ARTICLES AND ABSTRACTS ABOUT USING

THE HUMAN WORN SURGICAL SIMULATOR (CUT SUIT) IN MEDICAL EDUCATION

For the last six years Strategic Operations (STOPS) has helped develop innovative medical simulations with medical schools like Rocky Vista University (RVU) School of Osteopathic Medicine, an early adopter of the STOPS Human Worn Surgical Simulator (“Cut Suit®”). RVU and STOPS incorporated the Cut Suit into surgical and emergency medicine education and created an Intensive Surgical Skills and Trauma Course (ISSTC) curriculum around this technology. Since the demise of the “Halsted Method” of “see one, do one, teach one,” which allowed practicing on a live human - and is no longer possible because of patient safety and ethics - simulation is the only alternative as a safe, repetitive, immersive teaching tool. Creating medical simulation in a hyper-realistic environment – from point-of-injury through the ER to the OR, takes modern surgical and emergency medicine education to a new level.

STOPS defines Hyper-Realistic® as “the achievement of such a high degree of fidelity in the simulation of real world conditions in a training or educational environment that participants willing suspend disbelief so as to emotionally (and physiologically measurably) become totally immersed and eventually stress inoculated.” Recent medical studies corroborate anecdotal evidence that Hyper-Realistic® immersion training produces a stress inoculation effect and that repetitive training in controlled, stressful situations enables people to lower their stress levels from the detrimental range to a more beneficial one, in a measurable way. The following peer-reviewed scientific papers and presentations over the last five years demonstrate the effectiveness of this type of medical training and education.

PUBLISHED


4. Tuan N. Hoang, MD, FACS, CDR, MC, USN; Jeff Kang, MD, LCDR, MC, USN; Anthony J. LaPorta, MD, FACS, COL (Ret), USA; Vyacheslav I. Makler, MS3, ENS, MC, USNR; Carissa Chalut, MS3, 2LT, USAR: “Filling in the Gaps of Pre-Deployment Fleet Surgical Team Training Using a Team-Centered Approach” Journal of Special Operations Medicine; Winter 2013.


8. LaPorta, A.J.; Franciose, R; Robinson D: “Operating Room Crisis – The Video Opportunity” MEDtube.net; July 2014.


11. Mark S. Lea MD, FACS; Ryan Slattery OMS-III, Anthony J. LaPorta MD, FACS; Michael Tieman MD, FACS; Rebecca Bowden PhD; Joseph Stasio DO; Alan Moloff DO, MPH; Reginald Franciose MD, FACS; Tuan Hoang MD, FACS: “Rocky Vista University, College of Osteopathic Medicine Hyper-Realistic Simulation Center, The First ACS-AEI Surgery Center in an Osteopathic Medical School,” Journal of Surgical Education, Volume 72, Issue 2, Pages A1-A8, 179-366 (March-April 2015). (14) 00312-2/abstract


13. Anthony J LaPorta, MD, FACS, Charles Hutchinson, MS, Douglas Granger, PhD, Mark Lea, MD, FACS, Roy Alson, MD, FACEP, Michael Czekajlo, MD, PhD, Alan Moloff, DO, MPH, Tuan Hoang, MD, FACS Reginald Franciose, MD, F ACS and Joseph LaPorta, MS: "The Correlation of Salivary Cortisol and Alpha Amylase in the Execution of Realistic Surgical Trauma Simulation and Medical Student Training: Abstract." The Proceedings of the American College of Surgeons, Accredited Education Institution. March 13-14, 2015, Chicago IL
14. Andrew W. Kirkpatrick, MHSc MD Deon Louw, MD Anthony LaPorta, MD Susan Brien, MD, Tim Leslie, Elon Glassberg, MD, MHA Jessica McKee, MSc Chad G. Ball, MSc Heather E. Wright-Beatty, PhD Jocelyn Keillor, PhD Derek J. Roberts, MD, MSc Homer Tien, MD: "Technical innovations that may facilitate real-time tele-mentoring of damage control surgery in austere environments: a proof concept comparative evaluation of the importance of surgical experience, telepresence, gravity and mentoring in the conduct of damage control laparotomies." *Can J Surg*, Vol. 58, No. 2, April 2015


17. LaPorta, A.J., MD, FACS; Hoang, T., MD, FACS; Hutchinson, DO; Edwards, S., MS4; Granger, D PhD; Czekajlo, M., MD, PhD; Taut, L; Fields, R, Lea, M.; Tieman, M. MD, FACS: “The Jump Past Textbooks to Life and Death Situations.” Proceedings of 6th International Clinical Skills Conference. Prato, Tuscany, Italy. May 17-20, 2015.


19. Warner, L MS2; Saffer, E MS2; LaPorta, A.J, MD, FACS; Hoang, T., MD, FACS; Lea, M, MD, FACS; Siriratsivawong, K M.D; Kang, J, MD: “The Operating Room Crisis - Hollywood and Immersion Training Teaches How to Handle the Catastrophic or Unexpected Event.” Proceedings of 6th International Clinical Skills Conference. Prato, Tuscany, Italy. May 17-20, 2015.

20. Andrew W. Kirkpatrick, MD, FRCSC, Homer Tien, MD, FRCSC, Anthony T. LaPorta, MD, FACS, Kit Lavell, Jocelyn Keillor, PhD, Heather E. Wright Beatty, PhD, Jessica Lynn McKee, MSc, Susan Brien, MD, FRCSC, Derek J. Roberts, MD, PhD, Jonathan Wong, BSc, Chad G. Ball, MD, FRCSC, and Andrew Beckett, MD, FRCSC, Calgary, Alberta, Canada: “The Marriage of Surgical Simulation and Tele-Mentoring for Damage Control Surgical
Training of Operational First-Responders: A Pilot Study” J Trauma Acute Care Surg 29 October 2015.

21. LaPorta, A.J, MD, FACS; Hoang, T., MD, FACS; Reginald Franciose, MD, FACS; J. Savas, MD, FACS; Roy Alson, MD, FACEP; Michael Czekajlo, MD, PhD; Alan Moloff, DO; MPH, Discussant Lawrence Gaul MD, FACC: Measuring the Tools of the Future: How Will We Tell the Effectiveness of Training. (Abstract); Proceedings of the American College of Surgeons, Accredited Education Institute 9th annual meeting. Mar 7-8, 2016 Chicago IL.


23. A.J. LaPorta; A.W. Kirkpatrick; T. Hoang; E. Pierce; H. Tien; J. McKee; S. Brien; D. Louw; A. Skinner; R. Dee and L. Bejjian; Usage, Development and Refinement of a High-Fidelity Surgical Phantom for Examining Torso Exsanguination in Weightlessness and Multiple Sea States [Abstract]; Proceedings of the 22nd Medicine Meets Virtual Reality Conference (MMVR22) Los Angeles California April 7-9, 2016.

24. LaPorta, A.J.; Hoang, T., MD, FACS; A. Moloff, DO, MPH; Vijay Setty, MS3; Vinay Setty, MS3; A. Gingras, MS3; Understanding Team Training Utilizing Objective Markers (Journal) Medical Training Magazine, Volume 5, issue 2, 2016.

25. Tuan N. Hoang, MD, FACS; Jeff Kang, MD, FACS; Kris Siriratsivawong, MD; Anthony LaPorta, MD, FACS (Ret.); Amber Heck, PhD; Jessica Ferraro, BSN; Douglas Robinson, MS4; Jonathan Walsh, MS3. Hyper-realistic, team-centered fleet surgical team training provides sustained improvements in performance Journal Surgical Education, Volume 73, issue 4, p.668-674.

26. Hutchinson, Charles, DO; LaPorta, Anthony MD FACS; Moloff, Alan DO MPH; Lea, Mark MD FACS; Franciose, Reginald MD, FACS; Alson, Roy MD PhD; Czekajlo, Michael MD PhD; Field, Ryan; Hoang, Tuan MD FACS; Granger, Doug PhD: “Salivary Cortisol and Alpha-amylase Response to Hyper-Realistic Emergency Surgery and Trauma Simulation in Second Year Medical Students.” Journal of Surgical Education


28. Andrew W. Kirkpatrick, CD MD MHS FRCSC FACS; Jessica L. Mckee, BA MSc; Derek J. Roberts, MD PHD; COL. Homer Tien, MD; MAJ. Andrew Beckett, MD FRCSC; Chad Ball, MD MSc FRCSC, FACS; COL (Ret) Anthony LaPorta; Ian Mckee; Deon Louw, MBChB FRCSC; COL (Ret) John B. Holcomb, MD: Randomized Control Trial Comparing Marksmanship
Following Application of a Tourniquet or Hemostatic Clamp in Healthy Volunteers, *Journal of the Royal Army Medical Corp.*


31. A.J., LaPorta; C. Hutchinson; D. Robinson; M. Lea; R. Franciose; L. Gaul; R. Alson; M. Czekajlo; D. Granger; A. Moloff: **The Use of Hyper-Realistic Surgical Simulation. I/ITSEC Proceedings Interservice/Industry Training, Simulation, and Education Conference Orlando Florida Dec1-5, 2015.**

32. A. Kirkpatrick; J. McKee; H. Tien; A. LaPorta; K. Lavell; T. Leslie; D. King; P. McBeth; S. Brien; D. Roberts; R. Franciose; J. Wong; V. McAlistair; D. Bouchard; C. Ball: **Damage Control Surgery in Weightlessness: A comparative Study of Simulated Torso Hemorrhage Control Comparing Terrestrial and Weightless Conditions.** *Journal of Trauma and Acute Care Surgery* February, 2017, Volume 82, issue 2, p 392-399

33. LaPorta, A.J Kirkpatrick, A; Pierce, E; Hoang, T; Gaul, L; Franciose, R; McKee, J; Moloff, A; Skinner, A; McBeth, P. **The Usefulness of Heart Rate Variability on Trauma Team Members in Weightlessness, Difficult Oceanic Conditions, and Mass Casualty Training.** Proceedings of the 7th International Clinical Skills Conference. Page 56, 2017 Prato IT

34. LaPorta, A.J.; Kirkpatrick, A; Hoang, T; Pierce, E; Bork, M; Liu, M; Herder, P: **Training for Trauma in the Ultimate Austere Environments-High Sea States and Weightlessness.** Proceedings of the 7th International Clinical Skills Conference. Page 80. Prato IT.

35. LaPorta AJ, Ross, D. **Operating Room Crisis-Training Realistically for the Rare but Inevitable.** Proceedings of the 7th International Clinical Skills Conference. Page 96, 2017 Prato IT.

36. Hoang, T; LaPorta, AJ; Wrenn, K; Lucero, A; Mullinax, R: Ross, D; **Methods of Team Training When All Members of The Interdisciplinary Team Are Experts.** Proceedings of the 7th International Clinical Skills Conference. Page 97, 2017 Prato IT

37. LaPorta, AJ; Alson, R; Moloff, A; Ross, D Hoang, T; Franciose, R; Almazan, M; Marlin, J; Fergusson, B; Sureshi, P; Berber, G; Czekajlo, M. **Biologic Objective Measurements of the Future.** Proceedings of 7th International Clinical Skills Conference. Page 97, 2017 Prato IT
38. LaPorta AJ.; McKee, J; Hoang, T; Mcbeth, P.; Gillman, L; Kirkpatrick, A: **Stress Inoculation:** Preparing Outside the Box in Surgical Resuscitation and Education. *Current Trauma, Current Trauma Rep* (2017) 3: 135. doi:10.1007/s40719-017-0090-2

39. Antony J LaPorta, MD, Anna J Austin, Conner McKinney, Amber Heck, PhD, Lawrence Gaul, MD, Tuan Hoang, MD, Reginald Franciose, MD, Rocky Vista University School of Medicine, Parker, CO: **Sleep Recovery in Total Immersion Surgical Training: Training as if Real.** *Scientific Forum Abstract, Journal of American College Surgeons* Vol 233, No.4S1 October 2016 S132.

40. Kirkpatrick, Andrew W CD, MHSc, MD, FRCSC, FACS; McKee, Jessica BA, MSc; McBeth, Paul B. MD, FRCSC; Ball, Chad G MSc FRCSC, FACS; LaPorta, Anthony MD, FACS; Broderick, Timothy MD, FACS; Leslie, Tim BSc, MSc; King, David MD, FACS; Wright-Beatty, Heather PhD; Keillor, Jocelyn PhD; Tien, Homer CD, MD, FRCSC: **The Damage Control Surgery in Austere Environments Research Group (DCSAERG): A dynamic program to facilitate real-time tele-mentoring/tele-diagnosis to address exsanguination in extreme and austere environments.** *Journal of Trauma and Acute Care Surgery,* April, 5, 2017. doi: 10.1097/TA.0000000000001483(Abstract only)