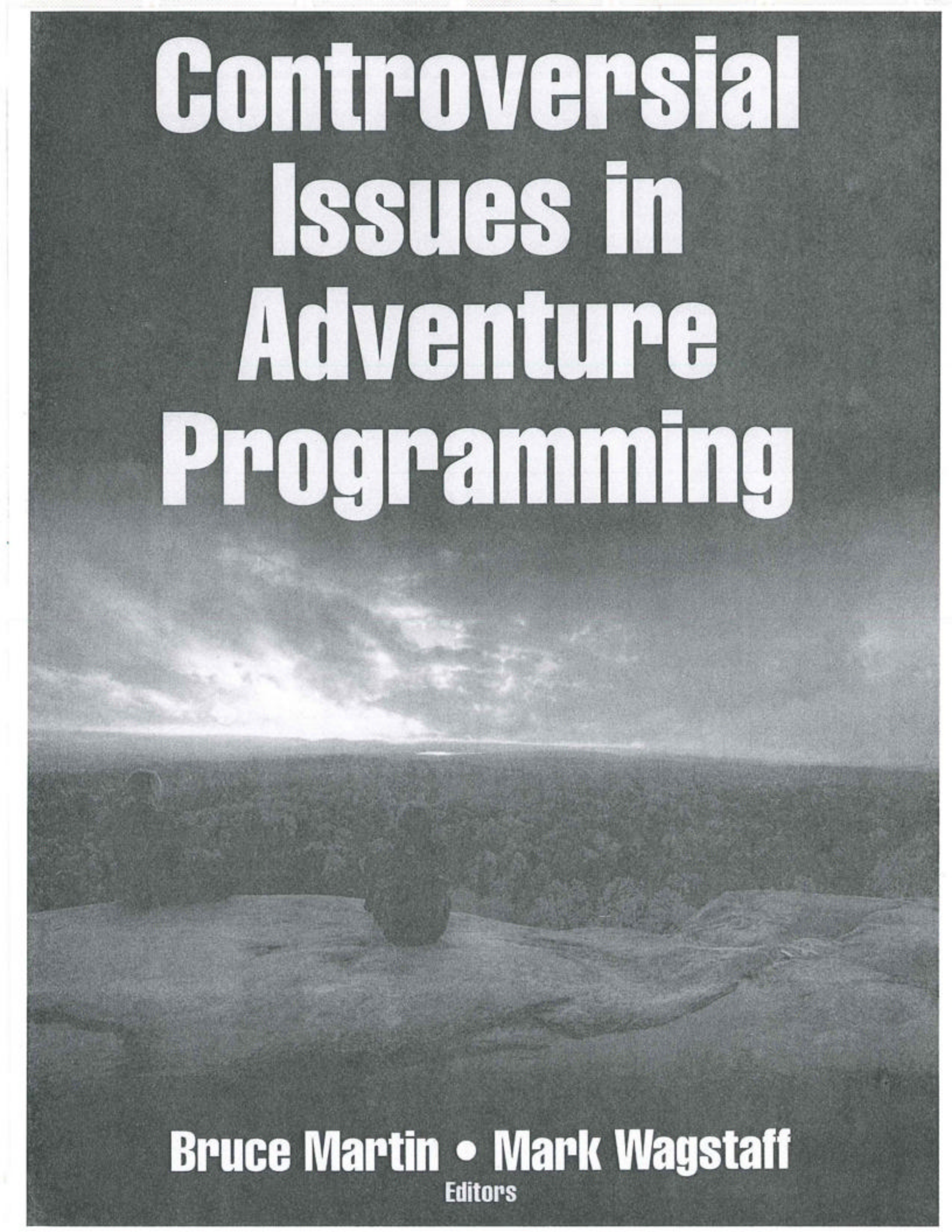


Controversial Issues in Adventure Programming



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Editors

Should Wilderness First Responder be the standard of care for wilderness leadership?

NO

Woof(er), Woof(er): The Wilderness First Responder Dog and Pony Show

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Paul Petzoldt professionalized outdoor leadership in the United States. More than 35 years ago, he authored one of the first comprehensive textbooks in the field, *The New Wilderness Handbook* (Petzoldt, 1974). The topic of mountain medicine and first aid consumes about 10 pages, the bulk of which deals with preventing accidents. He opines that he has "little faith in pills and medications in the wild outdoors" and recommends that first aid kits contain only "tape, a small roll of gauze, moleskin, Band-Aids, pain pills, and sleeping pills." For those interested, he recommends that they study a book (Forgey, 1999), but he stresses that "quality judgments" are more important.

In many outdoor programs today, Paul Petzoldt would not be eligible to lead an expedition. Despite his legendary accomplishments as a mountaineer, educator, and environmentalist, Petzoldt lacked a *sine qua non* for a contemporary wilderness leader in some programs: graduation from a 70-hour wilderness first responder (WFR) course. The man who held the record for safely guiding folks up the Grand, whose reconnaissance laid the foundation for the ultimate ascent of K2, and whose system of climbing communication is used daily throughout the world would today be considered unqualified to lead a group of young adults into his beloved Wind River Range.

This odd state of affairs has a long and complicated history but ultimately is predicated on five assumptions that I believe are fundamentally flawed. In this argument, I outline the five assumptions as an argument against WFR as the industry standard.

Assumption One

Wilderness recreation carries a substantial risk of serious injury and illness.

Wilderness recreation encompasses a broad range of activities. Clearly, one cannot lump BASE jump-

ing or hunting, which is responsible for an average of about 30 deaths annually in the United States (International Hunter Education Association, 2008), with backpacking or mountaineering. For purposes of this discussion, wilderness recreation includes extended treks into remote areas; during these treks, the activity mostly consists of traveling over terrain of variable difficulty and setting up and taking down campsites and occasionally consists of skill-specific tasks such as rock climbing or flat-water canoeing. This definition includes most of the wilderness education programs offered by colleges and universities, courses offered to the public by various providers of outdoor adventure travel, and activities sponsored by organizations such as the Boy Scouts of America.

Unfortunately, obtaining complete national data on serious medical problems in such venues is impossible. The administrative data sets that are used by epidemiologists for such studies are mined by ICD-9 codes (Gindee et al., 2008). Because no codes or modifiers specifically identify wilderness recreation, comprehensive analysis of hospital or death-certificate data can never be performed.

On the other hand, investigators have used a number of techniques, such as regional or organizational registries, to obtain data on wilderness medical incidents. Published data addressing the risk of injury and illness in such pursuits is strikingly consistent: wilderness recreation is one of the safest recreational activities on which data are maintained.

One attempt at using an administrative database to collect incidence data on outdoor recreational injuries used the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP), a 63-hospital stratified probability sample of all U.S. hospitals that is maintained by the U.S. Consumer Product Safety Commission (Flores, Haileyesus, and

Greenspan, 2008). This database is used by investigators to project the incidence of various injuries throughout the United States. Unfortunately, the outdoor recreation activities in this database include sports such as skiing, snowboarding, snowmobiling, and surfing. Additionally, there is no way to identify where in the wilderness these injuries occurred. Despite these limitations, the total burden of outdoor recreational injuries in the United States was small (roughly 100,000 per year for the entire country, or about 25/100,000 of the population) and the severity of the vast majority of the injuries was modest (only 5 percent were hospitalized).

Although the NEISS-AIP data are the most robust global estimate of the burden of outdoor injuries, data from organizational databases provide much better information on the incidence of specific injuries, albeit without the context of population frequency. A recent example of this is a 2003 study that prospectively examined medical incidents occurring during more than 20,000 participant days in a Minnesota canoe and backpacking camp (Elliott, Elliott, and Bixby, 2003). Most of the incidents studied were minor: only 12 in the entire series required evacuation for definitive care and, apparently, none of these 12 was serious enough to require hospital admission.

A larger database examines the injury and illness experience of the National Outdoor Leadership School (NOLS) (McIntosh et al., 2007). This report, derived from a database, covers a three-year period from 2002 through 2005. The report cites injury and illness rates of 1.18 and 1.08, respectively, per 1,000 participant days; this is similar to the findings of Elliott, Elliott, and Bixby's (2003) report on the Minnesota camp. No deaths occurred. About half of the incidents resulted in leaving the field, and less than 5 percent required hospital admission. As is the case in most such reports, the majority of injuries were soft-tissue injuries, mostly in the lower extremity. The catalog of injuries and illnesses (authors' tables 2 and 3) list few if any conditions that would call for much in the way of knowledge or skill competency beyond basic first aid.

The most recent attempt to establish incidence rates from a well-defined cohort came from a college program, Cornell Outdoor Education. During a five-year period encompassing more than 74,000 participant days, this program experienced an illness and injury rate of 1.5 per 1,000 participant days; this is strikingly consistent with other data (Gaudio, Greenwald, and Holton, 2010).

The most serious wilderness injury, of course, is death. Although examination of death rates may

not be an appropriate way to inform discussion of specific backcountry injuries, it is ideal for putting the health risks of the activity into perspective. Deaths are dramatic events that are uniformly reported and, consequently, quite reliable.

At least two studies have examined death rates from wilderness recreation in defined populations. Paton (2007) recently updated his report of deaths among participants in Outward Bound courses. In the most recent period examined (1999 through 2005), no fatal accidents occurred in 1,347,587 participant days. In this report, Paton also revisited an analysis of deaths in this program in an unfortunate era in which such events were more common. Of 12 deaths in Outward Bound programs between 1971 and 1980, at least 7 deaths were the result of situations that even the most exemplary wilderness first aid training could not have prevented (multicasualty drowning, motor vehicle accidents, sudden cardiac death, and a suicide).

Complementing this organization-based study is a population-based report from Victoria, Australia (Gabbe et al., 2005). Using data from the Victoria State Trauma Registry and the National Coroner's Information Service, this study examined deaths and serious injuries from sport and recreation over a two-year period. Merging these data with information about the populations engaging in various activities, the investigators calculated rates of serious injury and death per 100,000 participants per year. The activities associated with the greatest risk of injury or death were those associated with powercraft and horses. The most common mechanism of death was drowning. Backpacking, camping, hiking, and mountaineering were not included in the activities associated with serious injury or death. Two percent of the cases were associated with rock climbing, but it is impossible to tell from the study whether these cases were associated with a wilderness location.

Assumption Two

A defined set of competencies exists between standard first aid and definitive medical care, and these competencies can be used in situations in which such definitive care is substantially delayed.

This assumption undergirds the entire WFR education industry, which seems at first glance to be eminently reasonable. Knowledge and procedures typically considered within the purview of first aid assume that the patient will either have a benign,

self-limited condition that requires no further medical care or be able to connect with definitive care in a brief period of time (often one hour or less). The nature of wilderness activity is such that extended periods of time may pass before definitive care can be accessed. Thus, it makes sense that a body of knowledge and skills short of the practice of medicine but beyond first aid might have application in the backcountry.

Although eminently reasonable, minimal evidence shows that such a set of competencies exists. Consider shock. Most first aid texts have an approach to shock that boils down to a few points: keep warm, keep hydrated, keep dry, treat other problems, watch for deterioration, and get to definitive care. Once the patient reaches definitive care, our options are legion: volume expansion and pressors titrated to cardiac output and perfusion, antibiotics and blood products based on the underlying cause of the shock, ventilatory support to maintain peripheral oxygenation, extracorporeal support to other target organs (e.g., hemofiltration), and correction of underlying processes, to name just a few. It is difficult to identify any evidence-based intervention between the basic first aid for shock and its definitive care.

Sure, the patient with shock who is a day from a trailhead will require a longer period of first aid (if he or she survives, which is highly unlikely in bona fide shock). In reality, however, the actual care we can offer the patient continues to be nothing beyond the aforementioned basics (warm, dry, hydrated, and so on). Ensuring these basic comforts in a remote location and orchestrating evacuation requires much more in the way of general outdoor skills, judgment, and leadership than specific medical competencies.

The example of shock can be extended to the panoply of catastrophic (albeit extraordinarily rare) events that are included in the curriculum of WFR courses. Closed head injury, surgical abdominal emergencies, multiple traumas, respiratory failure—beyond basic first aid, provision of comfort, and orchestration of evacuation, no evidence-based intervention exists that a layperson could use in the backcountry for an individual with one of these conditions.

Assumption Three

Competencies in medical procedures can be taught to and meaningfully retained by laypersons who do not regularly use them.

Much of the curriculum of contemporary WFR courses deals with the pathophysiology and recog-

nition of rare (in the backcountry) conditions and a variety of specific interventions. One published curriculum (keep in mind that there is absolutely no standard WFR curriculum to which U.S. providers or regulatory bodies have agreed) listed goals for a WFR course; these goals included such complex issues as the management of diabetes, chest trauma, and alterations in consciousness (Wilderness Medical Society Curriculum Committee, 1999). The idea that laypersons could meaningfully retain the bulk of this material is implausible and certainly has never been systematically tested.

In this context, we must remember that these concepts and competencies are not only taught to individuals with no medical background, they are taught to individuals who will not have regular opportunities to use them in the course of their daily work. Courses of similar length are used for entry-level providers in the Department of Transportation emergency medical system (EMS). Individuals completing these programs, however, will generally be working in the EMS industry on either an employed or a volunteer basis. Thus, they will have ongoing, regular exposure to the medical problems included in their initial course, and their practice will include direct oversight and regular opportunities for feedback and continuing education. An outdoor educator will never encounter the vast bulk of the content of a typical WFR course in his or her lifetime. The belief that such an individual could meaningfully apply skills from a remote course—skills that had not been used since course completion—when suddenly confronted with a crisis defies everything we know about pedagogy.

Although the modern wilderness medicine education industry emphasizes its expertise in education, the reality is that it is completely disconnected from contemporary scholarship in medical education. The American Heart Association and the American Red Cross are the recognized experts in the science and teaching of cardiopulmonary resuscitation skills to professional medical personnel and to the general public. The research of these organizations has led to discontinuation of teaching to laypersons the pulse check (Cummins and Hazinski, 2000) and airway management skills (Svensson et al., 2010) during basic cardiopulmonary resuscitation (CPR) courses because these organizations recognized that meaningful skill retention does not occur.

The issue of skill retention has become a major subject for research and practice among personnel working full time in clinical medicine. Nurses working regularly in intensive care have demonstrated

deterioration in airway-management skills (Hamilton, 2005), and initiatives now promote regular workplace assessment of CPR skills for critical-care unit personnel who regularly use these skills in the course of their jobs (Niles et al., 2009). These issues are being addressed with high-fidelity simulators and dedicated clinical educators in advanced clinical education laboratories. In light of developments such as this, the notion that laypersons with no continuing oversight or practice can master and retain vastly more complex clinical skills is preposterous.

Assumption Four

The costs (direct, indirect, and opportunity) are in alignment with their benefits.

The costs of taking a WFR certification or recertification course today are not inconsequential. Tuition, room, board, travel, and materials may easily push the cost of a course to more than \$1,000 per participant. These costs are borne either by the educators themselves or by their programs. If the latter, the costs will of course pass to program clients. Given the precarious financial situations of many outdoor education programs today, it would be irresponsible to make such investment without compelling evidence of its appropriateness.

In particular, if a program is going to make an investment in safety and risk management for its clients, one might ask whether a blanket requirement for WFR certification is the most responsible use of this investment. For example, automotive accidents are the largest cause of accidental death and severe injury among young adults in the United States today (Heron et al., 2010). However, a recent survey of college wilderness education programs showed that the students who drive participants to wilderness activities receive little if any formal driver education (Welch, Clement, and Berman, 2009). It seems curious that a program would insist that its instructors complete a 70-hour course dealing with esoteric aspects of human physiology while permitting them to, with no or minimal structured instruction, drive clients in multiperson vans on interstate highways.

Although fatalities in wilderness recreation are extraordinarily rare, when they do occur, drowning is one of the most commonly reported incidents (Gabbe et al., 2005; Paton, 2007). Beyond treks involving water travel, many backcountry expeditions provide opportunities for swimming. The evidence-based practitioner might reasonably question why training and certification in water safety and rescue have not infiltrated the outdoor

education industry to the degree that wilderness medicine has.

Recent reports of evacuations from wilderness education programs have highlighted the role of emotional and psychological crises in such incidents. Indeed, much-publicized (and litigated) fatalities have occurred consequent to trek leaders (including some with WFR credentials) failing to appreciate clients' emotional distress (Szalavitz, 2006). It would seem that a place exists for structured training for backcountry educators in areas such as conflict resolution and the approach to psychic trauma. Textbooks used in some WFR training programs (Carline, 2004; Schimelpfenig, 2006) do not even reference such situations.

In the very rare event that a severe injury occurs in a remote location, the skill set required for dealing with the situation is broad and first aid training is only a part of it—a small part. We have already demonstrated that few medical competencies beyond standard first aid have an evidence basis in the backcountry. Advanced navigational skills, complex decision making, organizational skills and communication, and the basic campcraft competencies requisite to ensuring warmth, nutrition, hydration, dryness, and comfort are vital to the resolution of a wilderness disaster. Yet few instructors come into programs with a uniform skill set in these areas, and we are unaware of any broad initiative to require regular recertification or skill updating in these areas.

The toolbox required by the outdoor educator today is large and varied. I find it curious and unsupported by the evidence that such an emphasis is placed on one very small part of this toolbox.

Assumption Five

WFR certification is a standard in the adventure programming industry.

Despite these rather incontrovertible points, debates about this topic ultimately move to the conclusion that, rightly or not, WFR certification has become an industry standard. This, too, is clearly incorrect. A recent study (Welch, Clement, and Berman, 2009) shows that no governmental jurisdiction in the United States recognizes the WFR certification as a requirement for guides or outfitters. The national organizations that provide the vast majority of guided wilderness expeditions in the country (e.g., Boy Scouts of America, Sierra Club) have no such requirement. A minority of college outing programs prescribes WFR certification for trek leaders. Indeed, the largest organization that

does require this certification for its outdoor instructors (NOLS) also happens to be a major provider of WFR courses.

Although course providers market these programs as providing a credential, the certification is not recognized by any government entity in North America (unless the specific course also provides Department of Transportation certification, which is rarely the situation today). States vary somewhat in the ways in which they regulate the practice of medicine, but all enforce such regulation through medical practice acts and pharmacy acts. In no jurisdiction is the holder of a WFR or similar certification granted authority to independently undertake any procedure beyond standard first aid—indeed, anything that could be done by any layperson.

Conclusion

Wilderness pursuits are among the safest forms of recreation. Serious injuries and death are exceedingly rare, and most often the latter are relatively instantaneous and not amenable to intervention. Absolutely no evidence shows that competencies beyond those of standard first aid could be useful in backcountry incidents. Current scholarship suggests that the likelihood is nil that laypersons can meaningfully retain medical information and skills that they do not use regularly. Devotion of time and resources to lengthy courses and refreshers in first aid may detract from acquiring and maintaining skills in more important areas. The WFR credential is not a recognized certification by any legal jurisdiction, does not endow on its holder any additional legal authority, and is not required by any state agency.

Paul Auerbach (2010), author of the leading textbook of wilderness medicine and a past president of the Wilderness Medicine Society, provides a final word to this debate: "What should be taught to guides, instructors, and trip leaders who are responsible for the care of their participants in the outdoors? The best we can advise right now is that basic first aid with augmentation about wilderness-specific concerns seems reasonable. . ." (paragraph 5).

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