The British Sub-Aqua Club

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Technical Information

ARTIFICIAL VENTILATION T.13

Advice regarding rate of administration of Artificial Ventilation (AV)

Land based rescue

The BSAC does not recommend a rate for AV that is applicable with all casualties in all rescue scenarios. The essential feature of AV, like all other rescue techniques, is its effectiveness. The effectiveness of AV is assessed and monitored by observing the casualty's chest rise and fall, the sound of the exhalations, and the ease of inflation of the chest. This allows the rescuer to monitor the degree of inflation provided with each breath ensuring that that there is neither under- nor over- inflation. The rescuer will also be able to recognise when the casualty's exhalation has ceased (when the chest has ceased falling and the sound of the exhalations has ceased). When this occurs it is time to provide another breath to re-inflate the chest. This method automatically sets both the rate of AV and the volume by which the chest is inflated, appropriately for the particular casualty's build. A slightly built, slim person will therefore be ventilated more shallowly, but at a slightly higher rate, than someone with a larger chest capacity. It is for this reason no rate is specified.

This guidance is in line with that for "Rescue Breathing" in Basic Life Support (Resuscitation Guidelines 2000; Resuscitation Council (UK)). In summary these are that only a small amount of resistance to breathing should be felt during rescue breathing and each rescue breath should take 2 seconds, achieving a tidal volume of an amount to produce visible lifting of the chest. The rescuer should then wait for the chest to fall fully during expiration before giving another breath. This should normally take about 2 - 4 seconds; each sequence of 10 breaths will therefore take about 40 to 60 seconds to complete. The exact timing of expiration is not critical; the chest should be allowed to fall before another breath is given.

In water rescue

In the water, monitoring effectiveness as described above is almost impossible and other guidance has to be given by the BSAC. This has to be a compromise because, as noted above, no advice will be ideal for all casualties and situations. In the water there is also the possibility that effectiveness may be further compromised by the need to tow the casualty.

The advice of the BSAC is that, in water, ventilations should be given at a rate of two breaths every 15 seconds. This figure is considered to provide adequate inflation of the casualty's lungs and adequate deflation between the breaths. The inflation phase will take 1.5 to 2 seconds, followed by a deflation (exhalation by the casualty) for about 4 seconds. The total time for the inflation/deflation for each breath of AV will therefore need to take about 5 - 6 seconds, although again this is an approximation for an 'average' adult.

Once an in-water rescue has progressed to the stage where monitoring effectiveness can be performed as for the on land situation described above, that method of monitoring the effectiveness should take precedence.

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