cardiac physiology

[Diagram showing various aspects of cardiac physiology]

- contractile properties: 
  - myocardium shows length-tension relationships
  - cardiac muscle shows activated properties
  - phase 0 is depolarisation
  - phase 1 is initial repolarisation
  - phase 2 is plateau
  - phase 3 is late repolarisation
  - phase 4 is baseline

- metabolic properties: 
  - ATPase activity is high due to high oxygen demand
  - fibres are dependent on oxygen

- electrical properties: 
  - cardiac ion channels

- mechanical properties: 
  - systolic intraventricular pressure
  - diastolic intraventricular pressure

- morphology: 
  - general key features:
    - branching cells
    - single central nucleus
    - visible striations
    - intercalated discs
    - T-tubules are located Z-lines rather than A-I junction

- supply dependency: 
  - critical DO₂
  - septic shock
  - cardiogenic and hypovolaemic shock

- oxygen delivery (DO₂) vs. oxygen uptake (VO₂)

- critical DO₂

- supply independence (VO₂)

- supply dependence

- Na⁺-activated
- Ca²⁺-activated
- ATP-sensitive
- Acetylcholine-activated
- Arachidonic acid-activated

- ligand-gated K⁺ channels
- NMDA channel
- T-channel
- L-channel
- Ca²⁺-activated
- Na⁺-activated
- ATP-sensitive
- Acetylcholine-activated
- Arachidonic acid-activated