Posture and concept: Definition, values of good posture, causes and drawbacks of bad posture

Introduction

We are a health conscious society today and good posture is a part of it. Good posture means our bones are properly aligned and our muscles, joints and ligaments can work as nature intended. It means our vital organs are in the right position and can function at peak efficiency. Good posture helps contribute to the normal functioning of the nervous system.
Without good posture, your overall health and total efficiency may be compromised. Because the long-term effects of poor posture can affect bodily systems (such as digestion, elimination, breathing, muscles, joints and ligaments). A person who has poor posture may often get tired or be unable to work efficiently or move properly.

Definition of posture

Posture is the attitude assumed by the body either with support during muscular inactivity, or by means of the co-ordinated action of many muscles working to maintain stability or to form an essential basis which is being adapted constantly to the movement which is superimposed upon it.
Ideal postures are those assumed to perform an activity in the most efficient manner utilizing the least amount of energy. All activity begins with a posture and ends with a posture. The relationships between body parts can be controlled voluntarily but to do this would require too much concentration. During normal functioning one's postures and adjustments to postures are automatic and occur quickly.

Classification of postures

1. Inactive posture
2. Active posture

a. Static
b. Dynamic

Inactive posture

These are attitudes adopted for resting or sleeping, as they are most suitable for this purpose when all essential muscular activity required maintaining life is reduced to a minimum. Those postures which make minimal demands upon the muscle responsible for the maintenance of essential function, such as respiration and circulation are preferable. The posture or position used for training general relaxation fulfilled this condition by allowing freedom for respiratory movement and least possible work for the heart muscle.

Active posture

The integrated action of many muscles is required to maintain active posture, which may be either static or dynamic

Static posture
A constant pattern of posture is maintained by the inter-action of groups of muscles which work more or less statistically to stabilise the joints, and in opposition to gravity or other forces. In the erect posture they preserve a state of equilibrium.

Dynamic posture
This type of active posture is required to form as efficient basis for movement. The pattern of the posture is constantly modified and adjusted to meet the changing circumstances which arise as the result of demand.

Mechanism of posture
1. Muscles
2. Nervous control
   Postural reflex
      i. The muscle
      ii. The eye
      iii. The ears
      iv. Joint structure

Muscles
The intensity and distribution of the muscle work which is required for both static and dynamic posture varies considerably with the pattern of posture, and the physical characteristic of the individual who assumes it. The groups of muscle most frequently employed are those which are used to maintain the erect position of the body, by working to counteract the effects of gravity. They are consequently known as anti-gravity muscle and their action with regards to joints is usually that of extension.
These anti gravity muscles present certain structural characteristics which enable them perform their function with efficiency and the minimum of effort. The form of the muscles is multi-pennate and fan shaped, as arrangement which signifies powerful action as opposed to the ability to produce a wide range of movement at high speed. Many of the constituent fibres are red, indicating their capability of sustained contraction without fatigue, due to their low metabolic rate of action.

Nervous control
Posture are maintained or adapted as a result of neuromuscular co-ordination, the appropriate muscle being innervated by means of a very complex reflex mechanism.
The postural reflex: A reflex is, by definition as efferent response to an afferent stimulus. The efferent response in this instance is a motor one, the anti-gravity muscles being the principal effectors organ. Afferent stimuli arise from a variety of source all over the body, the most important receptor being situated in the muscles, themselves the eye and the ears.

i. The muscles: Neuromuscular and neurotendinous spindles within the muscle record changing tension. Increased tension causes stimulation and results in a reflex contraction of the muscle, and so appears to be a manifestation of the myostatic or stretch reflex.

ii. The eyes: Visual sensation records any alternation in position of the body with regards to its surrounding, and the eyes form one of the receptors for the righting reflex, which enables the head and body to restore themselves to the erect position from other less usual attitudes.

iii. The ears: stimulation of the receptors of the vestibular nerve results from the movement of fluid contained in the semicircular canals of the internal ear. Each canals lies in a different plane, which is at right angle to both the other, and any movement of the head disturbs the fluid they contain and thus knowledge of the movement and the direction in which it takes place and recorded.

iv. Joint structure: In the weight bearing position approximation of bones stimulates receptors in joint structures and elicits reflex reaction to maintain the position.
Skin sensation also plays a part, especially which of the soles of the feet, when the body is in standing position.
Impulse from all these receptors are conveyed and co-ordinated in the central nervous system, the chief centres involved being the cerebral cortex, the cerebellum, the red nucleus and the vestibular nucleus.

Values of good posture
Posture is the position in which we hold our body upright against gravity while standing, sitting, or lying down. A good posture:
keeps bones and joints in the correct alignment so that muscles are being used properly.
helps decrease the abnormal wearing of joint surfaces that could result in arthritis.
decreases the stress on the ligaments holding the joints of the spine together.
prevents the spine from becoming fixed in abnormal positions.
prevents fatigue because muscles are being used more efficiently, allowing the body to use less energy.
prevents strain or overuse problems.
prevents backache and muscular pain.
contributes to a good appearance.

Definition of poor or bad posture
Postural dysfunction or "Poor" posture is defined as when our spine is positioned in unnatural positions, in which the curves are emphasised and this results in the joints, muscles and vertebrae being in stressful positions. This prolonged poor positioning results in a build up of pressure on these tissues.

Causes of poor posture
The causes of faulty posture can be divided into two categories: positional and structural.

Positional causes of poor posture include:
poor postural habit—for whatever reason, the individual does not maintain a correct posture

psychological factors, especially self-esteem

normal developmental and degenerative processes

pain leading to muscle guarding and avoidance postures

muscle imbalance, spasm, or contracture

joint hyper-mobility or hypo-mobility

respiratory conditions
general weakness

excess weight

loss of proprioception—the ability to perceive the position of your body

over reliance on passive support from a non-ergonomic chair

Structural causes are basically permanent anatomical deformities that may not amenable to correction by conservative treatments. However, some leg length inequalities and some ankle and foot issues can be corrected conservatively.

Treatment of poor posture

- Assessment and diagnosis of postural habits.
- Postural education and training.
- Manual therapy and soft tissue massage.
- Dry needling.
- Postural taping.
- Electrotherapy.
- Joint mobilisation.
- Corrective exercises and movements to improve flexibility, strength and posture.
- Activity modification advice.
- Advice regarding ergonomic work stations.
- Pilates exercises.

Examination of posture Examination should include the following:

- observation of the patient as they sit and move about.
- spinal alignment.
- measurement or estimation of the deviation from ideally erect postures using plumb lines, inclinometer, and posture guides —done in three or all four views.
- limb length and girth measurements.
- flexibility tests and joint mobility tests.
- muscle length and strength tests.

Technique of re-education of posture

The atmosphere in which instruction is given to the patient is of the great importance in postural re-education. The patient must be made to feel that, any effort he makes to attain it will be noticed and appreciated, while his difficulties and shortcoming will be understood. The techniques of re-education are

i. Relaxation
ii. Mobility
iii. Muscle power
iv. Stretching
v. Presentation of good posture
vi. The complete picture

i. Relaxation: The ability to relax is an important factor in re-education, as some degree of useless and unnecessary tension is nearly always associated with poor posture. To begin with, general relaxation with the body in horizontal position reduces muscular tension and gives a feeling of alignment. Voluntary relaxation of specific muscle groups can then be taught and practiced so that the patient learn to recognise tension and able to relax at will, if and when it develops during the maintenance of either static or dynamic postures.

ii. Mobility: The maintenance of normal mobility is essential to enable a wide variety of posture to be assumed. Abnormal mobility however is a liability rather than as asset, as additional muscular effort is required to control it, and in some case it may be a contributory factor in the development of poor posture.

Normal mobility is maintained by general free exercises which are rhythmical in character and include full range movement of all joints. Emphasis is laid on full extension as this is the movement which is most liable to limitation, except in case of lumbar spine and the shoulder, where flexion and lateral rotation respectively are more likely to be limited.

Exercise and agilities which increase the respiratory excursion are of great importance and should on no account be omitted, and those which involve hanging position give good alignment of the body and are much enjoyed by children.

iii. Muscle power: General muscular weakness is rare, if so, harmonious muscular development helps to maintain their tone and efficiency, and so to withstand any strain which may be imposed by occupational stress.

iv. Stretching: Shortened agonist muscles must be stretched before the antagonist muscles can be optimally exercised to increase their strength, or vice versa. Depending on the condition, manipulation may also be required to release an accompanying joint fixation. Therefore, manipulation should be added to the list of posture correction therapies.

.**iv. Presentation of a good posture**: A mirror, posture recorder or photograph may be useful for this purpose; so that the image can be compared with pictures of experts which demonstrate a good general pattern of alignment. Video tapes may also be used. This is particularly impressive in training dynamic posture in activities such as tennis, diving and lifting where faulty posture can have such a marked effect on the efficiency of the movement.

v. The complete picture: If the complete pattern of good posture does not emerge, it must be built up gradually and progressively from complete relaxation. A state of balanced tension and much concentration is required at first, but the effort and tension are progressively reduced by repetition. Provided there is sufficient repetition and precision so that the new pattern of posture becomes habituated and therefore no longer requires voluntary control, as it maintain by a conditional reflex which is a part of the postural reflex.

Conclusion

We often hear that good posture is essential for good health. Normally, we do not consciously maintain normal posture, instead certain muscles do it for us, and we do not even have to think about it. Good posture helps us stand, walk, sit, and lie in positions that place the least strain on supporting muscles and ligaments during movement and weight-bearing activities, whereas poor posture can lead to excessive strain on our postural muscles when held in certain positions for long periods of time.