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Letter to the Editor

Specific theorical and practical education on mechanical chest compression during advanced life support training courses – Results from a local experience

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Abstract

Specific training modules focusing on mechanical chest compression and device use might be considered in a structured manner during the standard advanced life support (ALS) courses. The aim of this study was to evaluate the impact of a specific brief 15 min training on the use of a specific mechanical CPR device during Advanced Cardiac Life Support courses on its correct use and on attendees' satisfaction.

Keywords: Training, Advanced life support, Mechanical compression

During cardiopulmonary resuscitation (CPR), provision of high-quality chest compression (CC) may re-establish systemic blood flow, achieving and maintaining threshold levels of organ perfusion.[1,2] Mechanical CPR devices are capable to deliver CC consistently and are suggested as a reasonable alternative to manual CC.[3] However, when a mechanical chest compression device is used, CC interruptions during device use should be minimized by using only trained teams familiar with the device.[3,4] Thus, specific training modules focusing on mechanical chest compression and device use might be considered in a structured manner during the standard advanced life support (ALS) courses.

The aim of this study was to evaluate the impact of a specific brief (15 min) training on the use of a specific mechanical CPR device during Advanced Cardiac Life Support courses on its correct use and on attendees' satisfaction, from Nov. 30th, 2021 to Dec. 04th, 2021. Informed consent was collected by each participant. Thirty-four subjects (19 physicians and 15 nurses) were asked to deploy and use correctly the mechanical devise Corpuls CPR® after have been divided into 3 groups, equally distributed by age, sex, and skills: A. no training (n = 12); B. a theorical only 5-min training on the correct use of the device (n = 11); C. a theorical training plus a 10-min practical hands on session on the correct use of the device (n = 11). Differences were compared by ANOVA or χ^2, as appropriate.

The mechanical compressor was placed correctly in 82% of tests with an average deployment time of 49 sec. Subjects who underwent to a complete theorical and practical training, positioned the compressor correctly in 100% of instances and significantly more rapidly, i.e. in 31 sec, compared to the others, who needed approximately 1 min prior to deploy the compressor ($p < 0.05$, Table). No significant data emerged in relation to gender, age, years of activity or yearly exposure to CPR. The most critical aspect emerged on the use of the mechanical device was the correct positioning, as reported by 56% of subjects. All participants expressed a positive rating on a Likert scale from 1 (min) to 5 (max), on this specific training on mechanical device, that was considered useful and to be introduced as part of the course by 82% of subjects (Table 1).

Interruptions in CC to apply a mechanical compressor have been reported to be as low 20 sec but are often much longer.[4] With a

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Table 1 – Characteristics of the training course and its participants.

Variables	All	Group A (n = 12)	Group B (n = 11)	Group C (n = 11)	p value
Age, years (SD)	39 (10)	39 (11)	37 (8)	40 (12)	NS
Gender, female n (%)	22 (65)	6 (50)	9 (82)	7 (64)	NS
Physician, n (%)	19 (56)	6 (50)	7 (64)	6 (55)	NS
Years of activity, n (%)					
<5	15 (44)	5 (42)	5 (46)	5 (46)	NS
10–20	12 (35)	5 (42)	4 (36)	3 (27)	
>20	7 (21)	2 (17)	2 (18)	3 (27)	
CPR/year, n (%)					
<5	17	8 (67)	5 (46)	4 (36)	NS
10–20	7	2 (17)	1 (9)	4 (36)	
>20	10	2 (17)	5 (46)	3 (27)	
Device already used, n (%)	3 (9)	0 (0)	1 (9)	2 (18)	NS
Time for device deployment, sec (SD)	49 (31)	63 (30)	53 (35)	31 (20)	**0.02**
Correct device positioning	28 (82%)	7 (58)	10 (91)	11 (100)	**0.03**
Presence of critical aspects needing training reported by the users, n (%)					
Yes	27 (79)	11 (92)	8 (73)	8 (73)	NS
Positioning	15 (56)	5 (46)	6 (75)	4 (50)	
Turning on	7 (26)	4 (36)	2 (25)	1 (13)	
Other	5 (19)	2 (18)	0 (0)	3 (38)	
Specific training satisfaction (1–5), n (%)					
1 (min)	1 (3)	0 (0)	1 (9)	0 (0)	
2	1 (3)	1 (8)	0 (0)	0 (0)	
3	5 (15)	0 (0)	5 (46)	0 (0)	**0.026**
4	10 (29)	4 (33)	2 (18)	4 (36)	
5 (max)	17 (50)	7 (58)	3 (27)	7 (64)	
Specific training considered useful, n (%)	30 (88)	11 (92)	8 (73)	11 (100)	NS

Group A. no training; Group B. theorical training; Group C. theorical and practical training.
SD, standard deviation.

specific training such pauses can be even shorter, i.e. 14 sec, prior to achieve a correct positioning.[5] The goal of saving more lives is also based on effective education and indeed a brief training as that we have reported in this study has brought significant effects on deployment time and correct positioning in a population with no or minimal experience in the use of that compressor. Thus, specific training on application and use technique might be considered as an easy standard implementation in current ALS courses in order to achieve more awareness and skills in the final stakeholders.

Conflict of Interest

FDA is a member of the ERC – ALS Science and Education Committee.

GR is the ERC Director Congresses.

CRediT authorship contribution statement

Fausto D'Agostino: Conceptualization. **Felice Eugenio Agrò:** Supervision, Data curation, Writing – original draft. **Pierfrancesco Fusco:** Conceptualization, Visualization, Investigation. **Claudio Ferri:** Investigation, Supervision. **Giuseppe Ristagno:** Conceptualization. **Pierluigi Ingrassia:** . **Stefano Ianni:** . **Angela Sinagoga:** . **Emanuele Sammartini:** . **Davide Sammartini:** . **Paolo Petrosino:** . **Silvia Fabris:** .

Appendix 1. The training group collaborators

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