SER No	CONTENT

LESSON PLAN

LESSON PLAN : H 1
STRUCTURE AND FUNCTION OF THE HUMAN BODY

Period - One
Type - Lec
Code - H 1
Term - I (SD/SW)

Training Aids

1. Computer Slides, Pointer, Charts, Black Board and Chalk.

Time Plan

2. (a) Introduction - 05 Min

(b) Skeletal and Muscular System - 10 Min

(c) Organ Systems - 20 Min

(d) Conclusion - 05 Min

INTRODUCTION

3. The human body is the greatest of all complex machineries. In order to carryout first aid, a first aider should have basic idea of structure and function of every part of the human body. Many lives can be saved if proper and timely first aid can be rendered.

AIM

4. To teach the NCC cadets about the Structure and Functioning of the Human Body.

PREVIEW

5. The class will be conducted in the following parts:-

(a) Part I - Skeletal and Muscular System.

(b) Part II - Organ Systems.

(a) **PART I : SKELETAL AND MUSCULAR SYSTEM**

Skeletal System

6. **Structures of Bones.** The human body has 206 bones of various shapes and sizes. The bones give shape and firmness to the body, as also it protects the vital organs like brain, heart, lungs spinal cord**.** Bones can either be ‗loosely arranged‘or ‗densely arranged‘. The loosely arranged

bone is called ‗spongy bone'and densely arranged bone is called ‗compact bone'. Some bones are hollow from inside and filled with bone marrow.

7. **Classification of Bones.** Bones can be classified according to their shape as under:-

(a) **Long Bones.** These bones are long and tubular and are confirmed to upper / lower limbs.

(b) **Short Bones.** These bones are short and tubular and are found in the ankle / wrists. 216

(c) **Flat Bones.** These bones are flat like plates, e.g. bones of cranium (Skull), shoulder or hips.

(d) **Irregular Bones.** Irregular or mixed shape, eg. vertebral column.

(e) **Sesamoid Bones.** They develop in the tendons of the muscles around the joint. eg. patella.

Muscular System

8. The muscle forms about half of the total weight of the body and are responsible for body movement. The muscles form the ‗flesh' of the body are under the control of nervous system.

9. **Classification.** The muscles of the body are classified into the following types:-

(a) **Voluntary/Skeletal Muscles.** Voluntary muscles or skeletal muscles are attached to the surface of bones. These muscles form about 47% of the body weight and are either fiber type or striated type. Most of the skeletal muscles pan from one bone to another across a joint and by contracting, they act upon the joints and produce movements.

(b) **Involuntary Muscles.** These are called involuntary muscles, because they are controlled by the autonomic nervous system.

(c) **Cardiac Muscles.** Though cardiac muscles are striated structurally, they form the main part of heart wall.

(b)

PART II : ORGAN SYSTEMS

10. **Circulatory System.** The circulatory system consists of the Heart, Blood Vessels and Blood. Each time the heart contracts, blood is pumped along the blood vessels. It is therefore kept in a state of continuous motion. By blood circulation, oxygen, nutrients and other substances are brought to the tissues and the waste products and carbon dioxide formed by the tissue are constantly removed.

(a) **Heart.** The Heart is the most important organ of blood circulation. It is situated in thorax between the lungs and on to the left side of the body. The size of heart in equal to a cloned fist and the average wt of heart in a male is about 300 gms, and in a female about 250 gm. It is divided into two compartments, the right and the left. The right side contains impure blood while left side contains pure blood. Each side is again divided into AURICLEs and VENTRICLEs. Auricles are the receiving chambers.

(b) **Blood.** The blood is also known as the ‗transport system' of the body, and plays an important role in maintenance of life. The total volume of blood contains – hemoglobin, RBC, WBC &

platelets.

(c) **Blood Vessels.** Blood vessels are tube like structures which carry blood all over the body for circulation. These are of three types:-

(i) **Arteries.** These are the blood vessels which carry pure blood from the heart to all parts of the body.

(ii) **Capillaries**. These are tiny blood vessels which connect the small arteries & veins. The exchange of oxygen and nutrition with carbon di oxide by the tissue takes place in the capillaries.

(iii) **Veins.** These blood vessels carry impure blood to the heart. The main veins are called ‗superior' and ‗inferior' vena cava.

11. **Respiratory System.** Respiration or breathing is a process by which, oxygen, obtained from fresh air, is absorbed in to the blood stream and carbon dioxide, formed by the tissue action, is removed from the blood and expelled into the air, that is then expired. It is a process essential to life. It involves the taking in of oxygen and giving out of carbon dioxide. The main organs of respiratory system are Nose, Pharynx, Larynx, Trachea, Bronchi, and the Lungs.

12. **Digestive System.** Digestion is a mechanical and chemical process by which, complex food substances are converted into simple substances so that they can be easily absorbed by blood and utilized by the various tissues of the body according to their requirements. The main organs of digestive system are mouth, salivary glands, pharynx, esophagus, stomach, pancreas, liver, small intestine and the large intestine

13. **Excretory System.** Excretion is a process by which waste products are removed out of the body. Among the organs that contribute towards the elimination of waste products are the skin, lungs, kidneys and the gastro-intestinal tract.

(a) **Skin.** The skin covers the external surface of the body. Waste matter in the form of sweat is removed through perspiration by the skin.

(b) **Urinary System.** The main organs of the urinary system are:-

(i) **Kidneys.** There are two bean shaped organs situated on the posterior abdominal wall in the lumbar region. They act as filters in the body, to filter the waste.

(ii) **Ureters.** Ureters are two tubes, which carry the urine from kidney to Urinary bladder.

(iii) **Urinary Bladders.** It is a hallow muscular organ situated in the pelvic cavity. It is a freely movable organ. Its size and shape varies according to the amount of urine it contains. It stores the urine.

(iv) **Urethra.** It is a tube leading from the floor of the urinary bladder to the exterior. It is used for excretion of the urine from the body.

14. **Nervous System.** Internal Balance of the human body is maintained within normal limits by the nervous system and the endocrine system. The nervous system may be sub divided into three main portions:-

(a) **The Central Nervous System.** This consists of brain and spinal cord.

(b) **The Peripheral Nervous System.** This forms the connections between the central nervous system and the various organs and muscles.

(c) **The Autonomic Nervous System.** It is an offshoot of the central nervous system and controls the involuntary functions of the various internal organs such as the stomach, intestine bladder and also the tiny muscles of the blood vessels and also controls the secretions of the Liver and Kidneys. A person is neither conscious for the normal activities of the autonomic system nor is he able to control them.

CONCLUSION

15. Basic knowledge of our body systems allows us to understand the field of health and hygiene with ease. This knowledge provides us the basic framework on which subsequent knowledge and skills dealing with medical science can be gained in a progressive manner.