جامعة ساوة الاهلية
كلية التقنيات الصحية والطبية
قسم التخدير - اللجنة العلمية

SAWA UNIVERSITY

APPLIED PHYSIOLOGY

جامعـــة ســـــــاوة — Sawa University

كليـــة التقنيات الصحيـة والطبية — College of health and medical techniques

قسم تقنيـات التخديـــــر — Department of Anesthesia

المرحلـــة الثانيـــة — Second Stage

عملي محاضرة ١

Practical Lecture 1

أستاذ المادة : م.م. محمد حسين هندي

AN INTRODUCTION OF APPLIED PHYSIOLOGY

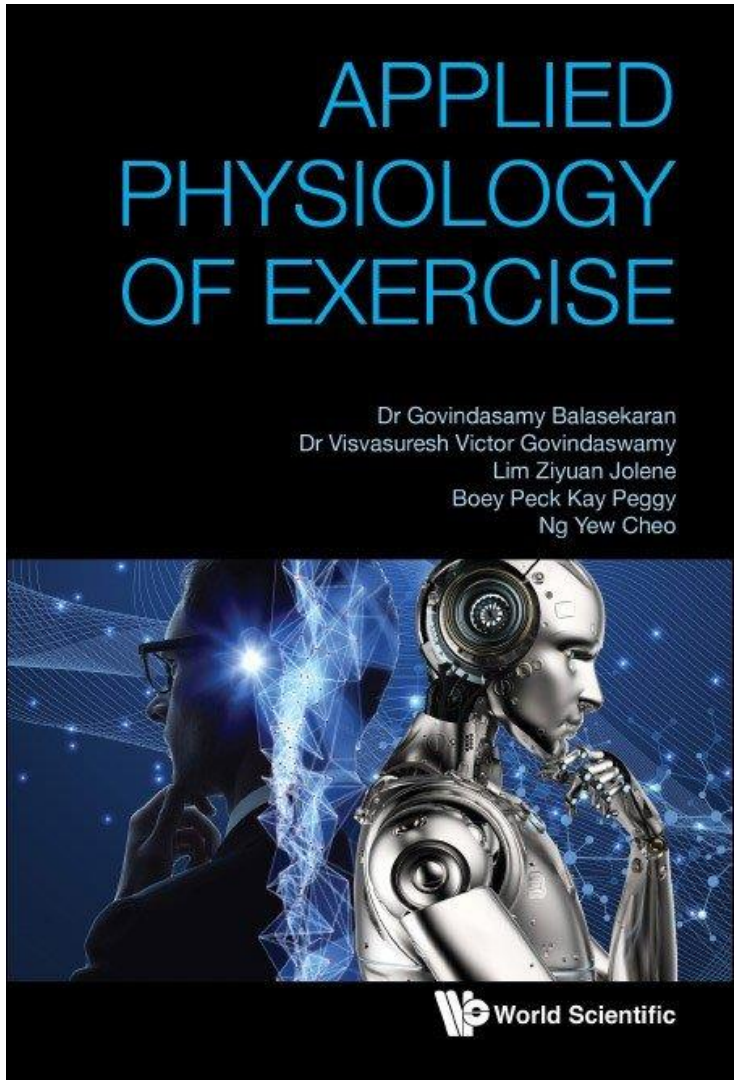
* **Applied Physiology** is a branch of physiology that focuses on the practical application of physiological principles in real-world settings. It involves the study of how the human body responds to various external stimuli, such as exercise, diet, and environmental stressors.

* **The goal of applied physiology is to use this knowledge to optimize human performance and improve health outcomes.**

AN INTRODUCTION OF APPLIED PHYSIOLOGY

One of the key areas of research in applied physiology is **exercise physiology**.

This includes the study of **how muscles contract** and produce force, **the regulation of metabolism during exercise**, and **the effects of different types of exercise on various organ systems**. The findings from exercise physiology research have been used to develop exercise programs for athletes, as well as for individuals looking to improve their overall health and fitness.



AN INTRODUCTION OF APPLIED PHYSIOLOGY

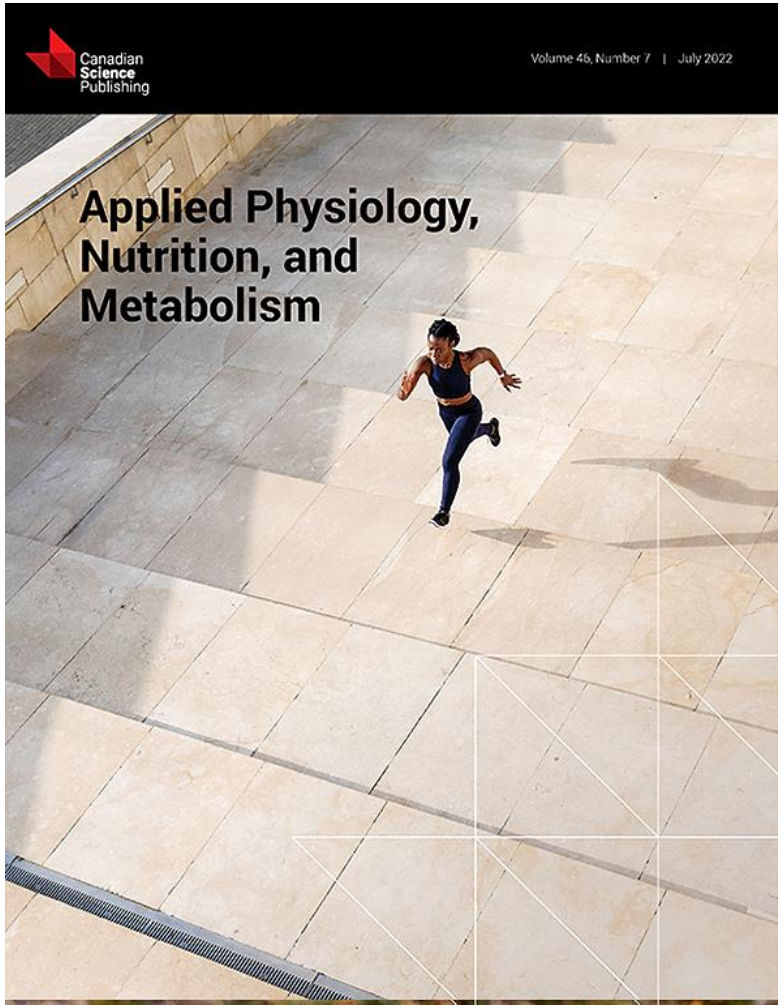
Another area of applied physiology research is **environmental physiology**, which studies **how the body responds to different environmental stressors**, such as heat, cold, and altitude.

This research has been used to develop interventions to protect individuals who work or play in extreme environments, such as soldiers, firefighters, and mountain climbers.

AN INTRODUCTION OF APPLIED PHYSIOLOGY

Applied physiology also includes research on topics such as **nutrition**, **aging**, and **disease prevention**.

By understanding how the body works in different contexts, applied physiology helps to inform interventions that can **improve human health and performance**.



WHAT WE WILL STUDY IN APPLIED PHYSIOLOGY

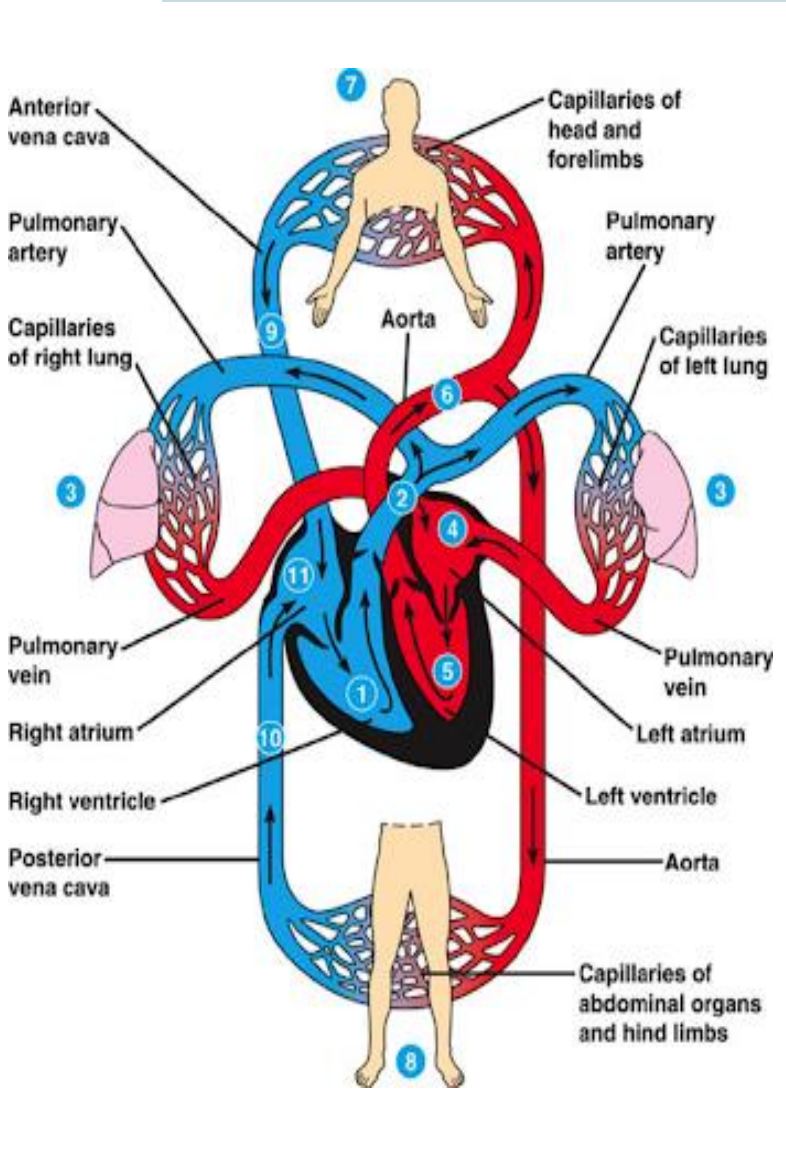
As a beginning the two aspects we study is:

1- cardiovascular system

2- respiratory system

Which have these topics

cardiac cycle
cardiac innervation and control of heart rate
systemic circulation
physiology of microcirculation(starling law of capillary)
venous circulation and venous return
coronary circulation
spirometery and lung volumes



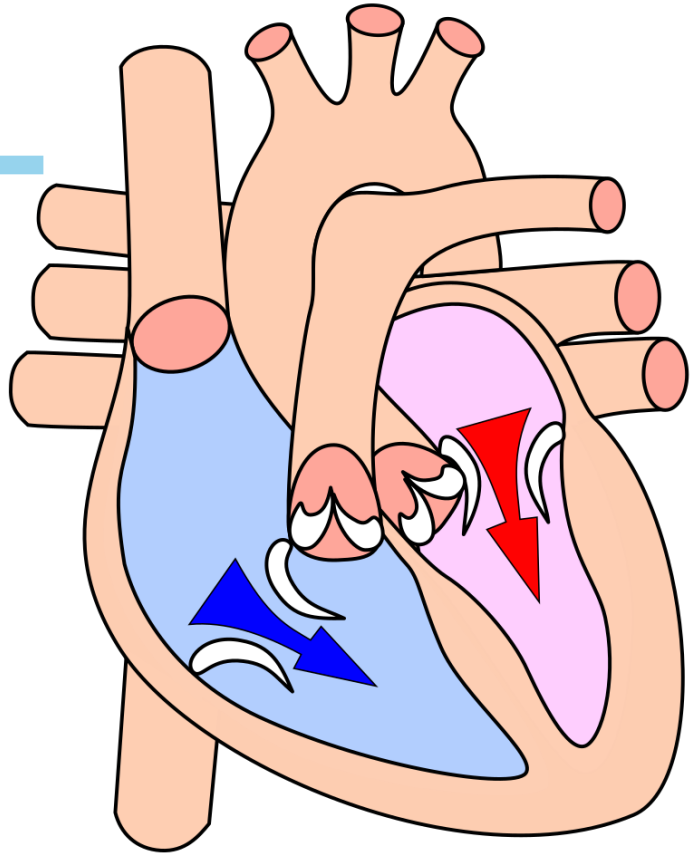
CARDIAC CYCLE

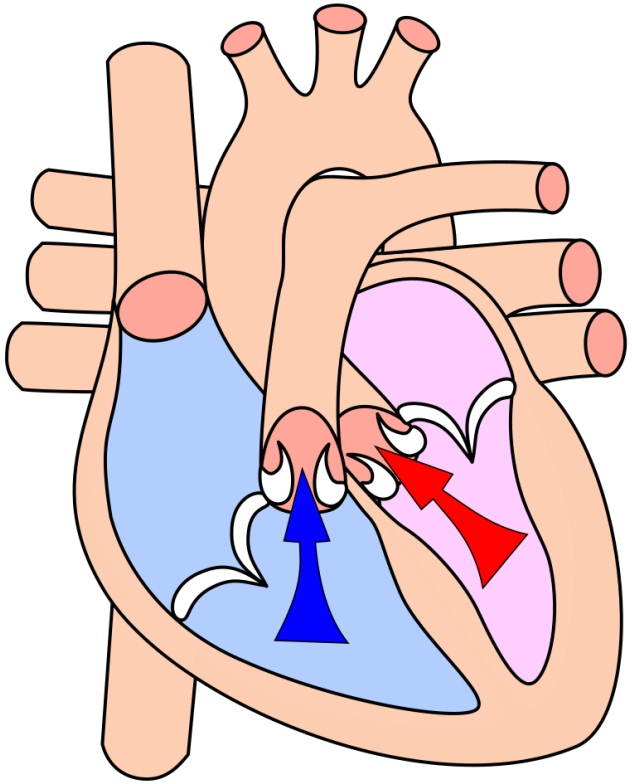
The cardiac cycle refers to the sequential contraction and relaxation of the heart's chambers. Including the atria and ventricles, driven by electrical changes, pressures, and mechanical actions.

The cardiac cycle is the performance of the human heart from the beginning of one heartbeat to the beginning of the next.

It consists of two periods: one during which the heart muscle relaxes and refills with blood, called Diastole, following a period of robust contraction and pumping of blood, called Systole.

CARDIAC CYCLE





Diastole : is the relaxed phase of the cardiac cycle when the chambers of the heart are refilling with blood.

Systole :is the part of the cardiac cycle during which some chambers of the heart contract after refilling with blood.

Atriole systole begins

Atrial contraction forces blood into ventricles

Ventricular systole (first phase)

Ventricular contraction pushes AV valves closed

Ventricular systole (second phase)

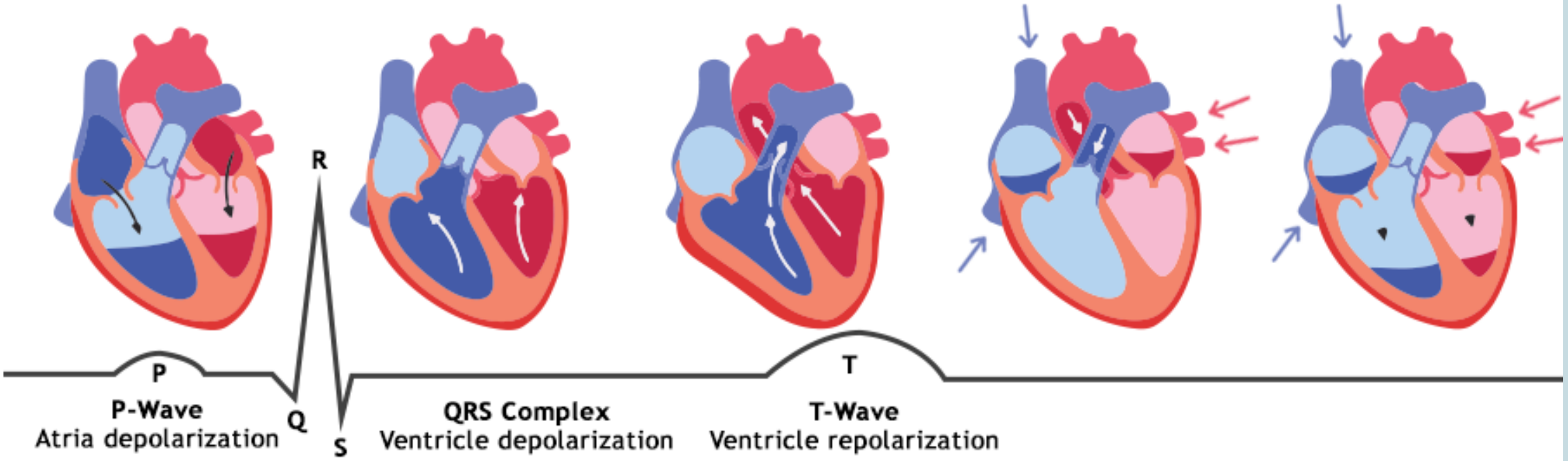
Semilunar valves open and blood is ejected

Ventricular diastole (early)

Semilunar valves closed and blood flows into atria

Ventricular diastole (late)

Chambers relax and blood fills ventricles passively

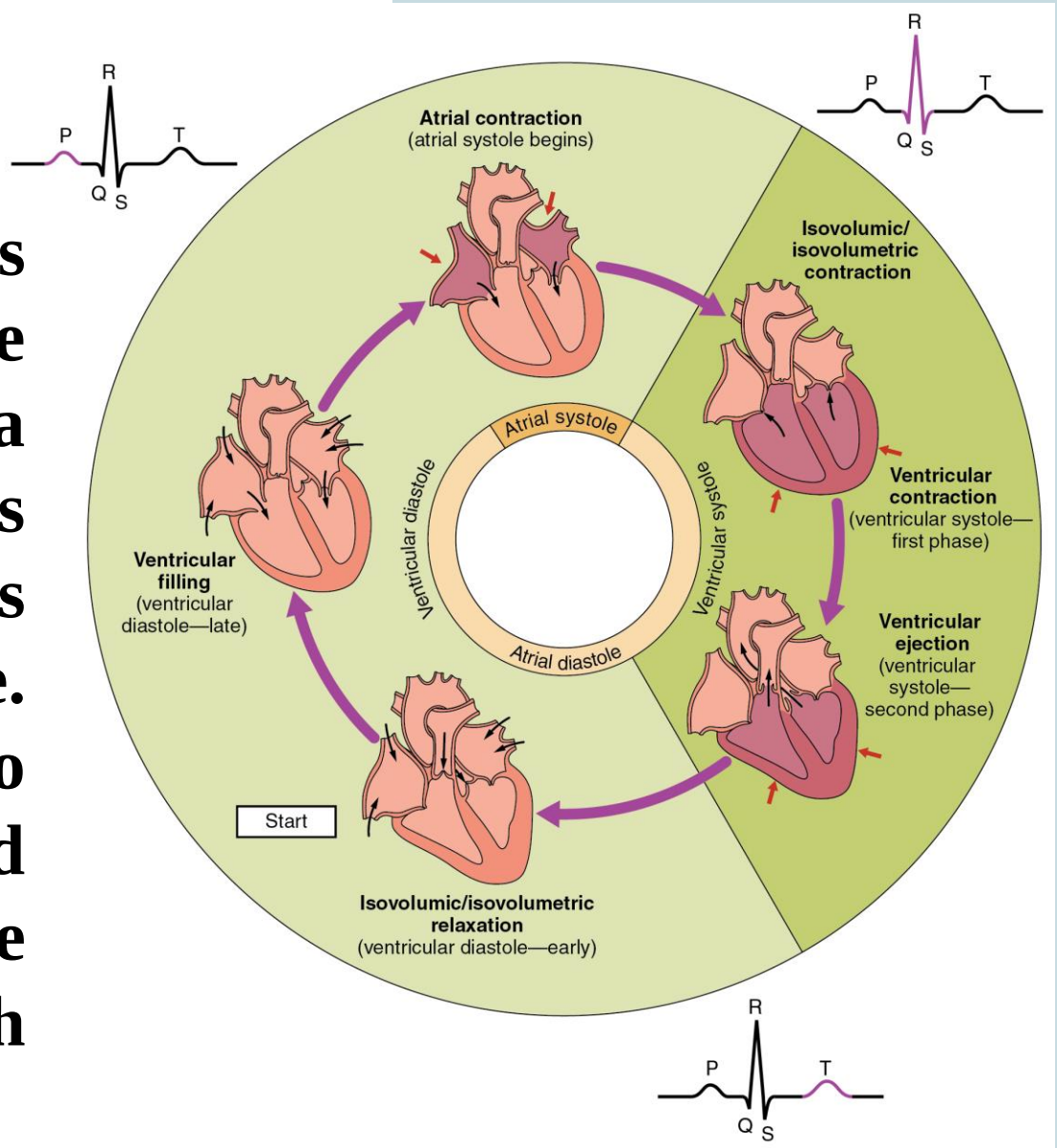


Atriole Diastole | Atriole Systole

Ventricular Diastole | Ventricular Systole | Ventricular Diastole

CARDIAC CYCLE

In general, the cardiac cycle consists of a period of cardiac muscle relaxation, known as diastole, and a period of contraction, known as systole. Contraction of the ventricles is referred to as ventricular systole. The cardiac output (CO) is equal to the product of heart rate (HR) and stroke volume (SV), which is the output of the left ventricle on each stroke, or cycle.



Thank You

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