

## SmartMan<sup>®</sup>

### Why it is Important to get Compressions Right

There are two ways that chest compressions provide blood circulation. First, by increasing the pressure inside the chest (intrathoracic) it forces blood out of the chest. Second, the heart is compressed between the sternum and the spine. Opening and closing of the heart valves keeps the blood (with oxygen) flowing forward to the brain and other vital organs.

Under the best of circumstances, CPR can provide up to 20% of the normal blood flow. The standards set in the AHA guidelines are aimed at achieving 20% circulation of blood throughout the body, including circulating through the brain. An error in performing any of the component skills which are part of performing compressions will reduce or even stop blood flow. The AHA guidelines specify how to perform chest compressions properly.

1. Rate. A rate of less than 100 per minute will decrease forward blood flow, and a rate greater than 100 will increase fatigue, which leads to other performance errors.
2. Depth. Compressing the chest less than 1.5 inches will reduce blood flow and greater than 2 inches will increase the likelihood of injuring the victim.
3. Full chest recoil. When a compression is released, elastic recoil of the chest will create a negative pressure that pulls blood into the chest. Incomplete decompression will reduce the amount of blood available to be circulated with the next compression.
4. There is evidence to suggest that it takes 3 to 7 compressions to restore aortic pressure and cerebral perfusion pressure after a pause. In simple terms this means that it takes 3 to 7 compressions to get the blood flowing. *Thus the repercussion of performing several poor compressions in a row is much greater than used to be thought. It is now believed to have direct consequences for survival of a victim.*

Both the heart and thorax respond to compression rate, compression depth, and chest recoil. In reduced depth and/or reduced rate compressions, the heart and thorax are not pumped sufficiently. Without proper recoil the thorax and heart cannot fill with blood, so the next compression will be less effective and if such ineffective compressions continue in succession it will lead to loss of aortic pressure.

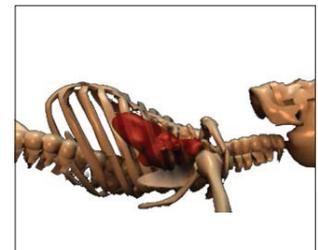
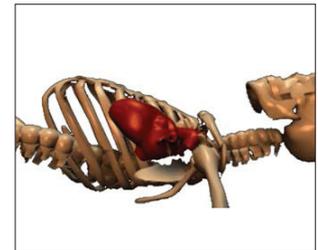
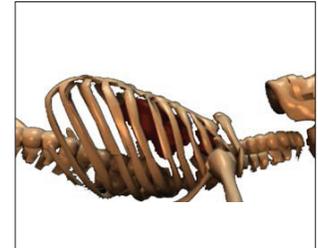
The SmartMan<sup>®</sup> test measures and provides analysis for each of the component skills involved in performing compressions correctly.

Real time feedback helps you integrate all component skills so they are performed correctly together. The aim is to produce each compression to the correct depth with a smooth stroke at the correct rate and allowing full chest recoil before you start the next compression. This gives the greatest potential benefit to a victim.

This is the target for all of us. SmartMan<sup>®</sup> provides the feedback in real time so you know as you press the chest how you are performing. This is crucial to improving what you do.

Most people improve their performance from the visual feedback during their first set of 30 compressions.

**SmartMan<sup>®</sup> is the ONLY system that addresses how you perform chest compressions!**



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