

Medical Considerations and Planning for Short Distance Road Races

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Abstract: *Short distance road races are popular in most communities, and athletic trainers are often asked to coordinate the medical coverage for such events. The medical support needed to successfully cover marathons, triathlons, and other endurance events has been well documented. However, little information has been presented regarding medical considerations for shorter distance races. Heat illness is often seen in short distance races, especially when the environmental conditions are extreme. Successful coverage of races of any length includes thorough planning and preparation, adequate supplies, and competent personnel. Medical coverage includes organizing the medical tent at the finish line, selecting appropriate protocols for treatment, and identifying a physician who will act as the race's medical director. It may also be necessary to provide medical coverage on the race course, at other areas, and at the finish line. The purpose of this paper is to inform the medical community, and athletic trainers in particular, of some of the details that should be considered when planning race coverage. The information detailed within may also*

be applied to other sports-related medical coverage provided by athletic trainers.

The medical support needed to successfully cover marathons, triathlons, and other endurance events is well documented.^{1,3,11,12,18,22} However, little information has been presented on how to provide medical coverage for races of shorter (less than marathon) distances. It is now commonplace for outpatient, sports-related physical therapy clinic personnel to be present at such races and to render care to injured athletes. This provides these clinics with an excellent opportunity for exposure and community involvement. Unfortunately, these events also pose a certain amount of inherent risk. The Gasparilla Distance Classic in Tampa, FL, simultaneously runs a 5-km, a 15-km, and a wheelchair race. Over the past 8 years, the medical coverage for these races has been organized by athletic trainers. They have refined the race's medical coverage to where it now may serve as a working model for other races and also may set the standard for medical coverage for races of less-than-marathon distance.

Although physicians are usually the medical directors, athletic trainers are often the ones asked to coordinate and plan the medical coverage of these events. During the past 8 years, the medical coverage for the Gasparilla Distance Classic has been coordinated by athletic trainers from the Sports Medicine Center of the

Tampa General Hospital, an outpatient, sports-therapy facility. The purpose of this paper is to describe, by example, what factors should be considered when planning the medical coverage of such races.

The Gasparilla races (15K, 5K, and Wheelchair), which annually have 10,000 to 15,000 participants running simultaneously, have been held under various environmental conditions. Covering any race with that many participants is a challenge. The challenge becomes even greater when the environmental conditions are stressful, which is often the case in Tampa.^{5,6,9,19} Although not all races will experience the same number of participants or the extreme environmental conditions seen in Tampa, the key to all race coverage is knowledge and preparedness. Medical coverage of these events begins with establishing a medical tent at the finish line and anticipating what kind of problems you may encounter. Short distance races often pose unique problems not often seen in races of longer duration.

Types of Problems

Some controversy currently exists in the marathon and ultramarathon populations concerning the etiology of collapse in runners.^{10,14,15,17,20} However, in shorter distance races, such as the Gasparilla, there is little uncertainty about the cause of collapse. It is likely that the runners are dehydrated (hypovolemic) and have elevated core temperatures (hyperthermic). We therefore anticipate that most of our casualties will be admitted to the medical tent with heat illness and prepare accordingly.^{11,12} Athletic trainers are often familiar with heat illness; however, the etiology of heat illness in runners may differ slightly from that of football players or other athletes with which athletic trainers might be more familiar.

There are several reasons why we might see more heat illness in these runners specifically. A great number of participants in the 5K race are untrained, unfit, unacclimatized, and generally unprepared for racing.

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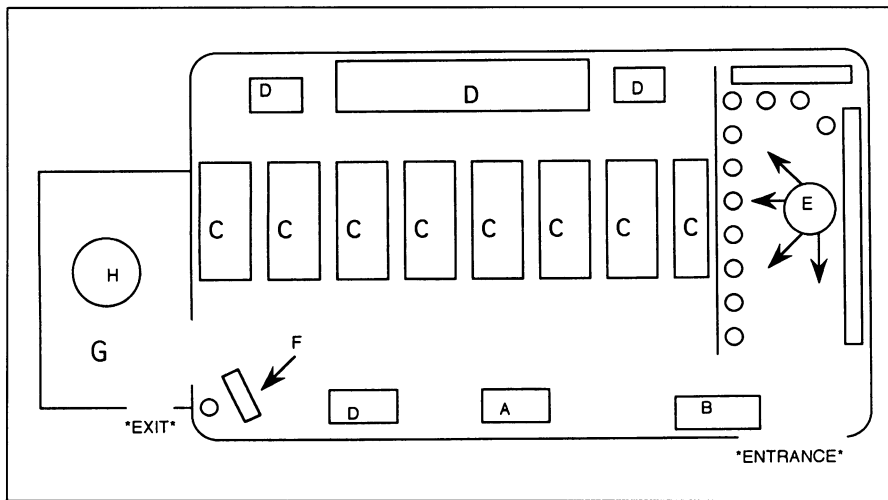


Fig 1.—Diagram of the medical tent showing the; (A) communications table, (B) registration table, (C) critical-area gurneys, (D) supply table, (E) noncritical area with chairs, (F) check-out table, (G) annex, (H) plastic-covered area.

These are all known risk factors for heat illness.⁷ However, a greater number of problems will be seen from the 15K race participants, because they tend to train for races of greater distance and feel as though they do not have to train specifically for short distance races. Additionally, the participants in the 15K race are often marathoners (or at least greater distance runners) and feel that they can sprint through the race course. This creates several additional problems. First, the runners do not drink as much fluid along the race course as they should. One reason for this is that often the racers are running at a faster pace than will allow them to drink. Additionally, the runners know that they will be finished in less than an hour, and often feel that they can wait to replenish their fluids. Second, as Noakes has noted, elevated rectal temperatures (and heat illness) are often the result of the metabolic intensity of the exercise and not dehydration alone.¹⁶ When these factors are combined with such environmental conditions as were present at the 1990 race (84°F and 90% relative humidity), many race participants are admitted to the medical tent.

The Medical Tent Set-up

The medical tent is staffed by over 30 volunteers, including the medical director (an emergency room/trauma

center staff physician), orthopaedic surgeons, podiatrists, and a cardiologist. The remainder of the staff is comprised of registered nurses trained in emergency medicine, athletic trainers, and other paramedical personnel. All the members of this medical team are selected on the basis of their training, qualifications, and special abilities, such as pediatric experience or bilingualism. All medical tent personnel are required to follow universal precautions, and are encouraged to have personal professional liability insurance.²¹

There are also nonmedical personnel present in the tent, whose duties are predominantly logistical/secretarial. Among these nonmedical personnel are our communications personnel, who, with the use of cellular telephones and two-way radios, are able to link the medical tent with the hospital and other areas of the race for which medical coverage is provided. The finish line, recovery area, and massage tent are areas that require medical supervision as well as communication with the medical tent.

Another crucial nonmedical member of our team is an attorney. An attorney is essential for a medical tent situation in today's society. Our attorney is primarily responsible for making sure that release forms are signed by each patient before receiving treatment.²¹ It is helpful to have

an attorney present because of the many potential legal ramifications involved in patient treatment, as patients with heat illness occasionally become incoherent or delirious. Uniformed police officers are also assigned to the tent for security and are available to assist the attorney if needed.

All members of the medical team, including the support staff (those who set up the tent and transport the supplies) are given and required to wear windbreakers and baseball caps with the hospital logo on them. The apparel distinguishes them and also aids in maintaining security within the tent.

The medical director and medical coordinator also dress accordingly, but wear different colored baseball caps to make them more identifiable. The medical tent is the center of the medical activities and houses most of the staff. The tent is located at the end of the finish line and near the recovery area. It is comprised of three main areas: Critical-Medical, Noncritical-Medical (podiatric, blisters, abrasions, etc), and Communications (Fig 1). The communications center is simply a table that is equipped with cellular telephones, two-way radios, and radios to communicate with Fire Rescue (Advanced Cardiac Life Support units) and City Police. Runners requiring noncritical medical care (such as blisters) are treated in an area away from the critical patients, and away from the entrance to the tent, to avoid congestion. This noncritical area is comprised of a table with supplies, and a group of chairs.

The rest of the tent is organized with one entrance and one exit. More critical patients (Fig 2) are handled at an area near the entrance, while other noncritical medical patients (Fig 3) are handled in different designated areas. This creates a flow through the tent, and runners can be discharged at the exit, which leads to the annex area.

At the entrance to the tent, there is a table set up where patients receive a patient information form and sign their consent to treatment form and liability waiver. This procedure is



Fig 2.—A runner suffering from severe dehydration being treated in the critical area of the medical tent.

also conducted bedside with critical patients. The patient is taken to a hospital gurney, where the staff awaits him/her. A group of four such beds are staffed by one physician, four nurses, two athletic trainers, and two secretaries. The medical director, also part of this bedside staff, circulates throughout the entire medical area. All medical areas are accessible to wheelchair participants.

Tent personnel follow strict protocols set by the medical coordinator, including record keeping. Upon discharge, the patients receive brief written instructions from a member of the medical team informing them what to do in the next few days.

Protocols

An aggressive protocol, appropriate for situations specific to intense

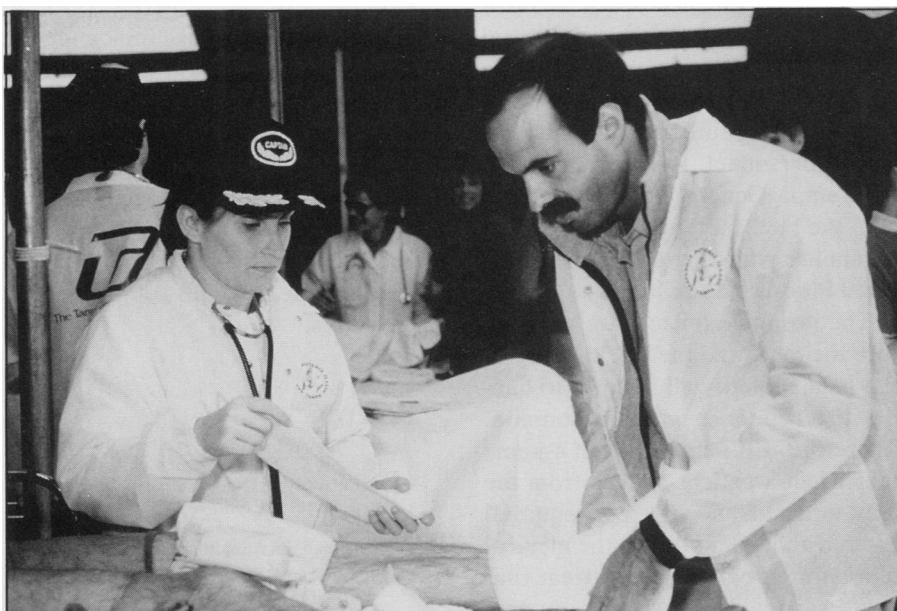


Fig 3.—A runner with suspected stress fracture of the foot is being casted in the noncritical area of the medical tent.

athletic activities, is used in our tent. Once admitted into the critical area of the medical tent, each subject is triaged, and classified,²⁰ and then has his/her vital signs taken (pulse, respirations, pupils, and temperature). Rectal temperatures are also taken in patients suspected to be hyperthermic/hypovolemic.^{4,23,24}

In patients who are predominantly hyperthermic/hypovolemic, intravenous (IV) fluid replacement 1000 ml bag of D5 1/4 NS is started immediately. Patients are given IV fluid replacement because of how quickly they respond to this type of therapy.^{1,8,13} After the IV is started, it can be maintained, or discontinued, or an additional IV can be started in the contralateral arm at any time, as warranted. If the patient does not begin to respond to the IV therapy, he/she may have an underlying medical problem, or another condition, which would require transport to a tertiary facility anyway. In such cases, it is prudent to maintain an open line during transport to a medical facility.

In addition to IV treatment, patients respond well to the administration of oral fluids, cold towels, mist bottles, fans, etc, and most are discharged after receiving only 1 liter of fluid intravenously. A record of fluid administration is kept by our support personnel. Our protocol states that the medical director must re-evaluate the patient after 2 liters are given IV.

While a patient is receiving an IV, he/she is also encouraged to consume fluids orally. The patient will also be cooled with ice packs, cold towels, fans, and mist bottles.⁸ It is necessary to cool the patient before large amounts of IV fluids are administered, in order to prevent pulmonary edema.⁴ The use of fans and mist bottles has been extremely beneficial. The application of fans, along with a fine mist of water on the patient's skin, produces evaporation and intense cooling.

Additional Areas of Coverage

The remainder of the medical staff is assigned to one of four other areas. These include: the race course, the finish line, survey areas, and an area

just outside of the medical tent which is used as a tent overflow and an additional recovery area. The overflow area is an annex to the medical tent and is staffed with athletic trainers. It is set up in a shaded area where heavy duty plastic covering can be spread on the ground. The purpose of this area is to create a place where runners suffering from mild heat illness/fatigue and not needing advanced care can be treated and monitored without crowding the medical tent. This area allows for easy communication and access with the medical tent should a runner's condition become more critical. It also allows for aggressive (and often messy) treatment. Runners are encouraged to consume oral fluids while sitting or lying on the plastic covering, which is periodically covered with ice, while they are being sprayed simultaneously with a hose. This area is also extremely useful as a step-down area from the medical tent. After runners have been treated in the tent, they are transferred to this recovery area, where they may consume additional oral fluids and can take their time recuperating while being observed.

Both the finish line and the survey areas are covered by sweep teams made up of physical therapists, athletic trainers, and Emergency Medical Technicians (EMTs) who work in pairs. The sweep teams are in constant contact with the medical tent via two-way radios. The survey areas include the "massage area," which is staffed with licensed massage therapists, and the "recovery area," where runners eat, drink, use restroom facilities, relax, and talk with their competitors. Providing coverage to these areas enables us to encourage runners who do not feel well to go to the medical tent to be screened, monitored, and treated before their condition worsens. It is often in these areas that runners begin to experience leg cramps and other early warning signs of heat illness. Despite being mild, these symptoms can quickly progress to more advanced stages of heat illness if no intervention is taken.

There are aid stations positioned along the race course in conjunction with water stations. Each of these aid stations is staffed with one EMT and one athletic trainer, along with the normal water station personnel. The medical personnel at these aid stations have only limited supplies but are in radio contact with the medical tent and the roaming ambulances. These aid stations respond to immediate emergencies, identify runners in trouble, triage, and refer treatment to the medical tent or the hospital. Our aid station personnel do not have the authority to disqualify a runner in trouble, as some other races allow.^{2,3} The authority to disqualify participants by aid station personnel may lead to confrontations or legal situations that might otherwise be avoided.

The roaming ambulances are two Fire Rescue vehicles with (Advanced Cardiac Life Support). There is also another such vehicle parked at the back of the medical tent. Private Basic Life Support units are used for all non-life-threatening transports, either from the race course to the hospital, to the medical tent, or from the medical tent to the hospital. Participants requiring transfer to a tertiary medical facility are taken to the Tampa General Hospital, the closest hospital along the race course that can provide the necessary medical support. Tampa General Hospital houses the area's Level One Trauma Center and has excellent emergency room (ER) facilities and highly skilled personnel. It is advantageous for Tampa General Hospital to also staff the medical tent, so the hospital is familiar with the tent's personnel, capabilities, and limitations.

The hospital is placed on alert before the race, and the ER knows that the medical tent will attempt to handle the runners' problems on-site. Therefore, ER personnel can assume that when a patient arrives from the tent, more advanced care is required. Even with its limitations, the medical tent is often better able to treat runners, especially those with hyperthermia/dehydration, faster and more aggressively, than could the ER.

There is no sense in flooding the ER with patients who can be successfully treated in the medical tent. In 1990, 65 runners were successfully treated and released from our tent within a 3-hour time span, while only 8 needed to be transported to the hospital. Patients routinely transported to the ER included those who required X rays, who complained of chest pain, had underlying medical conditions, or who failed to respond to the treatment administered in the tent. Severely hyperthermic runners who may require subsequent hepatic and renal evaluations are also routinely transported.

Since it is unlikely that a race will be canceled for environmental or other reasons, it is imperative that racers be informed and that medical providers be prepared. Crude methods for predicting how many race participants will be seen in the medical tent are available. One such regression chart which we have used with good success is based on the number of race participants and the environmental conditions, and was developed at the Boston Marathon.¹ We also invite the racers to attend educational clinics during the week leading up to the race. In these lectures, the runners are notified about possible environmental conditions and precautions that should be taken. Additionally, immediately prior to the race, colored flags indicating the current environmental conditions (wet bulb globe temperature) are displayed and announcements of the conditions are made at the starting line. Yet, despite taking these, and other precautions, runners may still become ill and will rely on the knowledge and preparedness of the medical providers.

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