

# Bystander Fatigue and CPR Quality by Older Bystanders

Comparison of the Continuous Chest Compression and 30:2 Compression-to-Ventilation CPR Methods

## 85% of Cardiac Arrests Occur at Home



Victims are usually in their sixties, and the most likely bystander is a similarly aged spouse



Two methods of CPR are commonly used: the Continuous Chest Compression and 30:2 Compression-to-Ventilation Methods

How do these CPR methods compare in terms of bystander fatigue and CPR quality for an older bystander population?

## A Randomized Crossover Trial

**Location:**  
4 study booths  
(3 hospitals, 1 seniors center) in Ottawa, Canada

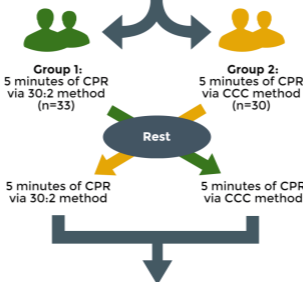


**Inclusion Criteria:**  
1) 55 years or older  
2) No physical limitations  
3)  $\leq 3$  on Clinical Frailty Scale



**Participants:**  
69 invited between July-August 2010. 63 enrolled in study

Study subjects practiced CPR technique and pacing on mannequins before random assignment to two groups



Record measures of fatigue (HR, BP, Borg Scale), CPR quality (frequency, number and depth of compressions) and preferred method of CPR

## The Results

### Pros of CCC-CPR



Participants using CCC-CPR performed more compressions (480 vs 376)



CCC-CPR was also associated with more chest compressions of adequate depth (382 vs 325)

### Cons of CCC-CPR



The number of adequate chest compressions during each minute declined significantly for CCC-CPR



69% of participants preferred the 30:2 method, despite similar levels of fatigue

## Points of Interest

- A metronome was set at 100 bpm to help set the chest compression rate during CPR practice and the study intervention
- Fatigue was measured at baseline and before and after each CPR session. CPR quality was measured using a manikin.
- A General Linear Model (GLM) was used to account for any carry-over effect of fatigue from one CPR session to the next

## Conclusions

- CPR quality decreased significantly faster when performing CCC compared to 30:2. However, performing CCC produced more adequate compressions overall with a similar level of fatigue compared to the 30:2 method.
- Limitations of the study included the use of a metronome to artificially control compression rate, as well as the selection of a "fitter" cohort which may not be representative of a similarly-aged population.

### References:

- Liu, S., Vaillancourt, C., Kasaboski, A. & Taljaard, M. Bystander fatigue and CPR quality by older bystanders: a randomized crossover trial comparing continuous chest compressions and 30:2 compressions to ventilations. CJEM. 2016:1-8
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