



Building Blocks of Clinical Practice

Helping Athletic Trainers Build a Strong Foundation



Issue #6: Cardiac Assessment: Physical Examination Outline Part 1 of 2

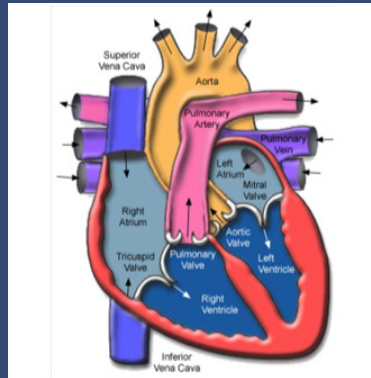
REVIEW ANATOMY AND PHYSIOLOGY

Topographical Anatomy

- **Great Vessels**
 - Pulmonary artery: main trunk, 3rd interspace left sternal border
 - Aorta: substernal, level of 4th rib, curves upward to sternal angle, arches back and down
 - Vena Cava: superior and inferior connect to right atrium

Circulation Pattern

- Superior and Inferior Vena Cava
- Right atrium
- Tricuspid valve
- Right ventricle
- Pulmonic valve
- Pulmonary artery
- Lungs
- Pulmonary veins
- Left atrium
- Mitral valve
- Left ventricle
- Aortic valve
- Systemic circulation



CARDIAC EXAMINATION

HISTORY QUESTIONS (Reference: PPE Monograph)

- Have you ever passed out or nearly passed out **DURING** exercise?
- Have you ever passed out or nearly passed out **AFTER** exercise?
- Have you ever had discomfort, pain, or pressure in your chest during exercise?
- Does your heart race or skip beats during exercise?
- Has a doctor ever told you that you have high blood pressure, high cholesterol, a heart murmur, or a heart infection?
- Has a doctor ever ordered a test for your heart (e.g. EKG, echocardiogram)?
- Has anyone in your family died for no apparent reason?
- Does anyone in your family have a heart problem?
- Has any family member died of heart problems or of sudden death before age 50?
- Does anyone in your family have Marfan's syndrome?

Present History

- Chest pain: onset, duration, character, location, severity, associated symptoms
- Fatigue
- Cough
- Difficulty breathing
- Loss of consciousness (syncope)

Past History

- Cardiac surgery, rhythm disorder, acute symptoms, chronic illness

Family History

- Diabetes, heart disease, high cholesterol, hypertension, congenital heart defects
- Sudden death in a young and middle-aged relative
- Family members with risk factors, etc.

Personal / Social History

- Tobacco use
- Diet, power drinks, caffeine, weight loss aids
- Use of alcohol and recreational drugs
- Prescription medications, supplements, etc.

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GENERAL APPROACH

- Expose chest
- Quiet room
- Warm hands
- Be methodical / systematic
- Clinician stands to one side of patient
- Check vitals: bp, heart rate, respirations

INSPECTION

- Peripheral edema
- Precordial heaves – could indicate hypertrophy
- Point of maximum impulse (PMI)
- Chest wall deformities
- Color of skin and nail beds
- **Pallor**
 - May indicate anemia or lack of arterial blood flow
 - Check mucous membranes, conjunctiva, palmar creases
- **Cyanosis**
 - May indicate decreased oxygenated blood
 - Check fingertips, lips, earlobes
- **Capillary refill time**
 - Blanch nail bed for several seconds, then release pressure
 - Observe time elapse for nail to regain color - should take less than 2-3 seconds

PALPATION

- Use proximal halves of 4 fingers held together gently and touch lightly
 - Thrills – palpable vibrations of murmurs
 - Heaves / Lifts – visible movement of precordium due to movement of the heart
- Pulses

AUSCULTATION

- **Indications for Cardiac Auscultation**
 - History of syncope, dizziness
 - Chest pain, pressure or dyspnea during or after activity / exercise
 - Sensations of heart palpitations
 - Tachycardia or bradycardia
 - Sustained hypertension and/or hypercholesterolemia
 - History of heart murmur or heart infection
 - Noted cyanosis
 - Signs of Marfan's syndrome
 - Symptoms of hypertrophic cardiomyopathy
 - Trauma to the chest
- **Stethoscope**
 - Diaphragm – high pitched sounds
 - Bell – low pitched sounds
 - Ideally, auscultate directly on skin, not clothes

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- **Auscultation Sites / Valvular Positions**
(*A Pretty Tough Murmur*)
- A = Aortic: 2nd right intercostal space
- P = Pulmonic: 2nd left intercostal space
- T = Tricuspid: 4th left intercostal space
- M = Mitral: Apex, 5th intercostal space (mid-clavicular line)

Auscultate at each valvular area with bell and diaphragm and assess the following:

- Cardiac rhythm – regular or irregular
- Heart sounds –note the quality
- Murmurs – valvular locations
- Extra-cardiac sounds

STEP-BY-STEP CARDIAC EXAMINATION

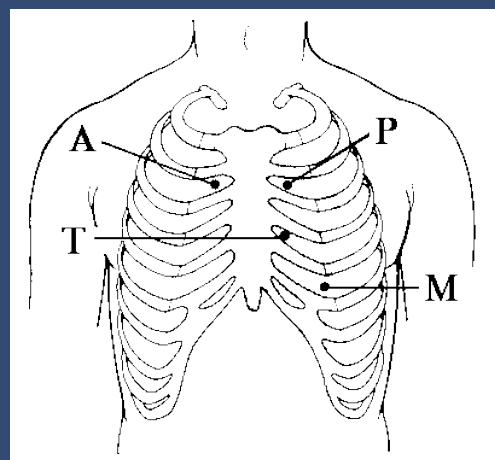
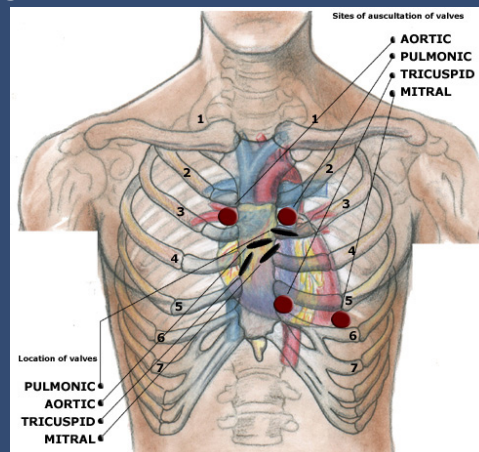
- Stand to the right side of patient
- Determine BP, pulse and respiration
- Inspect nail beds for pallor, cyanosis, and/or capillary refill
- Inspect / palpate legs for edema, temperature, varicosities, hyperpigmentation
- Palpate bilateral peripheral pulses

Supine Position (or 30-45 degree angle)

- Inspect precordium using tangential lighting is needed
- Palpate around the heart with ball of hand for lifts, heaves, thrills, PMI
- Auscultate with diaphragm at 4 valvular positions
- Auscultate with bell at 4 valvular positions
- Auscultate with bell in left lateral decubitus position

Sitting

- Auscultate with diaphragm at 4 valvular positions
- Auscultate with bell at 4 valvular positions



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