

WHICH CHEST COMPRESSION TECHNIQUE IS MORE FATIGUING FOR RESCUER?

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To the Editor,

Cardiopulmonary resuscitation is one of the main skills that should be acquired by the medical personnel and emergency personnel, including firefighters. The quality of chest compressions includes not only of the depth and frequency but also the degree of complete chest relaxation after compression and the correct position of the hands on the chest while performing indirect heart massage [1]. The 2015 American Heart Association guidelines place a great emphasis on minimizing pauses during chest compressions [2]. Therefore, based on the aforementioned guidelines, it is reasonable to perform CPR with continuous chest compression, while maintaining the airway patency with endotracheal intubation [3] or with the use of supraglottic airway device [4, 5]. For people without the experience in the endotracheal intubation, the alternative is to intubation is the use of supraglottic airway devices. This allows for protecting the airways without the need for interrupting chest compressions. An additional issue which should be highlighted is the insufficient quality of chest compressions as reported by many authors [6–8]. The solution to this problem may be to increase the physical fitness in people who perform resuscitation [9, 10], as well as further research for the most optimal method of chest compressions.

The aim of the study was to assess the impact of performing two different adult CPR techniques have on the firefighters.

This study was a randomized, cross-over study. After presenting the aims and objectives of the study, 40 firefighters who work in the State Fire

Service were included. All participants of the study had previously been trained in the qualified first aid, including cardiopulmonary resuscitation, maintenance of airway patency and ventilation support. During the study, the participants were asked to conduct cardiopulmonary resuscitation in two different research scenarios. The scenario I included resuscitation based on the standard sequence of 30 chest compressions and 2 rescue breaths, while Scenario II was based on continuous chest compression. Even though the guidelines for CPR recommend that the person who performs chest compressions is changed every 2 minutes, it was decided that in this experimental study to use the rotation time of 5 minutes in order to assess the point at which the quality of chest compressions deteriorates due to the rescuer's fatigue. Both the order of participants and the research methods were determined by the coin throwing technique. Resusci Anne Simulator (Laerdal, Stavanger, Norway) was used to simulate a patient requiring cardiopulmonary resuscitation.

The mean age of firefighters was 28.9 ± 3.1 years and the mean work experience in the State Fire Service was 7 ± 3.7 years. The average chest compressions frequency during the scenario I was 125 ± 9 compressions per minute (CPM) vs. 129 ± 11 CPM for Scenario II ($p = 0.119$). The depth of chest compressions during scenarios I and II was different and it was 45 ± 7 mm vs. 48 ± 7 mm for Scenario I and II, respectively ($p = 0.218$). During the Scenario I, the reduction in depth of compression of the chest occurred in the 4th minute, while it occurred a minute earlier during Scenario II ($p = 0.023$).

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To sum up, our study material showed that performing the continuous chest compressions is more tiring than the standard 30:2 sequence. However, during the first three minutes of CPR, the chest compressions are deeper.

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