

CPR compression rotation every one minute versus two minutes: A randomized cross-over manikin study

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Abstract

Background: Current basic life support guidelines recommend two-minute shifts for providing chest compressions when two rescuers are performing cardiopulmonary resuscitation. However, various studies have found that rescuer fatigue can occur within one minute, coupled with a decay in the quality of chest compressions. Our aim was to compare chest compression quality metrics and rescuer fatigue between alternating rescuers in performing one and two-minute chest compressions. Methods: This prospective randomized cross-over study was conducted at Songklanagarind hospital, Hat Yai, Songkhla, Thailand. We enrolled sixth-year medical students and residents and randomly grouped them into pairs to perform 8 minutes of chest compression, utilizing both the one-minute and two-minute scenarios on a manikin. The primary end-points were chest compression depth and rate. The secondary end-points included rescuers' fatigue, respiratory rate, and heart rate. Results: One-hundred and four participants were recruited. Compared with participants in the two-minute group, participants in the one-minute group had significantly higher mean (standard deviation, SD) compression depth [mm] (45.8 (7.2) vs 44.5 (7.1), $P=0.01$) but there was no difference in the mean (SD) rate [compressions per min] (116.1 (12.5) vs 117.8 (12.4), $p = 0.08$), respectively. The rescuers in the one-minute group had significantly less fatigue ($P<0.001$) and changes in respiratory rate ($P<0.001$), but there was no difference in the change of heart rate ($P=0.59$) between the two groups. Conclusion: There was significantly higher compression depth and lower rescuer fatigue in the 1-minute chest compression group compared with the 2-minute group. (Thai Clinical Trials Registry TCTR20170823001)

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