

Clinical Summary

Wutzler A, Bannehr M, von Ulmenstein S, et al. Performance of chest compressions with the use of a new audio-visual feedback device: A randomized manikin study in health care professionals. *Resuscitation*. 2015;87:81-85.

Purpose

Inadequate chest compressions (CC) are common, even among health care professionals. The purpose of this paper was to evaluate the use of a novel feedback device (TrueCPR™ Coaching Device) compared to standard CC. Primary endpoints were:

- Absolute % of correct CC (includes correct rate and depth)
- % of CC in target rate
- % of CC in target depth

Methods

CC were performed by 63 healthcare professionals on a manikin using the TrueCPR device.

- Subjects were randomized into two groups that performed two minutes of CPR with and without feedback enabled on the device (i.e. with display covered and metronome muted). They performed CPR either first with feedback or first without and vice versa.
- Participants then answered questions on self-estimation of CC performance
- Primary endpoints were evaluated based on the data obtained from the TrueCPR device results

Results

Absolute % of optimal compression of all compressions:

- Optimal compressions increased from $27.9 \pm 28.8\%$ to $47.6 \pm 33.5\%$ (p Value <0.001) of target with the TrueCPR device
- Percentage of compression in the target depth increased from $35.9 \pm 30.6\%$ without vs. $54.8 \pm 33.5\%$ (p Value 0.003) with the TrueCPR device
- Percentage of compression within the target rate increased from $70.5 \pm 37.7\%$ without vs. $82.7 \pm 27.8\%$ (p Value 0.039) with the TrueCPR device

Conclusion

The TrueCPR device significantly improved the quality of CC given by health care professionals on a manikin.

Discussion Points

- Cardiac arrest survival rates are extremely low worldwide
- Performing optimal CPR is difficult in the best of circumstances
- We know feedback provided by accelerometer technology overestimates compression depth on soft surfaces¹
- Inaccurate rate and depth of CC are associated with worse outcomes²
- The 2013 AHA Consensus Statements on improving cardiac survival outline five key performance metrics to optimize CPR:³
 - Minimize interruptions to CC
 - Provide 100-120 CC per minute
 - Allow full recoil
 - Achieve compression depth of at least 2 inches
 - Ventilate <12 breaths/minute with minimum chest rise
- The TrueCPR device actively assists with four of the above measurements and passively assists with recoil
- This study showed the intervals without quality compressions were decreased with the use of the TrueCPR device. This may have a positive impact on survival and outcomes.
- Even with the use of feedback, compressions considered optimal (met both depth and rate criteria) were difficult to achieve. This emphasizes the need for feedback in real-life situations where the stress levels are likely to be higher.
- Triaxial field induction (TFI) used in the TrueCPR device provides reliable feedback of depth of compressions and can improve the overall quality of compressions being performed

Note: Published article shows shading backwards for Feedback and No Feedback group in Fig 3 & 4. Confirmed with author.

REFERENCES

1. Perkins G, Kocierz L, Smith S, et al. Compression feedback devices over estimate chest compression depth when performed on a bed. *Resuscitation*. 2009;80:79-82.
2. Wik L, Kramer-Johansen J, Myklebust H, et al. Quality of cardiopulmonary resuscitation during out-of-hospital cardiac arrest. *JAMA* 2005;293:299-304.
3. Meaney P, Bobrow B, Mancini M, et al. CPR Quality: Improving Cardiac Resuscitation Outcomes Both Inside and Outside the Hospital: A Consensus Statement from the American Heart Association. *Circulation*. June 2013;0009-7322:1-19.

For further information, please contact Physio-Control at 800.442.1142 (U.S.), 800.895.5896 (Canada) or visit our website at www.physio-control.com.



Physio-Control Headquarters

11811 Willows Road NE
Redmond, WA 98052
www.physio-control.com

Customer Support

P. O. Box 97006
Redmond, WA 98073
Toll free 800 442 1142
Fax 800 426 8049

Physio-Control Canada

Physio-Control Canada Sales, Ltd.
7111 Syntex Drive, 3rd Floor
Mississauga, ON
L5N 8C3
Canada
Toll free 800 895 5896
Fax 866 430 6115