**Table 1. GreadePro Certainty of Evidence for the Systematic Review:** Rapid Cycle Deliberate Practice compared to other approaches in resuscitation training

| **Certainty assessment** | | | | | | | **№ of patients** | | **Effect** | | **Certainty** | **Importance** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **№ of studies** | **Study design** | **Risk of bias** | **Inconsistency** | **Indirectness** | **Imprecision** | **Other considerations** | **Rapid Cycle Deliberate Practice** | **other approaches** | **Relative (95% CI)** | **Absolute (95% CI)** |
| **Time to chest compressions** | | | | | | | | | | | | |
| 31,2,3 | randomised trials | very seriousa | seriousb | seriousc | seriousd | nonea | 53 | 54 | - | SMD **0.173 SD lower** (0.69 lower to 0.343 higher) | ⨁◯◯◯ Very low | IMPORTANT |
| **Time to defibrillation** | | | | | | | | | | | | |
| 31,2,4 | randomised trials | seriouse | seriousb | seriousf | seriousg | none | Teixeira de Castro: since confirmation of an absent pulse / Lemke 2021: no information / Won: since the beginning of the scenario. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=41 vs N-other approachs=41. Teixeira de Castro: RCDP: Median: 10 s (IQR: 8); after-event debriefing: Median 47 s (IQR: 8), p = 0.014 / Lemke 2021: Mean: RCDP: 100 s (95% CI 90-111); after-event debriefing: Mean: 163 s (95% CI 120-201), p < 0.05 / Won: RCDP: Mean 126.85 s (SD: 33.59); after-event debriefing: Mean: 138.14 s (SD: 38.42), no significant. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Time to first epinephrine** | | | | | | | | | | | | |
| 22,3 | randomised trials | very seriousa | seriousb | serioush | seriousg | none | Magee: since starting chest compressions / Lemke 2021: no information. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=37 vs N-other approachs=38. Magee: RCDP: Mean: 151.52 s (SD: 40.8); after-event debriefing: Mean 179.53 s (SD: 36.2), p = 0.039 / Lemke 2021: Mean: RCDP: 251 s (95% CI 218-284); after-event debriefing: Mean: 321 s (95% CI 282-361), no significant. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Defibrillation pre-pause** | | | | | | | | | | | | |
| 24,5,i | observational studies | seriouse,j | seriousk | not serious | seriousk | none | One RCT (Teixeira de Castro) and one Observational study (Hunt).Teixeira de Castro: time between the last chest compression before rhythm check and defibrillation / Hunt: Since compressions are stopped and shock is delivered. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=56 vs N-other approachs=75. Teixeira de Castro: RCDP: Median: 6 s (IQR: 6); after-event debriefing: Median 25 s (IQR: 15), p = 0.036 / Hunt: RCDP: Median: 8 s (IQR: 4-18); after-event debriefing: Median: 84 s (IQR: 26-162), p < 0.001. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Successfully delivered shock within 2 or 3 min** | | | | | | | | | | | | |
| 21,5,i | observational studies | seriousj | seriousk | not serious | seriousk | none | One RCT (Won) and one Observational study (Hunt). Won: within 3 min / Hunt: within 2 min. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=67 vs N-other approachs=86. Won: RCDP: Shock: n=13 (81.3%); after-event debriefing: Shock: n=7 (41.8%); OR 5.57 (95% CI 1.13-27.52), p = 0.04 / Hunt: RCDP: Shock: n=33 (65%); after-event debriefing: Shock: n=38 (54%); HR 1.65 (95% CI 1.03-2.65), p = 0.04 (no differences in the bivariate analysis). | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Chest compression fraction / no-flow fraction** | | | | | | | | | | | | |
| 24,5,i | observational studies | seriouse,j | seriousk | not serious | seriousk | none | One RCT (Teixeira de Castro) and one Observational study (Hunt). Teixeira de Castro: compression fraction / Hunt: No-flow fraction. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=55 vs N-other approachs=75. Teixeira de Castro: RCDP: Median: 0.800 (IQR: 0.055); after-event debriefing: Median: 0.636 (IQR: 0.056), p = 0.027 / Hunt: RCDP: Median: 34% (IQR: 26-53); after-event debriefing: Median: 74% (IQR: 5-100), p < 0.001. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **No-Flow fraction** | | | | | | | | | | | | |
| 15 | observational studies | seriousj | seriousk | not serious | seriousk | none | Proportion of time a pulseless patient received no respiratory support, defined as periods with no BVM > 10 s. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=51 vs N-other approachs=70. Hunt: RCDP: Median: 30% (IQR: 22-41); after-event debriefing: Median: 39% (IQR: 22-64), p = 0.013. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Time to use of BVM / Time to positive pressure V** | | | | | | | | | | | | |
| 23,5,i | observational studies | very seriousa,e | seriousk | not serious | seriousi | none | One RCT (Magee) and one Observational study (Hunt). Magee: Average time to PPV from birth / Hunt: Time to ordering BVM.Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=68 vs N-other approachs=87.Magee: RCDP: Mean: 41.12 s (SD: 9.9) ; after-event debriefing: Mean 53.35 s (14.5), p = 0.007 / Hunt: RCDP: Median: 19 s (IQR: 11-30); after-event debriefing: Median: 23 s (IQR: 13-88), p = 0.09. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Quality of performance** | | | | | | | | | | | | |
| 33,6,7 | randomised trials | very seriousa,l,m | very seriousn,o | seriousp | very seriousg,q | none | Magee: Megacode Assessment Form (MCAF) / Lemke 2019: Change in performance between pre-post using the Simulation Team Assessment Tool (STAT) / Raju: PALS performance. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=36 vs N-other approachs=36. Magee: RCDP: Mean: 107.29/120 (SD: 7.9); after-event debriefing: Mean 100.94/120 (SD: 7.9), p = 0.026 / Lemke 2019: Mean: RCDP: 7.17 (95% CI 3.4-11); after-event debriefing: Mean: 0.79 (95% CI -11-13), p = 0.18 / Raju: No differences. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Team leader performance** | | | | | | | | | | | | |
| 11 | randomised trials | seriousr | seriousk | not serious | seriousk | none | Resuscitation Team Leader Evaluation (RTLE). Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=16 vs N-other approachs=16. Won: RCDP: Mean: 0.54 (SD: 0.19); after-event debriefing: Mean: 0.34 (SD: 0.16), p < 0.001. | | | | ⨁◯◯◯ Very low | NOT IMPORTANT |
| **Self-reported confidence** | | | | | | | | | | | | |
| 23,8 | randomised trials | very seriousa,s | serioust | seriousu | very serioust,v | none | Magee: Likert scale (1-5). No more information / Van Heukelom: Likert scale (1-7) in participants' abilities to perform skills during resuscitation. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=101 vs N-other approachs=94. Magee: RCDP: Mean: "Learners self-reported increased confidence in neonatal resuscitation regardless of the teaching method"; Van Heukelom: pre- and postest analysis showed an increase of confidence in both groups, with no differences between them in any variable (confidence in managing a medical resuscitation, confidence in my ability to lead resuscitation team, confidente in my medical knowledges as it relates to medical resucitation, confidence in my ability to think quickly and adapt to a changing/novel medical situation). | | | | ⨁◯◯◯ Very low | NOT IMPORTANT |
| **Teaching effectiveness** | | | | | | | | | | | | |
| 18 | randomised trials | seriouss | seriousk | not serious | seriousk,v | none | Likert scale (1-7); questions related to the teaching effectiveness of the facilitator, the effectiveness of the debriefing strategy used, and the realism of the simulation. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=84 vs N-other approachs=77. Significant differences were found in the following statements of the survey in favor of after-event debriefing (results shown as mean (SD): The debriefing helped me learn effectively: in-simulation: 5.3 (1.4); after-event debriefing: 6.2 (0.8), p = 0.001. The debriefing helped me to understand the correct and incorrect actions: in-simulation: 5.4 (1.2); after-event debriefing: 6.1 (0.7), p = 0.001. The debriefing style was effective: in-simulation: 5.4 (1.2); after-event debriefing: 5.9 (1.2), p = 0.010. | | | | ⨁◯◯◯ Very low | NOT IMPORTANT |
| **Time to defibrillation** | | | | | | | | | | | | |
| 15 | observational studies | seriousj | seriousk | not serious | seriousk | none | Time interval between onset of pulseless ventricular tachycardia and defibrillation. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=51 vs N-other approachs=70. Hunt: RCDP: Median: 128 s (IQR: 101-209); after-event debriefing: Median: 163 (IQR: 120-300), p = 0.03. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Time to compressions** | | | | | | | | | | | | |
| 15 | observational studies | seriousj | seriousk | not serious | seriousk | none | Time interval between onset of pulseless ventricular tachycardia and initiation of chest compressions. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=51 vs N-other approachs=70. Hunt: RCDP: Median: 27 s (IQR: 18-60); after-event debriefing: Median: 51 (IQR: 27-210), p < 0.002. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Time to recognize CA** | | | | | | | | | | | | |
| 14 | randomised trials | seriouse | seriousk | not serious | very seriousg,k | none | Since the beginning of the scenario. Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=5 vs N-other approachs=4. Teixeira de Castro: RCDP: Median: 15 s (IQR: 4); after-event debriefing: Median: 21 (IQR: 27), p = 0.104. | | | | ⨁◯◯◯ Very low | IMPORTANT |
| **Workload** | | | | | | | | | | | | |
| 12 | randomised trials | not serious | seriousk | not serious | very seriousk,w | none | National Aeronautics and Space Administration-Task Load Index (NASA-TLX . Number of participants are understood as number of simulations (eg. 1 simulation performed by 1 team of 4 people: n=1). N-RCDP=20 vs N-other approachs=21. Lemke 2021: RCDP had lower weighted score (63.7) compared to after-event debriefing (69.4, p = 0.02), however, both are above 60 (high workload). RCDP had lower frustration score (note: data from the figure does not correspond to data from the text). | | | | ⨁◯◯◯ Very low | NOT IMPORTANT |
| **Retention** | | | | | | | | | | | | |
| 13 | randomised trials | very seriousa | seriousg,k | not serious | seriousk | none | Primary: No differences in MCAF scores, both overall and percentage. RCDP group decreased the overall score in a higher proportion than after-event debriefing group (p = 0.033).  Secondary: Average time to PPV from birth: No differences.  Average time to compressions from PPV: No differences.  Average time to epinephrine from compressions: No differences. | | | | ⨁◯◯◯ Very low | IMPORTANT |

**CI:** confidence interval; **OR:** odds ratio; **SMD:** standardised mean difference

#### Explanations

a. Very serious risk of bias from Magee et al: high risk of bias for being rated with "some concerns" in 3/5 domains: randomization process, missing outcome data and measurement of outcome.

b. Different ways to assess interval times.

c. Pediatric studies: Won et al and Lemke et al; Neonatal study: Magee et al

d. Wide confidence interval (CI).

e. Serious risk of bias from Teixeira de Castro et al. Median with IQR without lower and upper bound in one of the studies.

f. Adult study: Teixeira de Castro et al; Pediatric study: Won et al & Lemke et al.

g. Few studies with few participants.

h. Pediatric study: Lemke et al; Neonatal study: Magee et al.

i. One RCT and one Observational study.

j. Serious risk of bias from Hunt et al (confounding domain).

k. Outcome reported just by one RCT and/or one observational study.

l. Serious risk of bias from Raju et al (randomization process).

m. Serious risk of bias from Lemke et al 2019 (randomization process).

n. Magee et al: quality performance in neonatal simulation Megacode Assessment Form (MCAF); Lemke et al: Team performance in pediatric simulation (Simulation Team Assessment Tool (STAT)); Raju et al: Pediatric advanced life support (PALS) performance.

o. Lemke et al 2019: Randomized crossover trial. All the participants received both interventions.

p. Pediatric studies: Lemke et al 2019 & Raju et al; Neonatal study: Magee et al.

q. No data reported regarding PALS performance (Raju et al).

r. Serious risk of bias from Won et al (measurement of outcome).

s. Serious risk of bias from Van Heukelom et al (randomization process and measurement of outcome).

t. No information about how to measure self-reported confidence (Magee et al).

u. Adult study: Van Heukelom et al; Neonatal study: Magee et al.

v. Intervention group in Van Heukelom et al study received a type of debriefing named "In-simulation debriefing" that, if it is not RCDP in itself, meets the definition.

w. Just central tendency measures, not dispersion.

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