implicit hazards associated with the boat maneuvering and exposure to the elements. Nonetheless, there have been significant tragedies. Recent improvements in safety gear and advances in technology have allowed for more acute medical management of sailors.

Objective.—This study investigates the relative frequency of injuries and illnesses sustained during offshore sailboat racing in the Great Lakes, which has never been reported. These results will be compared with those published in a study that investigated the same occurrences during the Newport Bermuda ocean race to determine whether there is a difference in frequency or type found on the open ocean versus the Great Lakes.

Methods.—The study design was prospective, descriptive, and observational. Surveys were self-reported and collected after the race from the boat representative. De-identified data were entered into a Microsoft Excel database and analyzed by a professional statistician.

Results.—In 2013, representatives of 164 boats responded to the survey in one offshore race, which represented 1260 sailors; 146 illnesses were reported, and 9 boats reported at least 1 injury. In 2014, representatives of 435 boats responded to the survey in two offshore races, which represented 3525 sailors. The 2014 data are still being analyzed.

Conclusions.—The 2013 rate of injury and illnesses in the Great Lakes was significant at 125 per 1000 races per sailor when compared with the Newport Bermuda race at only 12. Injuries in the form of contusions were most common in the Great Lakes races as opposed to lacerations in the ocean races, and seasickness was the most common illness in both environments.

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Paper Tape Prevents Foot Blisters: Randomized Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II)

Background.—Friction foot blisters, a common and potentially disabling injury, have been found to be the most likely factor adversely affecting ultramarathon performance. An inexpensive and effective prevention technique is needed for this ubiquitous outdoor occurrence.

Objective.—To determine whether paper tape could prevent friction foot blisters on blister prone areas of multistage ultramarathoners.

Methods.—This multisite prospective randomized trial was undertaken during the 2014 RacingThePlanet, a 155-mile, 6-stage ultramarathon in the Jordan, Gobi, Madagascar, and Atacama deserts. Paper tape was applied to a randomly selected foot before the race, either to participants' blister prone areas or to a randomly selected spot, with untaped areas of the same

foot as control. Study outcome was a blister anywhere on the study foot.

Results.—In all, 128 participants were enrolled, and 109 (85.2%) were compliant. There were 31 women (22.5%), with a mean age of 39.3 years (range 22 to 63 years) and body mass index (BMI) of 24.2 kg/m² (range 17.4 to 35.1 kg/m²). Intent-to-treat analysis revealed 106 participants (83%) had 117 blisters, with treatment success in 98 runners (77%). Paper tape reduced blisters by 40% ($P < .01$, 95% CI: 28 to 52), and number needed to treat, 1.31. Results were similar in the compliant group (NNT = 1.35). The majority of participants (78%) had 1 blister, most commonly on the toes ($n = 58$, 50%) and heel ($n = 27$, 23%), and 94 blisters (80%) occurred by the end of stage 2 of the race. Treatment success and number of blisters were significantly associated with hours of exposure ($P = .01$) and stage of race ($P = .02$); BMI correlated with number of blisters ($r = 0.23$, $P < .01$, 95% CI: 0.06 to 0.39).

Conclusions.—Paper tape was found to have robust protective effect against foot blisters for multistage ultramarathon runners.

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“Out of the Box” Disaster Training: Low-Cost Training Tools Improve Medical Team Disaster Performance

Background.—The provision of life-saving medical care in austere environments requires rescue team training in a simulated setting. Not every rescue organization has the capability to train in the field owing to weather, limited budgets, or schedule constraints.

Objective.—We developed a competency-based curriculum for patient care providers using an indoor, easily reproducible,

multiple patient environment. Two small group exercises were used that helped prepare teams before the multiple patient scenarios.

Methods.—Interprofessional teams of 5 to 6 trainees were assessed during two environmentally challenging (ie, flood evacuation and infectious disease outbreak) emergency preparedness training scenarios. To prepare teams before the multiple patient scenarios, 2 small group exercises were developed: 1) a communications exercise utilizing a large cardboard puzzle of a disaster scene (cost, \$30); and 2) a triage exercise with mock patients utilizing 60 small handheld toys (cost, \$20). Individual and performance objectives were assessed. Before training, team members completed a 24-question knowledge assessment, a demographic survey, and a comfort level self-assessment. After training, trainees repeated the 24 questions, a self-assessment, and a course assessment.

Results.—Of the 708 participants who completed the course between November 2011 and August 2014, 31.9% were medical students, 49.9% physicians, 7.2% nurses, and less than 1% each of emergency managers, mental health providers, EMS personnel, and law enforcement officials. Overall, 708 participants (100%), 509 (71.9%), and 243 (34.3%) completed the pre-test, post-test, and course assessment, respectively. The average percentage of correct answers between the pre-test and post-test increased from 46.8 to 76.3. Two hundred forty-two (99.6%) reported the course as relevant to care providers, and 241 (91.5%) highly recommended the course.

Conclusions.—Our competency-based emergency preparedness training curriculum used innovative small group exercises to improve disaster team performance, and cost less than \$50. Trainees improved their knowledge, and they highly recommended the course. The tools may serve disaster organizations lacking resources to train in the field.

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response with limited resources. Remote locations inhibit communication and outside support, leading to extended time to definitive care. That results in greater responsibility for first responders. A mobile application with protocol for wilderness issues may help providers with limited knowledge to manage medical emergencies until professional medical care is possible. Improvement in first responder care can also decrease emergency medical services and hospital costs, in addition to preventing long-term complications.

Objective.—The purpose of this study is to determine, by simulated scenario performance, whether the use of a smartphone application will improve management of common medical emergencies in the wilderness.

Methods.—We identified the top-rated survival and first aid applications available in the iPhone and Android digital application markets. We designed 6 emergency scenarios set in a wilderness context with performance based on standard criteria outlined in Auerbach's *Wilderness Medicine* textbook. Using a prospective study, we compared patient care performance between simulations that were application assisted and simulations that were not. A population of 66 simulations of 6 scenarios completed by 11 inexperienced students provided a 64% power to detect a difference of 50% in the improvement of scores when using the wilderness medicine application. Inter-rater reliability was also calculated on a subset of the stations.

Results.—Performance on simulations did not vary with smartphone application use, according to *t* test ($P = .296$).

Conclusions.—Smartphone applications theoretically provide accessible knowledge for inexperienced first responders in remote settings. Our study suggests an opening in the smartphone application market for an effective wilderness survival tool. Furthermore, lack of training in basic first aid may not be compensated for by smartphone application help. We plan to extend this study to include more participants.

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Smartphones in the Wild: Can Technology Improve Emergency Care in Remote Settings?

Background.—Environmental illness and injury in the wilderness can occur quickly and unexpectedly, requiring a swift