Scholar: Pilot and Validation Studies ISSN: 2689-7644
Volume 4 Issue 1 Pages: 1 – 5 DOI:10.32778/SPVS.71366.2023.33

Physician Assistant familiarity and skill with the recovery position: A pilot study

Authors: Brian N. Fink, PhD, MPH, CHES[1], Carolina Wishner, MD, MPH[2]

Affiliations:
1) University of Toledo School of Population Health, Toledo, OH
2) University of Toledo Department of Physician Assistant Studies, Toledo, OH

Keywords: recovery, position, training, students, basic life support (BLS), cardiopulmonary resuscitation (CPR)

Abstract:

Introduction:

Prior to matriculation, physician assistant students often need to be certified in Basic Life Support. However, it is unknown whether they are aware of and can place a victim in one specific life-saving method, the recovery position. This study evaluated physician assistant students' ability to place a human victim in the recovery position.

Methods:

Students enrolled in the physician assistant program (MSBS-PA) at a midwestern university, entered a simulated, multi-victim scene where they encountered a live victim with a head wound and difficulty breathing, laying supine on the ground, and had to provide care they felt necessary to save their life. The students were randomly selected from the university physician assistant program.

Results:

Just 38.4% (10/26) of students successfully placed the victim in the recovery. While some stated awareness of the recovery position, the majority stated that they had never received training nor had to demonstrate competency.

Conclusion:

The findings support the need to provide recovery position training to physician assistant students so they may better respond to a multi-victim incident.

Article History: Date received: 03/12/2023 Date revised: 07/09/2023 Date accepted: 07/15/2023
Corresponding Author: Brian N. Fink **E-mail:** brian.fink2@utoledo.edu

Introduction:

Placing a victim in the recovery position is often critical to the survival of patients with decreased level of responsiveness due to various etiologies.[1-4] The recovery position can reduce the risk of mortality by preventing airway obstruction, facilitate airway drainage, reduce the risk of aspiration, reduce chest pressure that could impair breathing, limit cervical spine movement, and allow for breathing observation.[1,5] To improve the spinal protective aspect of the recovery position, the High Arm IN Endangered Spine (HAINES) method and a modification thereof have been recommended for basic providers. If there are multiple victims at a scene, for example a multi-vehicle accident on the interstate or multiple victims who have overconsumed alcohol and are at risk of aspirating on their own vomit, placing one victim in the recovery position allows a rescuer to safely leave that individual and attend to other victims needing attention.[6-7]

Prior to matriculation, healthcare students are often required to complete a Basic Life Support (BLS) course that includes training for adult, child, and infant cardiopulmonary resuscitation (CPR) and use of automated external defibrillators (AED).[1] Depending on the course, other first-aid topics may be included, such as the Heimlich maneuver, infection control, environmental awareness, and the recovery position.[8] As the primary focus of the BLS training is CPR and AED use, knowledge retention and practical skill development pertaining to peripheral topics, such as the recovery position, may be diminished.

Simulation-based, active learning teaching techniques are expected to improve clinical competence and judgment[9-10] and can be used as educational approaches in curricula to prepare future

healthcare professionals, including physician assistant students, to perform life-saving measures and improve interprofessional communication skills.[9] While use of high-fidelity simulators has become an acceptable learning environment, Sterz et al.[11] found that use of standardized, human patients provides a more realistic environment, mimics the stress level of the real-life situation, and develops more competent students than high-fidelity simulators. Furthermore, evidence supports the use of a standardized, human victim in interprofessional student learning environments.[12]

Thus, our research team designed a simulation where the recovery position would be an appropriate and useful life-saving intervention. The research aims of this pilot study were to determine if physician assistant students were familiar with the recovery position and whether they could properly place a victim in the recovery position.

Methods:

Following Institutional Review Board (IRB) approval #301548-UT), consent for participation was sought from a random sample of physician assistant (PA) students at a midwestern university, all of whom had to complete BLS training before program admission, obtained by an online random number generator. Prior to the simulation, each consenting participant completed a brief survey for the following independent variable data: age, gender, active or prior military service, active or prior law enforcement or emergency medical technician (EMT) service, and familiarity with the recovery position. If participants stated familiarity, they were asked to explain where they had learned about the recovery position (e.g., school, work).

Inclusion Criteria: University, physician assistant students in the Master of Science in Biomedical Sciences (MSBS) PA program, at least 18 years of age, who consented to participate following explanation of the study and an opportunity to ask questions, were included in the study.

Exclusion Criteria: Faculty, staff, and graduates of the PA program were excluded.

Sample Size/Power Calculations:

We calculated our sample size by estimating that 50% of our random sample of university physician assistant students would be unsuccessful at placing a person in the recovery position. Using 95% power and a Type 1 error of 5%, we obtained a required sample size result of eleven.[13] a single proportion, estimating that 50% of all physician assistant students would successfully place a victim in the recovery position, given prior BLS training. We then estimated that the random sample of university physician assistant students would be 75% successful. Using 80% power and a Type 1 error of 5%, our required sample size was 26.

Missing Data Plans:

Any missing data from the demographic survey section would be left blank in the spreadsheet used for data entry.

Study Design:

A standardized human, simulating an active shooter victim, was supine on the ground. Prior to entering the simulated environment, each participant was informed the scene was now safe to enter and that multiple victims were in the surrounding environment. The human victim they would encounter had a simulated gunshot wound to the head, unequal pupils, decreased respiratory rate, and was coughing and dry-heaving. Further victim assessment and intervention would be up to the discretion of the participant. The participant was instructed to verbally communicate all communication to the victim, including all questions and actions they would take to treat the victim, and physically complete any actions that they deemed necessary for the victim. Participants did not have to clean out any debris in the mouth of the victim nor actually perform CPR. Timing started when the participant entered the scene and stopped when the participant declared they were finished providing care.

The standardized human victim coughed, simulated dry-heaving, and was unable to articulate words but made auditory noise in response to participant questions and actions. A secondary observer timed and recorded all participant actions, both verbal and physical. Any attempt to place the victim in the recovery position was documented for

each of its criteria (Table 1) and whether the dependent variable of successful recovery position placement was completed.

Table 1: Recovery position survey questions and results

	Yes	No
Was victim placed on side?	20	6
Legs bent slightly?	10	16
Forearm resting on bicep of bottom arm?	10	16
Head resting on hand?	10	16
Mouth pointing downward?	10	16
Chin raised forward?	10	16
Bottom arm reaching outward?	10	16
Was victim successfully placed in recovery position?	10	16

Questions based off recovery position technique

Afterwards, each participant underwent a debriefing session. A faculty member, certified as an emergency medical technician paramedic (EMT-P), served as a secondary observer, and provided feedback on participant performance during the simulation. If necessary, the faculty member taught the participant the proper technique for placing a victim in the recovery position. To confirm participant learning, the participant then had to successfully place the victim in the recovery position. While several versions of the recovery position are discussed in the literature, criteria for this study included the following from the American Heart Association and American Red Cross guidelines[8]: (1) extend the left or right arm reaching outward above the victim's head, (2) slightly bend their left or right knee, (3) roll the victim on side so head rests on extended arm, (4) bend left or right arm so opposite hand is under the head/cheek, (5) raise the chin forward and point mouth downward toward ground.

Data Analysis:

Data from the survey and simulation observation was entered into a database and then imported and analyzed using Statistical Package for Social Sciences (SPSS) version 27.0, Armonk, New York. Demographic variable frequencies were tabulated as well as the mean time of participant care to the victim. Due to our pilot study sample size of twenty-six, the Fisher's Exact Test of independent samples was used to determine whether successful placement of the victim in the recovery position was associated with familiarity of the recovery position. An independent samples t-test compared the mean participant care time between those who successfully placed the victim in the recovery position and those who were unsuccessful.

Results:

Of the twenty-six participants, ten (38.4%) successfully placed the victim in the recovery position (Table 2). This success rate included five of six (83.3%) that were familiar with the position (Fisher's Exact Test p =0.018), which included the one participant with prior EMT experience.

Table 2: Demographics and pilot study results

Age (years)	Minimum	Maximum	Mean
	21	40	26
Gender	N	%	
Female	17	65.4	
Male	9	34.6	
Military	N	%	
Yes/No	0/26	0.0/100	
Law/EMT	N	%	
Yes/No	1/25	3.8/96.2	
Recovery Position Familiarity	N	%	
Yes/No	6/20	23.1/76.9	
Correct Recovery Position Placement	N	%	
Yes/No	10/16	38.4/61.6	
	Correct Recovery Position Placement		
Recovery Position Familiarity	Yes	No	p[a]
Yes	5	1	0.018
No	5	15	
Time Treating Victim	Mean (seconds)	SD	p[b]
Successful Placement	31.90	13.09	0.28
Unsuccessful Placement	37.44	11.31	

[a] Fisher's Exact Test; [b] Independent Samples t-test

Participants who successfully placed the victim in the recovery position did so at a mean of 31.90 seconds, compared to 37.44 seconds among unsuccessful participants ($p = 0.28$). While twenty of the twenty-six participants (76.9%) placed the victim on their side, ten of them only completed this recovery position step.

During the scenario, participants stated numerous questions to the victim to assess condition, as well as the caretaking tasks they would perform. These tasks included the following: call 911, ask the victim questions, check airway for obstruction, check pulse, check pupils, attempting to place the victim in an upright position, begin CPR, attempt the Heimlich Maneuver, manage the bleeding through wound compression, roll victim onto side, and perform the recovery position.

Discussion:

Ten of the twenty-six participants (38.4%) placed the victim in the recovery position. Even though participants had completed BLS/CPR training, only six out of the twenty-six reported being familiar with the recovery position. Though some participants successfully placed the victim in the recovery position without prior familiarity, most did not know what to do. If recovery position education and training is not provided to physician assistant students, when they must perform this maneuver in a time of crisis, the likelihood of saving lives may be decreased.

Following their post-scenario education, training, and practice with the recovery position, participants commented on hearing about the recovery position during CPR training, but they did not recollect being taught the steps or being expected to demonstrate the proper technique. These findings suggest that recovery position training in these programs may be insufficient. Therefore, providing this training within a physician assistant program curriculum may increase student knowledge and skills, as well as potentially benefit victim outcomes in non-clinical settings. Further, because the recovery position training requires minimal time and resources, it is quite feasible to include in their education.

Active shooting events in the United States, just in the first two months of 2023, are both numerous and devastating. Natural disasters, including the recent earthquakes in Turkey and Syria, are quite common worldwide and demonstrate the need the need for urgent, life-saving interventions. Though victim observation may be more complete when they are supine, a patent airway and unencumbered breathing may be easier to maintain in the recovery position.[1] This has been supported in studies using the recovery position for sleeping adults and sedated children to reduce apnea, airway obstruction, and respiratory disturbance.[14-15] The recovery position remains a reasonable option when attention is paid to monitoring for and responding to patient deterioration.[1] This provides further rationale to ensure that all physician assistant students are educated and trained in performing the recovery position.

Furthermore, institutions of higher education could begin to collaborate with the general public by offering this education and training for free in community settings. This would be akin to a train-the-trainer program. Physician assistant faculty and their students could educate and train communities on the recovery position virtually anywhere the education and training are requested, which could include but not be limited to places of worship, schools, and businesses. By providing this training, the general public could also become confident and proficient in performing this life-saving intervention in a time of crisis.

Strengths:

To attempt to control for potential confounders related to recovery position familiarity and expertise, we inquired about prior/active law enforcement, EMT, and military experience. However, just one participant had prior EMT experience and was, in fact, both familiar with and successful in placing the victim in the recovery position. We utilized the recovery position components from the American Heart Association and American Red Cross in designing our data collection tool for participant observation.

Limitations:

In our study, some respondents stated they used to be lifeguards and through their training, they learned the recovery position. We did not explicitly ask for lifeguard experience but these findings made us aware to ask about all possible occupations that

may require recovering position training in future research. Though we did not specifically ask about prior BLS training, it is a requirement of the university for admission to the program.

Conclusion:

Our study demonstrates that physician assistant students are not uniformly trained in the recovery position prior to matriculation. They further indicate education and training on this life-saving intervention could be and should be taught to all physician assistant students, as they will be providing patient care during their careers, which could occur in non-clinical settings. There is potential for the physician assistant profession to be a leader in creating train-the-trainer programs, which could provide rich population health experiences to students who would also bring this life-saving intervention to the general public and save lives.

Author Contributions:

Dr. Fink was the principal investigator and lead the implementation of this study, did the data entry, analysis, and assisted writing the manuscript. Dr. Wishner helped with the research to develop the pilot study and assisted in the analysis and writing of this manuscript.

Funding Sources: None.

Potential Conflicts of Interest Disclosures:

The authors disclose that there were no conflicts of interest or financial support in the development of this project. All data is authentic and accurate.

References:

1) Douma MJ, Handley AJ, MacKenzie E, Raitt J, Orkin A, Berry D, Bendall J, O'Dochartaigh D, Picard C, Carlson JN, Djärv T, Zideman DA, Singletary EM. The recovery position for maintenance of adequate ventilation and the prevention of cardiac arrest: A systematic review. Resusc Plus. 2022 Apr 29;10:100236. doi: 10.1016/j.resplu.2022.100236.
2) Hammett E. Out-of-hospital resuscitation 4: Recovery position. Nurs Times. 2022;118(2):33-34. https://www.nursingtimes.net/clinical-archive/patient-safety/out-of-hospital-resuscitation-4-recovery-position-24-01-2022/ Accessed: Mar 01, 2022
3) Deakin CD, Nolan JP, Soar J, Sunde K, Koster RW, Smith GB, Perkins GD. European Resuscitation Council Guidelines for Resuscitation 2010 Section 4. Adult advanced life support. Resuscitation. 2010 Oct;81(10):1305-52. doi: 10.1016/j.resuscitation.2010.08.017. Erratum in: Resuscitation. 2011 Jan;82(1):140.
4) Handley AJ. Should we still be teaching the recovery position? Resuscitation. 2017 Jun;115:A6-A7. doi: 10.1016/j.resuscitation.2017.03.026. Epub 2017 Mar 21.
5) Handley AJ, Becker LB, Allen M, van Drenth A, Kramer EB, Montgomery WH. Single-rescuer adult basic life support: an advisory statement from the Basic Life Support Working Group of the International Liaison Committee on Resuscitation. Circulation. 1997 Apr 15;95(8):2174-9. doi: 10.1161/01.cir.95.8.2174.
6) Haines J. Positioning an unconscious patient with suspected neck injury. JEMS. 1996 Feb;21(2):85.
7) Blake WE, Stillman BC, Eizenberg N, Briggs C, McMeeken JM. The position of the spine in the recovery position--an experimental comparison between the lateral recovery position and the modified HAINES position. Resuscitation. 2002 Jun;53(3):289-97. doi: 10.1016/s0300-9572(02)00037-0.
8) Singletary EM, Charlton NP, Epstein JL, Ferguson JD, Jensen JL, MacPherson AI, Pellegrino JL, Smith WW, Swain JM, Lojero-Wheatley LF, Zideman DA. Part 15: First Aid: 2015 American Heart Association and American Red Cross Guidelines Update for First Aid. Circulation. 2015 Nov 3;132(18 Suppl 2):S574-89. doi: 10.1161/CIR.0000000000000269.
9) Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. Med Teach. 2005 Jan;27(1):10-28. doi: 10.1080/01421590500046924.
10) Kim JH, Hur MH, Kim HY. The efficacy of simulation-based and peer-learning handover training for new graduate nurses. Nurse Educ Today. 2018 Oct;69:14-19. doi: 10.1016/j.nedt.2018.06.023. Epub 2018 Jun 30.
11) Sterz J, Gutenberger N, Stefanescu MC, Zinßer U, Bepler L, Linßen S, Schäfer V, Carstensen P, Verboket RD, Adili F, Ruesseler M. Manikins versus simulated patients in emergency medicine training: a comparative analysis. Eur J Trauma Emerg Surg. 2022 Oct;48(5):3793-3801. doi: 10.1007/s00068-021-01695-z. Epub 2021 Jul 30.
12) Karpa K, Pinto C, Possanza A, Dos Santos J, Snyder M, Salvadia A, Panchik D, Myers R, Fink M, Dunlap A. Stroke Simulation Activity: A Standardized Patient Case for Interprofessional Student Learning. MedEdPORTAL. 2018 Mar 29;14:10698. doi: 10.15766/mep_2374-8265.10698.
13) Viechtbauer W, Smits L, Kotz D, Budé L, Spigt M, Serroyen J, Crutzen R. A simple formula for the calculation of sample size in pilot studies. J Clin Epidemiol. 2015 Nov;68(11):1375-9. doi: 10.1016/j.jclinepi.2015.04.014. Epub 2015 Jun 6.
14) Svatikova A, Chervin RD, Wing JJ, et al. Positional therapy in ischemic stroke patients with obstructive sleep apnea. Sleep Med. 2011 Mar;12(3):262–266. doi: 10.1016/j.sleep.2010.12.008.
15) Turkington PM, Bamford J, Wanklyn P, Elliott MW. Prevalence and predictors of upper airway obstruction in the first 24 hours after acute stroke. Stroke. 2002 Aug;33(8):2037-42. doi: 10.1161/01.str.0000023576.94311.27.