of the muscle cells deep in the body will be high and they will produce lots of CO_2. The distance between the cells where the O_2 is needed and the supply of oxygen is too far for effectiv e diffusion to take place. What's more, the bigger the organism, the smaller the SA:V ratio. So gases can't be exchanged fast enough for the organism to survive.

Calculating SA : vol ratios

Sphere

SA : $4\pi r^2$

VOL : $\frac{4}{3}\pi r^3$

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Example 1: Radius = 1 cm

SA is $4\pi r^2$ ∴ SA = $(4 \times \pi \times 1^2) = 12.6$ (1 d.p)

VOL is $\frac{4}{3}\pi r^3$ ∴ VOL = $(\frac{4}{3} \times \pi \times 1^3) = 4.2$ (1 d.p)

SA : V ratio is $\frac{12.6}{4.2} = 3:1$

Explanation

The bigger the organism, the smaller the SA: vol ratio becomes, and the distance that substances need to travel from the out e to reach the cells at the centre of the body get longer. This makes it harder and ultimately impossible to absorb