|  |  |
| --- | --- |
| **Body System** | **Acute response** |
| Respiratory | * Increased Tidal Volume (TV) * Increased Respiratory Rate (RR) * Increased Ventilation (V=TVxRR) * Increased Pulmonary Diffusion |
| Cardiovascular | * Increased Heart Rate (HR) * Increased Stroke Volume (SV) * Increased Cardiac Output (Q=HRxSV) * Increased Blood Pressure (Systolic= always, Diastolic=only in resistance training) * Increased Venous Return * Increased a-vO2 difference * Decreased Blood Volume * Redistribution of blood flow to working muscles and skin |
| Muscular | * Increased Motor Unit Recruitment * Increased Body Temperature * Increased lactate production * Decreased fuel stores (ATP,PC, Glycogen & Fats) |

**The role of each body system**

Respiratory: to extract more oxygen from the air and deliver it to the blood.

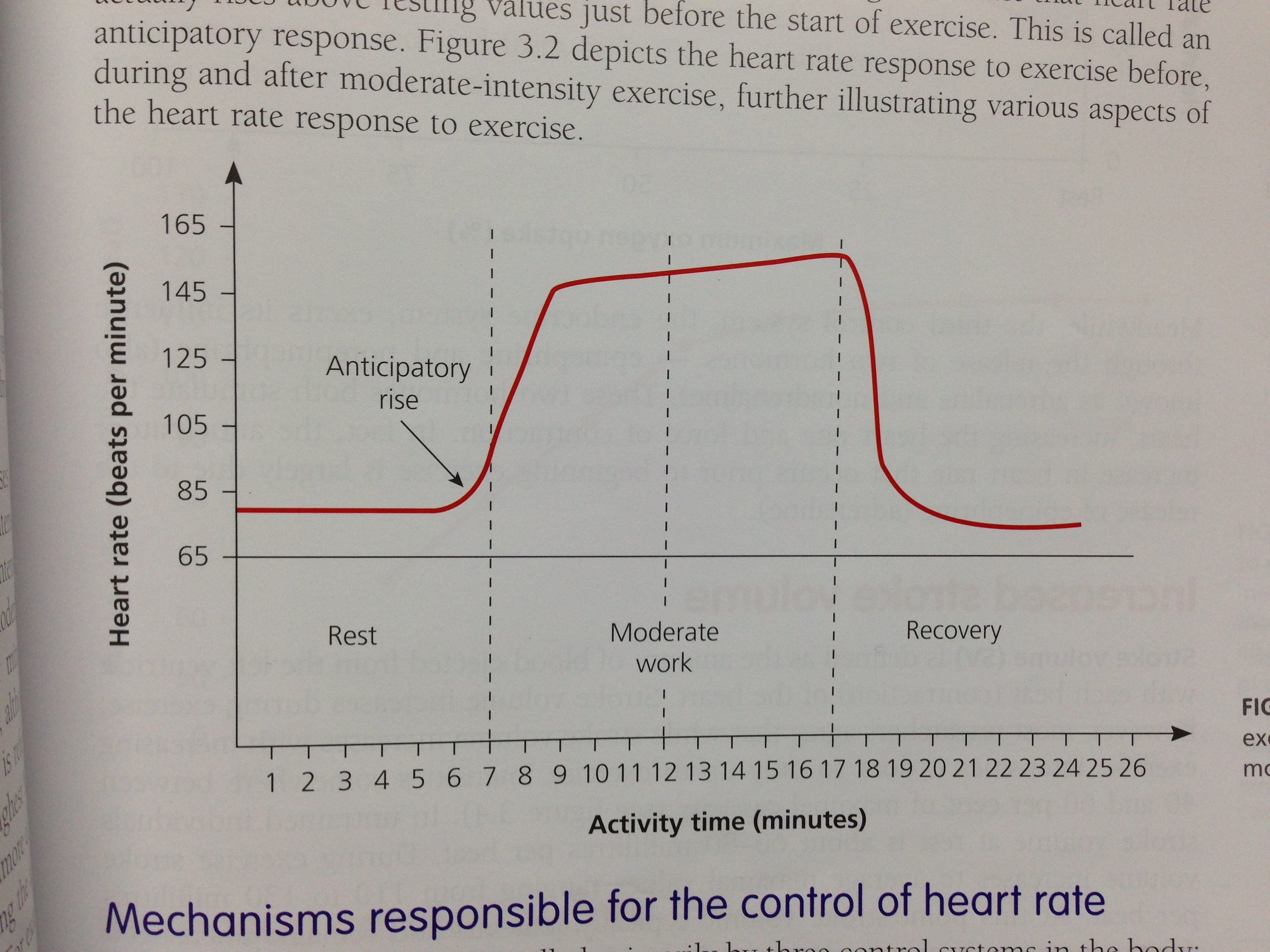
Cardiovascular: to transport the oxygen via the blood, delivering it to the working muscles.

Muscular: to use the oxygen to metabolise fuels and resynthesise ADP

**Compare how acute responses would vary at different intensities, different positions within the same sport or Anaerobic vs Aerobic events.**

* What would be the differences in Fuel depletion between a Hockey Goal Keeper Vs a midfielder and why?
* How would the acute response of increased body temperature compare between a 100m sprinter and a 1500m runner? Why would there be a difference?
* If I increased my intensity during a run, how would my Ventilation react?

**Analyse and Create Graphs and Table**



**Standard levels in a relatively fit athlete**

|  |  |  |  |
| --- | --- | --- | --- |
| **Response** | | **@ rest** | **@ max intensities** |
| **Respiratory** | Respiratory Rate (breaths/min) | 12 | 30 |
| **Cardiovascular** | Heart Rate (beats/min) | 70 | 220 - age |
| Stroke Volume (ml/beat) | 75 | 150 |
| Cardiac Output (L/min) | 5.2 | 28.5 |
| **Muscular** | a-vO2 difference (ml O2/100ml blood) | 5 | 15-18 |

**When reading a graph**

* Clearly read the axis so that you understand what you are looking at
* If there is additional information available, use this to make further sense of the graph
* If the question is directly related to the graph, always use the figures from it. Don’t make up values.

**Things to note when drawing a graph**

* Starting point @ rest (see table above)
* Slight anticipation before commencement of Physical Activity
* Sharp rise to meet O2 demands of the exercise
* @ sub max intensities, achieving a Steady State (O2 supply meets O2 demand)
* @ max intensities, a slower increase until the end of the activity
* During recovery, there will be a gradual decline to return to resting levels