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Physiological effects of kneeling posture on chest compression in cardiopulmonary resuscitation

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Aim: To investigate the physiological effects of kneeling posture on chest compression in cardiopulmonary resuscitation.

Background: Victims survival rate depends on the effectiveness of chest compression in cardiopulmonary resuscitation. However, there is still no clear guideline on kneeling posture for rescuers to adopt in performing cardiopulmonary resuscitation.

Design: A self-controlled repeated measure design was adopted and rescuers were required to perform cardiopulmonary resuscitation at three different kneeling postures.

Methods: Eighteen participants with qualified first aid certificate were recruited. All participants performed one session of chest compression on a mannequin on ground level at three different kneeling postures (farthest, self-adjusted and nearest) in randomized order. Each session lasted for 2 minutes and contained 5 blocks and each block consisted of 30 strokes of chest compression. Participants performed each session in 18 seconds with 4-second pause between consecutive blocks. Between consecutive sessions, participants were allowed to rest for 10 minutes on a chair. Physiological effects of kneeling posture on chest compression were measured by the amount of energy expenditure required.

Results: It was found that the efficiency of chest compression in both self-adjusted and nearest kneeling postures, was significantly better than that of the farthest one ($p < 0.05$). More than 83% of the participants preferred self-adjusted kneeling posture because of lower rate of perceived exertion, although both the self-adjusted and nearest postures had the similar effect.

Conclusion: For achieving higher survival rate of victims and increasing the efficiency of cardiopulmonary resuscitation, self-adjusted kneeling posture is recommended for maintaining consistent chest compression force.

Biography

HO Sung Hon has completed his Master of Science in Nursing in 2008 from The Hong Kong Polytechnic University and continuing Doctoral Degree in Health Science. He is the managing director of iLoveCare Service Group Limited, a supreme healthcare service company. With qualifications of Registered Nurse, Honorary Clinical Instructor and Nursing Instructor, he is being a consultant, lecturer, tutor, supervisor of various institutions, healthcare organizations and companies. In his experiences, he had operated and managed various healthcare enterprises and medical insurance services in Asia Pacific Region and Europe.

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