

Predicting cardiopulmonary resuscitation quality

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Research has shown CPR quality degrades over time, but little research has been conducted exploring other factors that alter cardiopulmonary resuscitation (CPR) quality. The purpose of this study was to determine if CPR chest compression quality differs overtime when controlling for various factors. 18 CPR certified participants (age= 27.88 ± 7.13 years, height= 172.51 ± 11.36 cm, mass= 77.85 ± 23.12 kg, Body Mass Index (BMI)= 26.7 ± 4.71) volunteered. Prior to testing, participants completed multiple fitness tests; Queens College Step test (predicted VO_{2max}), handgrip strength assessment (muscular strength), and maximum push-ups completed in 1 minute (muscular endurance). Participants completed CPR for 7 min on a stimulation manikin (Laerdal QCPR, Stavanger, Norway) that provided data on CPR skill (compression depth, compression release, compression rate) while wearing Polar heart rate monitors (Model H9, Polar, Bethpage, NY).

For compression depth, there was a significant difference across the 7 minutes of CPR being performed ($F_{2,297,36.754}=9.727$, $P=0.001$, $\eta^2=0.38$). Compression depth was also significant when muscular endurance was added as a covariate ($F_{3,553,53.002}=3.884$, $P=0.01$, $\eta^2=0.206$). All other covariates resulted in results that were insignificant ($P>.05$).

When analyzing compression release during CPR, there was no significant difference across the 7 minutes ($F_{1,028,16.446}=1.259$, $P=0.28$, $\eta^2=0.073$, $1-\beta=0.186$). There was a difference in compression rate during CPR ($F_{6,90}=3.884$, $P=0.002$, $\eta^2=0.206$). All covariates resulted in results that were insignificant ($P>.05$). Chest compression depth and number of compressions differed across 7 minutes of CPR suggesting rescuer fatigue. However, differences were negated when some fitness test results were added as covariates.

REFERENCES

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