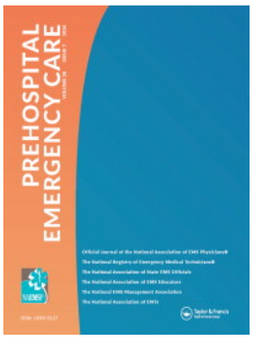

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Benefits of virtual reality training for cardiopulmonary resuscitation skill acquisition and maintenance

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TITLE PAGE

Benefits of virtual reality training for cardiopulmonary resuscitation skill acquisition and maintenance

Running title: Benefits of VR train for CPR

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ABSTRACT

Benefits of virtual reality training for cardiopulmonary resuscitation skill acquisition and maintenance

OBJECTIVES: To investigate the benefits of virtual reality (VR) first-aid training in acquiring cardiopulmonary resuscitation (CPR) skills.

METHODS: A total of 100 non-medical professional volunteers from Nanchang were selected in March 2021 using the convenience sampling method. They were randomly divided into two groups: the VR training group (VR group) and the traditional simulation scenario training group (traditional group). The VR Group underwent immersive virtual reality CPR training with interactive feedback, while the Traditional Group received standard simulation-based CPR training using mannequins and instructor guidance. After training, relevant data were collected for comparative analysis.

RESULTS: The study revealed that the VR group consistently outperforming the traditional group in theoretical knowledge test (cardiac arrest recognition, chest compressions, airway management, and artificial respiration) scores at 1, 3, 6, and 12 months post-training ($P < 0.05$). Similarly, the VR group showed superior performance in overall skills test scores and individual CPR quality metrics at all post-training assessments. The VR group scored higher in total skills, assessment, post-resuscitation assessment, chest compressions (at 1, 3, and 6 months), airway opening, and artificial respiration compared to the traditional group ($P < 0.05$). Despite these findings, both groups exhibited a gradual decrease in skills test scores over time.

CONCLUSIONS: Virtual reality training can significantly improve non-medical professional volunteers' CPR knowledge and skill levels, helping them master and maintain these competencies. However, a decrease in CPR knowledge and skills among the participants over time was observed after VR training, suggesting the need for further retraining sessions.

Word count: 248

Keywords: first-aid training; virtual reality; cardiopulmonary resuscitation; medical education

MAIN DOCUMENT

Benefits of virtual reality training for cardiopulmonary resuscitation skill acquisition and maintenance

INTRODUCTION

Virtual reality (VR) technology uses computer systems to simulate a three-dimensional (3D) space, providing participants with sensory experiences (e.g. auditory, visual and tactile sensations in virtual environments) while allowing the rapid observation of objects. When there are changes in the participant's position or vision, computer systems can accurately convert this information into 3D virtual video and transmit it back to the participant (1). Virtual reality technology offers many advantages, such as strong interactivity, multisensory perception, immersion, self-directed operations and novel modes of expression (2).

Currently, VR technology is being widely applied in various fields, including architecture, the military, education, scientific research, industry, healthcare and entertainment, with promising development prospects. In medical education, VR technology has been integrated into the learning process of medical students in the United States. It allows the visualisation of teaching scenarios that are difficult to explain verbally, making abstract concepts tangible and enhancing participant engagement (3). For instance, traditional anatomy courses primarily rely on lectures, supplemented by images, models and cadavers to deepen understanding. However, the availability of cadavers for students to learn anatomy is limited, posing constraints on learning conditions. Virtual reality technology has revolutionised traditional teaching methods, not only reducing learning time and enhancing learners' interest and efficiency (4) but also saving considerable amounts of money and time. Thus, VR technology has been increasingly applied to surgical training, simulating various scenarios for medical students to practice their skills, thereby reducing operative time and preventing doctor–patient disputes (5,6). During VR training, medical

students no longer worry about causing harm to patients or themselves from accidents or lack of proficiency. Additionally, they can practice repeatedly, receive timely feedback, keep records and make self-evaluations (7), thereby improving the efficiency and quality of training. In clinical practice, VR technology has been increasingly used to simulate various medical scenarios, which is expected to improve healthcare outcomes and enhance the quality of patient care (8).

Cardiac arrest refers to the sudden cessation of blood flow to the brain and other organs, leading to ischemia and hypoxia, which can damage various organs and cause significant economic losses and irreversible harm to families. In China, approximately 540,000 cases of cardiac arrest occur annually, with roughly one person experiencing cardiac arrest every minute (9). When sudden cardiac arrest occurs, the patient suddenly loses consciousness, stops breathing and exhibits no arterial pulsation or heart sounds (10). Therefore, the early identification of cardiac arrest and prompt initiation of high-quality cardiopulmonary resuscitation (CPR) can improve survival rates, reduce complications and alleviate the burden on healthcare systems (11). Cardiopulmonary resuscitation is a fundamental skill that every healthcare professional must master. According to the 2020 *Guidelines for Cardiopulmonary Resuscitation*, high-quality chest compressions should be performed at a rate of 100–120 compressions per minute, with a depth of at least 5 cm. Interruptions in compressions and ventilation should be less than 10 seconds for adults (12).

This study examines the advantages of VR-based first-aid training for acquiring and maintaining CPR skills. Its goal is to establish a theoretical foundation and provide a strategy reference for enhancing the efficiency of first-aid training, potentially leading to the creation of a new, comprehensive emergency care training system for the Red Cross.

METHODS

Study participants

A total of 100 non-medical professional volunteers were recruited from Nanchang in March 2021 using convenience sampling. Individuals meeting the inclusion criteria were divided into two groups using a random number table: the VR training group (VR group) and the traditional simulation scenario training group (traditional group). Each group comprised 50 individuals. The inclusion criteria were as follows: (1) non-medical professionals aged 18–60 years from Nanchang; (2) no prior CPR training; (3) voluntary participation with availability for the study; and (4) signed informed consent. The exclusion criteria were as follows: (1) inability to perform chest compressions for any reason; (2) lack of informed consent; (3) severe primary diseases affecting cardiovascular, respiratory, hepatic or renal function, limiting physical activity; (4) mental illness or cognitive impairments; (5) women in the late stages of pregnancy; (6) prior knowledge of CPR; or (7) family members of medical professionals. The dropout criteria were as follows: (1) early withdrawal due to unforeseen circumstances, (2) poor participant compliance, or (3) refusal to continue for any reason. This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Jiangxi Province Hospital of Integrated Chinese and Western Medicine.

Training tools

The VR training team used our centre's independently developed VR first-aid training platform along with a Bluetooth-enabled half-body manikin (model AD01). This system featured three common emergency scenarios: a swimming pool accident, traffic accident and bank scenario. The half-body manikin interacted with the participants within the virtual environment, providing real-time data during chest compressions to allow the participants to adjust immediately. The training process included self-directed learning, virtual simulation and assessment, offering detailed explanations and autonomous

demonstrations of actions, hands-on training and corresponding evaluations.

The KS/CPR100B model, a widely recognised CPR training manikin designed to simulate realistic chest compression and airway opening techniques, was used in traditional simulation scenario training. It included anatomical landmarks for proper hand placement during chest compressions and realistic airway resistance for practising effective ventilation techniques.

Training assessment

The theoretical training was assessed using a custom-designed questionnaire, developed by a panel of CPR experts. The questionnaire comprised nine items: three on identifying cardiac arrest and initiating the emergency response system, four on chest compressions, one on airway management, and one on mouth-to-mouth artificial respiration. The questions were based on established CPR guidelines to ensure they accurately reflected essential CPR knowledge for non-medical professionals. Each correct answer earned one point, and incorrect answers received no points. Scores from all questions were totalled to create a score ranging from 0 to 9 points, with a higher score indicating greater CPR knowledge.

Skills assessment included CPR examination (mandatory), with optional assessments for the Heimlich manoeuvre and/or haemostatic wound dressing, although due to time and personnel constraints, CPR was the primary focus. The assessment followed the 2020 *One-Rescuer Cardiopulmonary Resuscitation Scoring Sheet*, which totals 100 points, aligning with the 2020 *American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care*. Points were assigned based on each component's relative importance and complexity in ensuring effective CPR. This scoring system was developed by consulting CPR training experts and reviewing existing educational materials (13). The rated items included preparation (6 points), assessment (6 points), call for help (2 points), resuscitation

position (6 points), chest compressions (32 points), airway opening (10 points), artificial respiration (14 points), continuous assessment during resuscitation and post-resuscitation assessment (12 points) and organisation, documentation and comprehensive evaluation (12 points).

Procedures

Training team: The training team comprised eight medical professionals from the Emergency Department of the Jiangxi Province Hospital of Integrated Chinese and Western Medicine. All team members held Basic Life Support and Chinese Red Cross Society first-aid training certificates, with over 5 years of experience in first-aid training. Three members focused on theoretical training and assessment, four on skills training and assessment and one supervised the entire training process.

Course details: In accordance with the 2020 *American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care*, the training course adhered to the Red Cross Primary First Aid Training Outline. All participants received uniform training focused on three core skills: CPR techniques, the Heimlich Maneuver, and wound dressing with patient transportation. Due to time, personnel and technological constraints, this study focused exclusively on CPR skills. Additional emergency response knowledge tailored to participant needs covered topics including drowning, heatstroke, nosebleeds, burns and scalds. Educational materials were uniformly presented using PowerPoint slides.

Feasible, detailed intervention plans:

1) Theoretical training: The course outline adhered to the 2020 *American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care*, supplemented by publications from the Chinese Red Cross Society, including *Cardiopulmonary Resuscitation and Trauma Care* (14) and

Common Emergencies and Escape (15). Throughout the training programme, consistent slide decks were used by the training team.

2) Skills training: Following completion of the theoretical training, the participants were randomly assigned to either the VR group or traditional group using a random number table. Professional guidance was provided during practice sessions for both groups, allowing for error correction and question answering. The duration of training for both groups was 4 hours.

The VR group: Before formal training, the participants received detailed instructions on using the VR headset and safety precautions. During skills training sessions conducted in groups of five, the participants followed a self-directed learning model that included virtual training and assessment. The VR environment featured integrated audio and visual cues, allowing the participants to engage in various scenarios and receive immediate feedback and guidance on CPR skill execution. These simulations were designed to create realistic emergency scenarios and allow participants to practice CPR skills in a controlled environment. With real-time feedback and guidance, the participants could promptly identify and correct errors, enhancing their skill proficiency.

The traditional group: Initially, the participants received traditional CPR training, which involved demonstrating correct actions and explaining key procedures. Subsequently, skills training was conducted in groups of five. Professionals supervised the practice sessions, offering guidance, correcting errors and addressing questions.

Immediately following the theoretical course, the participants underwent an assessment. For skills training, an advanced manikin was used to measure chest compression frequency, depth and

positioning, as well as chest recoil adequacy during operations. Two independent professionals evaluated all participants using a CPR skill scoring sheet.

Data collection

Data were collected from all participants, including age, educational background and scores from theoretical knowledge and skills tests immediately after training and at 1, 3, 6, and 12 months post-training.

Statistical analysis

Statistical analysis was conducted using SPSS 26.0 software. The normality of data distribution was assessed using the Kolmogorov–Smirnov test, with normally distributed continuous data presented as mean ± standard deviation. Group comparisons were performed using independent sample t-tests. Repeated measures data were analysed using repeated measures analysis of variance (ANOVA). Categorical data were expressed as frequency (n) or percentage (%), and the chi-squared (χ^2) test was used for conditions meeting assumptions; otherwise, Fisher's exact probability test was employed. A two-tailed *P*-value less than 0.05 was considered statistically significant.

RESULTS

Demographic data

In the VR group, there were 27 men and 23 women, with an average age of 31.50 ± 12.37 years. Among them, there were 13 technical degree holders, 32 bachelor's degree holders and 5 master's degree holders. In the traditional group, there were 29 men and 21 women, with an average age of 33.30 ± 12.68 years. Among them, there were 16 technical degree holders, 31 bachelor's degree holders and 3 master's degree holders. There were no statistically significant differences between the groups in terms of gender, age or educational background (all $P > 0.05$) (see Table 1).

Comparison of theoretical knowledge test scores between the traditional and virtual reality groups

Analysis of variance was conducted to examine the impact of traditional and VR training on the participants' theoretical knowledge test scores over 12 months. Shapiro–Wilk test results indicated a normal distribution of data within each group ($P > 0.05$). Mauchly's sphericity test confirmed the equality of variance–covariance matrices between the groups ($P > 0.05$). Data were presented as mean ± standard deviation, as shown in Table 2.

The results showed that there was no difference between the two groups in the theoretical knowledge test immediately after training. However, there was a significant time*treatment interaction effect on test scores ($F_{interaction} = 424.484$, $P < 0.001$), indicating varying effects of traditional and VR training on scores across all time points. Additionally, both groups demonstrated a decrease in theoretical knowledge test scores over time ($F_{time} = 513.572$, $P < 0.001$).

Finally, significant differences were found in the influences of traditional and VR training on theoretical knowledge test scores between the groups ($F_{treatment} = 678.587$, $P < 0.001$). Further comparisons at 1, 3, 6, and 12 months post-training revealed consistently higher scores for the VR group than for the traditional group. Both groups showed a gradual decrease in theoretical knowledge test scores over time.

Comparison of skills test scores between the traditional and virtual reality groups

Using ANOVA, we investigated the effects of traditional and VR training on the participants' skills test total scores and individual scores for key CPR quality metrics over 12 months. Shapiro–Wilk test results indicated normal data distributions within each group ($P > 0.05$). Mauchly's sphericity test confirmed equal variance–covariance matrices between the groups ($P > 0.05$). Data were presented as mean ±

standard deviation, as shown in Table 3.

The assessment immediately after training identified no differences in skills test total scores between the two groups. Significant time*treatment interaction effects were identified for both skills test total scores and individual scores across key CPR quality metrics ($F_{\text{total score\_interaction}}$ = 451.351, $F_{\text{assessment\_interaction}}$ = 342.323, $F_{\text{chest compressions\_interaction}}$ = 473.333, $F_{\text{airway opening\_interaction}}$ = 573.534, $F_{\text{artificial respiration\_interaction}}$ = 358.265, $F_{\text{post-resuscitation assessment\_interaction}}$ = 425.581, $P < 0.001$). These findings underscored the varying impacts of traditional and VR training on skills test outcomes across all assessment points at 1, 3, 6, and 12 months post-training.

Furthermore, skills test total scores and individual scores for key CPR quality metrics in both groups decreased over time ($F_{\text{total score\_time}}$ = 534.622, $F_{\text{assessment\_time}}$ = 634.421, $F_{\text{chest compressions\_time}}$ = 423.104, $F_{\text{airway opening\_time}}$ = 534.153, $F_{\text{artificial respiration\_time}}$ = 371.453, $F_{\text{post-resuscitation assessment\_time}}$ = 258.482, $P < 0.001$). Traditional and VR training had different effects on skills test total scores and individual scores for key CPR quality metrics ($F_{\text{total score\_treatment}}$ = 423.412, $F_{\text{assessment\_treatment}}$ = 341.134, $F_{\text{chest compressions\_treatment}}$ = 634.412, $F_{\text{airway opening\_treatment}}$ = 522.571, $F_{\text{artificial respiration\_treatment}}$ = 349.143, $F_{\text{post-resuscitation assessment\_treatment}}$ = 427.472, $P < 0.001$). Further comparisons of skills test scores at 1, 3, 6, and 12 months post-training revealed the consistently superior performance of the VR group compared with the traditional group ($P < 0.05$). Specifically, the VR group scored higher in the total score, assessment and post-resuscitation assessment than the traditional group across all time points. For chest compressions, the VR group outperformed the traditional group at 1, 3 and 6 months post-training ($P < 0.05$). For airway opening, the VR group achieved higher scores immediately after training and at 1, 3 and 12 months post-training ($P < 0.05$). Similarly, the VR group scored higher in artificial respiration than the traditional group immediately after training and at 12 months post-training ($P < 0.05$). Both groups demonstrated a

gradual decrease in skills test total scores and individual scores for key CPR quality metrics over time.

DISCUSSION

To promote the goal of saving lives and reducing disabilities, the Red Cross and emergency care experts advocate the widespread dissemination of first aid knowledge and extensive skills training. This study has demonstrated that the VR group exhibited superior performance in both areas over time. Specifically, the VR group consistently outperformed the traditional group in theoretical knowledge test scores at 1, 3, 6, and 12 months post-training. Additionally, the VR group showed better overall skills test scores and higher individual scores for key CPR quality metrics, including total skills, assessment, post-resuscitation assessment, chest compressions (at 1, 3, and 6 months), airway opening, and artificial respiration. Both groups experienced a gradual decline in scores over time, but the VR group maintained a significant advantage in skill retention.

In this study, immediate assessments following training revealed no statistically significant differences in theoretical knowledge test scores or total skills test scores between the VR group and traditional group ($P > 0.05$). This could be attributed to instructor training before both traditional and VR sessions and the use of identical instructional slides. Consistent with findings from related studies (16), immediate assessments did not indicate significant short-term knowledge decay after training. However, the VR group outperformed the traditional group in artificial respiration and airway opening skills. This could be because VR training immerses participants in diverse first-aid scenarios, which may create intense scenarios that could potentially influence physiological responses such as adrenaline release. However, there is no direct empirical evidence to support this claim, and further research is needed to investigate such effects. Studies suggest a close link between adrenaline secretion and memory (17), aligning with previous research findings (18).

High-quality CPR not only saves lives but also correlates closely with favourable neurological outcomes (8,19). According to the 2020 *American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care* (20), there are 5 critical components of high-quality CPR: immediate initiation, a compression rate of 100–120 compressions per minute, adequate compression depth of 50–60 mm, full chest recoil and a firm surface supporting the patient. In this study, both the VR group and traditional group used manikins equipped with monitors for skills assessment, focusing on chest compression rate, depth and position, as well as full chest recoil. The results indicated that the quality of compressions, in terms of rate, depth and chest recoil, was superior in the VR group compared with the traditional group. However, the VR group exhibited suboptimal performance in terms of locating the appropriate compression position. This may be attributed to errors in initial positioning judgements solely based on sensation caused by using the VR headset.

Research abroad (21) has indicated that skill proficiency significantly decreases 6 months post-training. Individuals with CPR training often experience anxiety during emergencies due to concerns about suboptimal rescue outcomes, which can impact their CPR performance. In this study, both the VR group and traditional group demonstrated a gradual decrease in total skills test scores and individual scores for key CPR quality metrics over time, with statistically significant differences between the time points. This indicates that although VR training leads to superior skill retention over time compared to traditional simulation training. However, recurrent training remains crucial as skill degradation was observed with both methods. Therefore, memory-related principles should be considered in the timing of VR retraining. In this study, the VR group consistently outperformed the traditional group in total skills test scores and individual scores for assessment and post-resuscitation assessment at 1, 3, 6, and 12 months post-training. Regarding chest compressions, the VR group scored higher than the traditional group at 1, 3,

and 6 months post-training. For airway opening, the VR group scored higher than the traditional group immediately after training and at 1, 3, and 12 months post-training. In terms of artificial respiration, the VR group scored higher than the traditional group immediately after training and at 12 months post-training. However, at 6 months post-training, both groups demonstrated a noticeable decrease in their skills test total scores, consistent with findings from previous studies (22, 23). Regarding the optional Heimlich manoeuvre test, the VR group consistently outperformed the traditional group at 1, 3, 6, and 12 months post-training. This may be attributed to the participants' reinforced memory due to constant narration and VR visuals during training.

The traditional face-to-face approach has long been considered the gold standard for CPR training. However, integrating immersive and interactive VR technology into CPR training offers advantages to a broader population. Virtual reality training provides a more engaging and accessible method that addresses some limitations of traditional approaches. By simulating realistic emergency scenarios, VR first-aid training helps participants overcome the anxiety associated with real-life emergencies (24). Moreover, our study demonstrated that the VR group surpassed the traditional group in several key CPR quality metrics. Healthcare professionals can actively expand their knowledge base through VR-based simulated emergencies. Virtual reality technology offers the potential for reproducible and standardised training experiences across different settings. The success of VR-based training in our study can be attributed to several factors. The immersive nature of VR experiences allows learners to fully engage in developing first aid skills, maximising individual potential. The variety of scenarios and modes offered by VR technology stimulates learners' curiosity and desire for exploration. Overall, VR training facilitates the efficient development of personal knowledge, first aid skills and comprehensive emergency care capabilities.

LIMITATIONS

This study has several limitations. First, the VR headset used was relatively bulky, which restricted participants' movement and may have caused discomfort during prolonged use. With ongoing advancements in VR technology and the advent of the 5G era, future developments, such as 3D VR videos visible to the naked eye and high-resolution VR headsets, are expected to enhance user comfort. Additionally, VR training was limited to one participant at a time, restricting team training and potentially affecting real-life coordination. Future studies should explore group training in VR scenarios to improve teamwork skills. Furthermore, the impact of VR training on patient outcomes is unknown; future research should investigate patient-centered outcomes to assess the effectiveness of VR training in real-world settings.

CONCLUSIONS

In conclusion, VR training can significantly enhance the CPR knowledge and skill levels of non-medical professional volunteers and facilitate their mastery and maintenance of high-quality CPR skills. However, a decrease in CPR knowledge and skills among the participants over time was observed after VR training, underscoring the importance of periodic retraining sessions.

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TABLE CAPTIONS

Table 1: *Demographic data*

Item	VR group (n = 50)	Traditional group (n = 50)	t/χ^2 value	p-value
Sex (M/F)	27/23	29/21	0.162	0.687
Age (years, $\bar{x}\pm s$)	31.50±12.37	33.30±12.68	-0.719	0.474
Educational background (n)			-	0.667
Technical degree	13	16		
Bachelor's degree	32	31		
Master's degree	5	3		

Table 2: *Comparison of theoretical knowledge test scores between the traditional and VR groups*

Date	VR group (n = 50)	Traditional group (n = 50)	$F_{interaction}/P_{interaction}$ value	F_{time}/P_{time} value	$F_{treatment}/P_{treatment}$ value
Immediately after training	8.52±0.55	8.58±0.50			
1 month post-training*	7.41±1.00	6.77±0.81			
3 months post-training*	6.41±1.06	5.67±0.84	424.484/0.001	513.572/0.001	678.587/0.001
6 months post-training*	6.18±1.13	5.44±0.83			
12 months post-training*	5.02±0.88	4.21±1.15			

Table 2 footnotes: *"*" denotes a difference of statistical significance.*

Table 3: *Comparison of post-training skills test scores between the traditional and VR groups*

Item	Date	VR group (n = 50)	Traditional group (n = 50)	$F_{interaction}/P_{interaction}$ value	F_{time}/P_{time} value	$F_{treatment}/P_{treatment}$ value
Total score	Immediately after training	95.98±1.80	94.35±2.44	451.351/0.001	534.622/0.001	423.412/0.001
	1 month post-training*	70.93±7.13	67.09±6.56			
	3 months post-training*	69.61±8.94	65.74±8.41			
	6 months post-training*	62.66±8.42	57.09±10.61			
	12 months post-training*	48.02±9.23	39.86±9.39			
Assessment	Immediately after training	5.86±0.35	5.63±0.58	342.323/0.001	634.421/0.001	341.134/0.001

	1 month post-training*	5.50±0.59	3.53±1.30			
	3 months post-training*	5.02±0.66	4.16±0.75			
	6 months post-training*	4.36±0.75	3.00±0.87			
	12 months post-training*	4.00±1.08	3.09±0.89			
	Immediately after training	30.82±0.75	30.42±0.88			
	1 month post-training*	28.77±1.43	25.70±2.20			
Chest compressions	3 months post-training*	26.73±2.42	21.95±3.88	473.333/0.001	423.104/0.001	634.412/0.001
	6 months post-training*	23.61±2.81	17.35±4.20			

	training*					
	12 months post-training	18.05±3.46	17.19±4.33			
	Immediately after training*	9.55±0.63	7.91±0.37			
	1 month post-training*	8.18±1.23	5.65±1.13			
	3 months post-training*	8.25±1.22	5.26±1.24			
Airway opening	6 months post-training	5.32±1.33	5.40±1.58	573.534/0.001	534.153/0.001	522.571/0.001
	12 months post-training*	5.52±1.52	3.74±1.51			
	Immediately after training*	13.11±0.69	12.07±1.24			
	1 month	10.75±1.3	11.42±1.22			
Artificial respiration				358.265/0.001	371.453/0.001	349.143/0.001

	post-training 1					
	3 months post-training	10.73±1.30	10.07±2.60			
	6 months post-training	6.43±2.20	7.44±2.99			
	12 months post-training*	6.77±1.26	4.77±1.65			
	Immediately after training	7.91±0.29	7.74±0.44			
	1 month post-training*	6.77±0.83	4.84±0.95			
Post-CPR assessment	3 months post-training*	6.91±1.05	5.58±1.59	425.581/0.001	258.482/0.001	427.472/0.001
	6 months post-training*	6.02±1.07	3.72±1.45			

12 months post-training*	4.86±1.21	3.23±1.32

Table 3 footnotes: *"*" denotes a difference of statistical significance.*