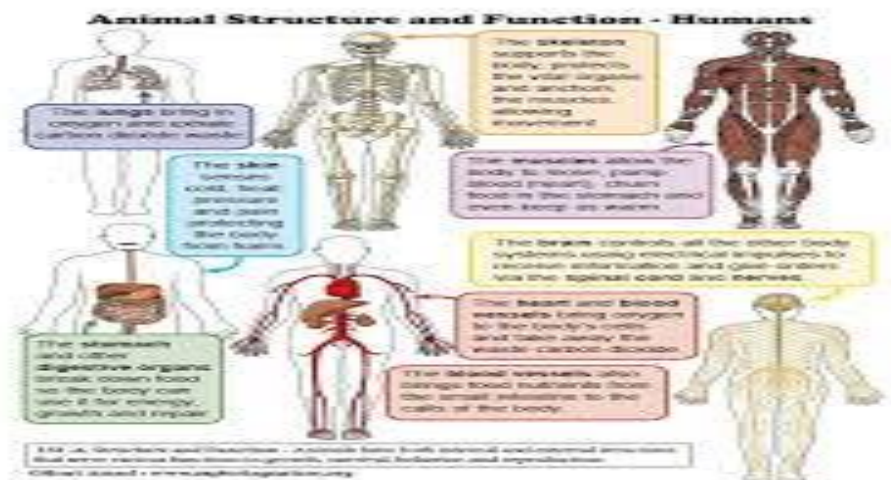


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Module code: BMHP5003

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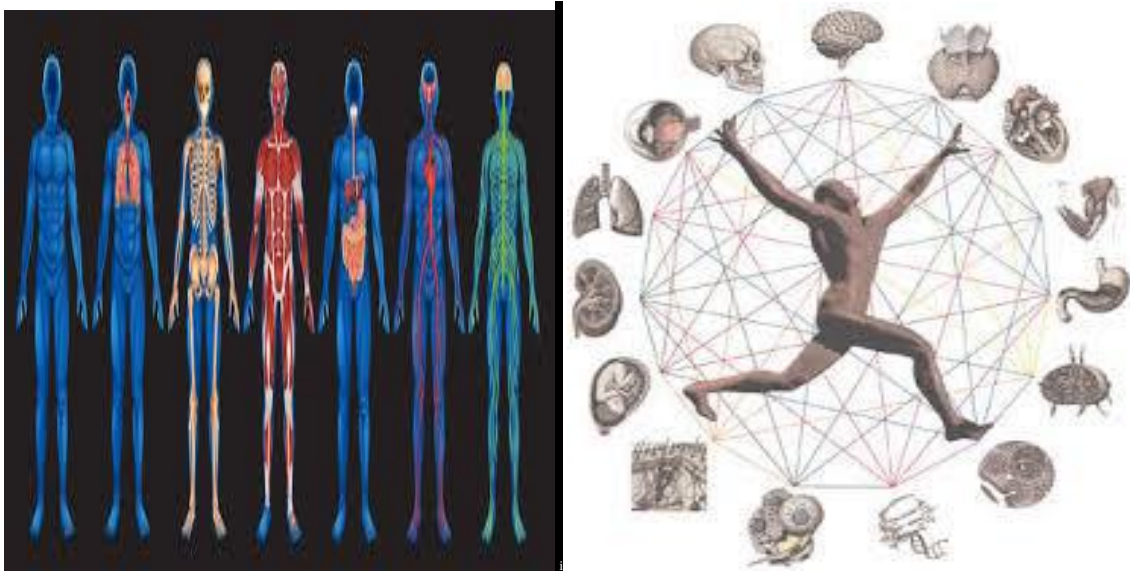
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Table of Contents

Introduction	3
Case Study	8
Recommendations	9
Conclusion	10
REFERENCES	11
APPENDIX	12

Introduction

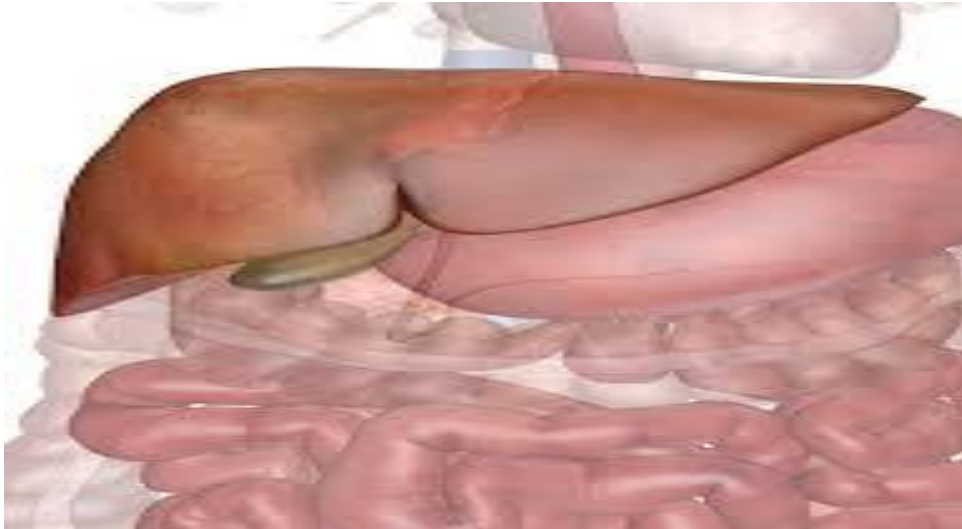
The human body is a complex system with structures ranging from cells to organs, and functions ranging from feeding to digestion and bodily protection. The structures and functions are dedicated to maintaining a state of health in the body. The human body is composed of a complex web of discrete parts that work together in order to achieve optimal functionality (Duval, Grover, Han, Mou, Pegoraro, Fredberg and Chen, 2017).



The complexity in the human body system can be likened to a city network. For instance, in London, there exist complex structures of the city. We have the buildings, structures, offices, the streets, or all the rooms within those buildings, different people within those rooms. We can also imagine the different road networks around the city, the roadways, waterways, sewers, parks, power plants, even the railways that go in and out of the city moving millions of people a day to their jobs and homes at night. This therefore necessitates a highly complex system of administration to attend to all the demands placed upon it. There is a complex web of discrete units within that administration system to attend to each of these needs at once, functioning at their designated roles but cooperating together at the same time - law enforcement, traffic and transportation guidance, sewer and garbage pickup, as well as education and power systems.

In the same way, the human body functions a lot like a city, with separate units designated for specific functions, but all working together for a common purpose. This takes us

to the relationship between Anatomy and Physiology. These two concepts are interrelated. While anatomy is the study of the physical structure of the body, physiology is the study of functions and relationships of different body parts. Anatomy clarifies the structure of the human body while physiology deals with the functioning of the human body. In order to study physiology it is necessary to have some knowledge about anatomy. Similarly, it is important to have knowledge about physiology in case one wants to know how to find out how anatomical structures react.

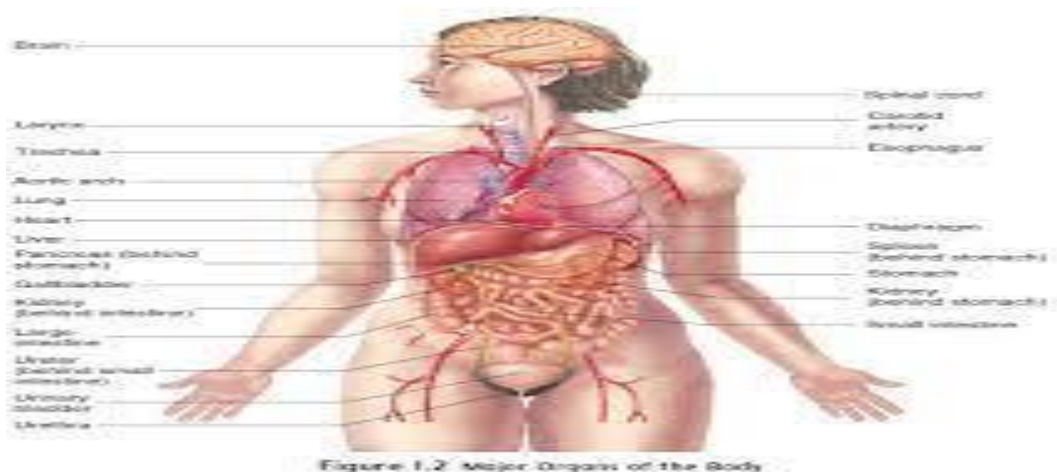


However, it is important to have an equal understanding of both these subjects and it is very important for both of them to learn and understand alongside each other. Similarly, the study of one would be incomplete without the other. Anatomy and physiology are intimately related. A muscle contracts and brings bones together (function) due to the arrangement of muscles and bones, and the arrangement of organelles inside of muscle cells (form) determines how much and for how long a muscle can contract (function) (Chan and Chan, 2016). Body structure functions depend on their form. The way structures work depend on the way they are organized. So understanding Physiology requires an understanding of Anatomy, and vice versa.



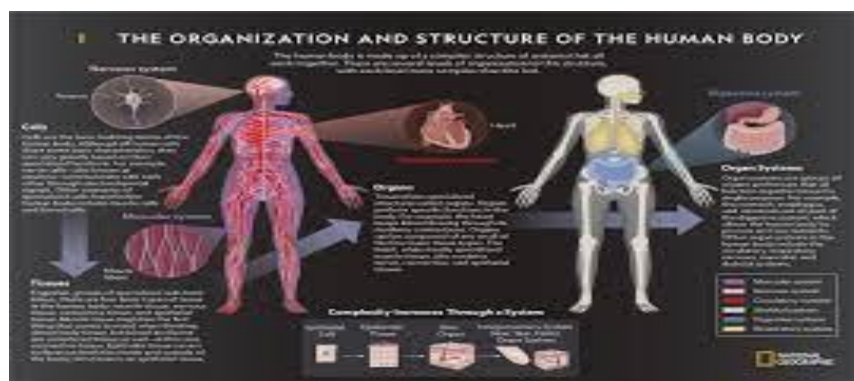
The word anatomy was coined from the greek words Anatomy (ana- = “up”, tome = “to cut”) is often defined as the study of structures in the human body. Anatomy focuses on the description of form, or how body structures at different levels look. Gross anatomy studies macroscopic structures (for example, the body, organs, and organ systems), and histology studies microscopic structures (for example, tissues, cells, and organelles) (Andersson-Rolf, Zilbauer, Koo, and Clevers, 2018).

On the other hand, Physiology is a study that that is concerned with the processes that control the heart beat to systems that even involve visual perception. Physiology was also coined from (physio = “nature”; -logy = “study”) studies the “nature” of the human body, nature in the sense of how structures at different levels work. Physiology focuses on function, or how structures at different levels work. If one wants to study physiology then it is important to work with organs or living bodies (Lutchen, Paré, and Seow, 2015). Physiology and anatomy can analyze with the help of aids such as clinical investigation of biological materials from specimens or dissection.

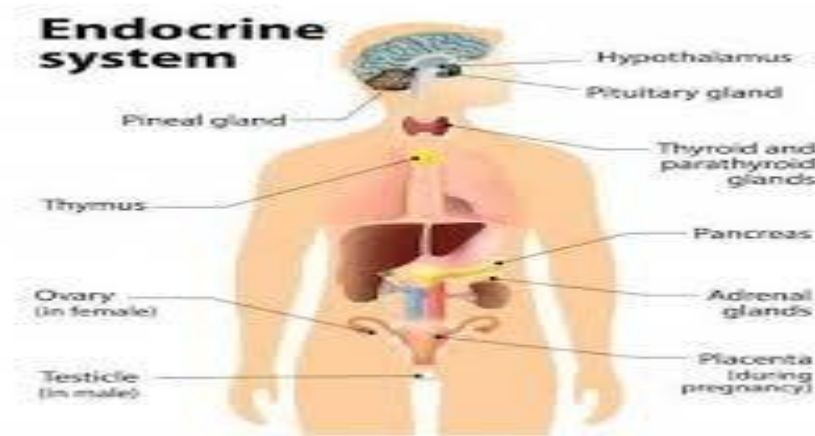


The study of physiology is, in a sense, the study of life. It asks questions about the internal workings of organisms and how they interact with the world around them. Physiology tests how organs and systems within the body work, how they communicate, and how they combine their efforts to make conditions favorable for survival. The most relevant arm of physiological research is applied human physiology; this field investigates biological systems at the level of the cell, organ, system, organism, and everywhere in between (Sawada and Arany, 2016).

The major systems covered in the study of human physiology are as follows:



- **Circulatory system** – including the heart, the blood vessels, properties of the blood, and how circulation works in sickness and health.
- **Digestive/excretory system** – charting the movement of solids from the mouth to the anus; this includes study of the spleen, liver, and pancreas, the conversion of food into fuel and its final exit from the body.
- **Endocrine system** – the study of endocrine hormones that carry signals throughout the organism, helping it to respond in concert.



- **Immune system** – the body’s natural defense system is comprised of white blood cells, the thymus, and lymph systems. A complex array of receptors and molecules combine to protect the host from attacks by pathogens.
- **Integumentary system** – the skin, hair, nails, sweat glands, and sebaceous glands (secreting an oily or waxy substance).
- **Nervous system** – the central nervous system (brain and spinal cord) and the peripheral nervous system. Study of the nervous system includes research into the senses, memory, emotion, movement, and thought.
- **Renal/urinary system** – including the kidneys, ureters, bladder, and urethra, this system removes water from the blood, produces urine, and carries away waste.
- **Reproductive system** – consisting of the gonads and the sex organs. Study of this system also includes investigating the way a fetus is created and nurtured for 9 months.
- **Respiratory system** – consisting of the nose, nasopharynx, trachea, and lungs. This system brings in oxygen and expels carbon dioxide and water (Trebak and Putney, 2017).

Case study

Sex: Male, 40 years old, BMI-24.21, For 170.10metres, 70.06weight.

Patient A does not smoke and has never smoke, Patient A has high pressure but has never had heart attack. Never had stroke and only the Father had a heart attack above the age of 60 years.

Exercise; Patient A is not the type that likes exercise but does once in a while.

Diet; Patient A eats meat, takes frozen foods, eat snakes and sometimes take vegetable.

Obesity may be the most significant medical problem that health care providers will face over the coming decades. Physicians must aggressively address this chronic disease, providing both preventive and therapeutic care. Obesity is a multi-factorial disease that has reached epidemic proportions in the united Kingdom, with about two thirds of adult overweight (body mass index [BMI] $> 25 \text{ kg/m}^2$), one third obese (BMI $> 30 \text{ kg/m}^2$), and about 5% with class III levels of obesity (BMI $> 40 \text{ kg/m}^2$). Obesity is associated with increased risk for a variety of co-morbidities, higher lifetime health care expenditures, and a greater risk for mortality. Increasing BMI is associated with further increases in disease burden and risk of mortality. This is therefore a major reason while obesity should be addressed urgently among the general populace (Ogden, Yanovski, Carroll and Flegal, 2017).

Recommendations

The most important thing is that Patient A should be motivated and ready to lose weight, this will assist in the adherence to the recommendations made. The following recommendations have therefore been made:

Lifestyle modification

Patient “A” needs to ensure some changes in the lifestyle. The foundation of obesity care is assisting the patient in making healthier dietary and physical activity choices that will lead to a net negative energy balance. Knowing fully well that, a comprehensive weight-loss program starts with lifestyle modification comprised of the food intake, dietary adjustment, avoidance of sedentary life, and behavioral control. All the above mentioned life styles needs be looked into in order to bring about a significant weight loss (Wadden, Webb, Moran and Bailer, 2012).

Dietary changes

Patient A needs to evolve a change in the dietary practices as gotten from the Questionnaire, there is need for limiting portion size, reducing fat and sugar intake, and using commercial weight-loss meal replacements. Taking low-carbohydrate diet, a low-fat diet, a Mediterranean diet, a low-glycemic-load diet, and a portion-controlled diet. He needs to make moderation his watchword. With regard to fluid intake, however, drinking eight (8) glasses of water a day is advisable. Regardless of the diet chosen, patients A should monitor the caloric intake via a food diary and weigh themselves at least once a week.

Increased activity

From the questionnaire administered, Patient A lives more of sedentary life. Choice of a particular activity (e.g., walking, swimming) needs to be made. There is need to increase energy expenditure. He needs to exercise for at least two and a half hour/week. This can lead to modest weight loss and help prevent weight regain; doubling this amount will promote more robust weight loss. As with food intake, patients A should record his daily physical activity.

Behavioral therapy

As applied to weight loss, behavioral therapy entails techniques for helping patients replace habits that contribute to excess weight and poor health with those that promote weight loss and good health. Group weight-loss programs in community settings, commercial weight-loss programs, and programs delivered by telephone, the Internet, or text message can all be effective.

Pharmacotherapy

If a patient has not lost about 5% of her body weight after 3 months, or if she has lost weight but regained some, most, or all of it over time, the patient consider use of weight-loss medication as an *adjunct* to lifestyle modification. In some patients with severe complications who require clinically meaningful weight loss quickly, lifestyle modification and pharmacotherapy can be initiated concomitantly (Shai, Schwarzfuchs and Henkin, 2018).

Conclusion

Obesity is a disease that requires permanent lifestyle changes. Lifestyle modification, enabled by dietary changes and increased physical activity. If a patient does not reach her goals in terms of reducing her weight and her risk for obesity-related complications, medication could be sorted after. After the establishment of relationship with patient A, it became very important for me to do a follow- up which I believe will the patient in implementing these strategies and reaching these goals.

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APPENDIX

LIFESTYLE QUESTIONNAIRE

Introduction:

In order to help us focus our Health Promotion activities in the practice, we would be grateful if you could fill in this short questionnaire. If you have already completed one on a previous visit, please return this questionnaire to the receptionist.

Name JAMES PATIENT(A) Date of Birth 40.1.13

Do you smoke? Yes ☐ No ☒

If Yes, do you -

smoke less than 1	cigarette/day	☐
1 - 9	cigarettes/day	☐
10-19	cigarettes/day	☐
20-39	cigarettes/day	☐
more than 40	cigarettes/day	☐
smoke a pipe		☐
smoke cigars		☐

If No, have you -

never ever smoked	☒
given up smoking in the last year	☐
not smoked for more than 1 year	☐

Do you have high blood pressure? Yes ☒ No ☐

Have you ever had a heart attack or suffered from angina? Yes ☐ No ☒

Have you ever had a stroke, "shock" or any weakness down one side? Yes ☐ No ☒

Have any of the following - mother, father, brothers or sisters had -

a heart attack below the age of 60	Yes ☐	No ☐
a heart attack above the age of 60	Yes ☒	No ☐
a stroke	Yes ☐	No ☐
trouble with very high cholesterol (hyperlipidaemia)	Yes ☐	No ☐

father

Practice Use Only

Health Education Smoking ??

BP 144/94

Height 170.10

Weight 70.6

EXERCISE

Healthy exercise usually involves activity that lasts for at least 20 minutes, raises your pulse and produces hard breathing. In younger people this might be running, cycling or sport, or brisk walking for older people.

Do you take this type of exercise -

- daily ☐
- 3 times weekly ☐
- once weekly ☐
- once monthly ☒
- seldom ☐

I cannot take exercise because of disability ☐

DIET

Please tick the one category which is closest to your usual eating pattern.

- I eat no meat, fish or dairy produce ☐
- I eat no meat ☐
- I eat a mixture including daily fruit and vegetables ☒
- I eat a mixture including regular chips and fries ☐
- I eat frozen meals (eg TV dinners) 3 or 4 times a week ☒
- I eat mainly snacks ☐
- I eat a special diet for a diet ☐

Please specify

ALCOHOL

Please tick the statement which most closely describes your usual average alcohol intake. (1 unit is 1 glass wine, ½ pint beer or a single measure of spirit.)

- I never drink alcohol ☐
- I drink less than 1 unit per day ☒
- I drink between 1 and 2 units a day ☐
- I drink between 3 and 6 units a day ☐
- I drink between 7 and 9 units a day ☐
- I drink more than 9 units a day on average ☐

Practice Use Only

Health Education Alcohol ☐
Alcohol Brief Intervention ☐