

scout platoon, an antitank platoon from Company D equipped with TOW HMMWVs (high mobility multipurpose wheeled vehicles) participated in the exercise.

The topics covered during the FTX included mounted land navigation using compass and odometer to cover long distances, desert survival, hand to hand combat, and medical training. Over the course of three days, we navigated to pre-designated points, identical to a dismounted land navigation course. We learned that long-range navigation in a vehicle is more effective when certain techniques are used:

- An azimuth should be taken outside the vehicle first (with the engine off), then inside, and the difference noted. Because of the magnetic effects of metal and radio interference, compass azimuths can be off by as much as 20 degrees when taken in vehicles. Each compass and vehicle will vary in the azimuth differences.

- The vehicle odometer is effective in measuring distance, but 10 percent should be added to the map distance to make up for wheel slippage in soft sand.

- It is best to use a primary and an

alternate compass operator, with the primary operator sitting in the passenger side front seat and the alternate (if in a cargo HMMWV) in the back, midway between the driver and the commander.

Using these techniques, we were able to navigate legs as long as 15 miles with little error in azimuth or distance.

The FTX culminated in a final area reconnaissance mission. The objective was a resupply point in open low ground surrounded by several large hills. The plan was for three vehicles to move the three scout squads to dismount points, each about 1,000 meters from the objective. The squads would then move on foot to the objective, and the reconnaissance would be made from three different directions.

I placed a TOW HMMWV equipped with a thermal sight on high ground about 2,000 meters from the objective to act as an early warning for the squads against possible enemy counter-reconnaissance patrols. The thermal sights were effective, and the squads now could be given advance warning to pull back if necessary. The squads dismounted at pre-designated points and, when they had finished their mission, moved to pre-coordinated

exfiltration points. (They could also move to the exfiltration points in case of trouble.)

Once a squad was in a vehicle, its survivability increased dramatically, and it could quickly get out of danger. The TOW vehicle in overwatch could take out any enemy armor that threatened either a dismounted squad or a vehicle. The use of vehicles and dismount points combined both the mobility of vehicle reconnaissance and the stealth and close observation of dismounted patrolling.

My initial observations of dismounted reconnaissance in the desert had led me to believe that it was ineffective. But after trial and error, and a little improvisation, I came to believe that leaders can combine mounted and dismounted operations to conduct effective reconnaissance missions.

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# Tactical Night Climb

**LIEUTENANT COLONEL WILLIAM M. MENNING**  
**LIEUTENANT COLONEL STEPHEN R. SANDS**

When most people think of military mountaineering, they picture soldiers making dramatic bounding rappels and mules patiently carrying ammunition boxes. Military mountaineering, in fact, includes a broad spectrum of individual and unit skills.

The Army's only mountain battalion — the 3d Battalion, 172d Infantry, Vermont

Army National Guard — has the mission of conducting offensive and defensive operations in mountainous terrain under all climatic conditions. This means it must be able to destroy either dismounted or armored forces in any weather conditions, in any season, day or night, and in all types of operations.

Individual military mountaineering skills that support these missions include operating in extreme weather conditions and in steep terrain; establishing and negotiating fixed ropes, alpine ladders, suspension traverses, and rappels; moving over snow, ice, and glaciers; and conducting basic rock climbing.

Unit military mountaineering skills

focus on extensive independent combat by small units; maneuver to encircle an enemy force or to preempt an enemy force from seizing critical high ground; the effective employment of obstacles; the tactical employment of helicopters; and the inevitable difficulties of resupply and evacuation.

The battalion's rifle companies fight primarily in the rough terrain (slow-go or no-go) found in the mountains. To support the companies' mobility, therefore, a few soldiers in each platoon receive more extensive training in climbing so that they can install fixed ropes for their unit. This climbing, in the finest traditions of the infantry, is most likely to succeed during the hours of limited visibility. Accordingly, night climbing is an important skill other units should learn as well, particularly those like Rangers and Special Forces, who may be called on short notice to operate in high terrain.

Although Training Circular 90-6-1, Military Mountaineering, provides detailed information on conducting climbing operations in general, it does not discuss the peculiarities of night climbing, the most likely tactical requirement.

Several prerequisites are necessary to the success of a night climb:

- Each soldier taking part in a climb must have an exceptional navigational sense and a good background in climbing.

- A unit must have an exact route description — preferably including both a sketch of the route and an opportunity to observe the route during good visibility.

- Although it is theoretically possible to climb in absolute darkness, depending solely upon the sense of touch, as a practical matter, some light is necessary. Climbers can use moonlight, headlamps similar to those miners use (the tactical situation permitting), or night vision devices.

On the basis of the mountain battalion's need for training in night climbing, the National Guard Mountain Warfare School at Jericho, Vermont, has integrated a night climbing exercise into its summer course of instruction.

During this training, the students conduct a one-pitch climb using night vision goggles (NVGs).

Soldiers and leaders alike quickly learn that night training is not as easy as taking what they have learned during daylight hours, putting on goggles, and beginning to climb. Climbing is stressful physically and, for beginners, is stressful emotionally, too.

Leaders must make sure their soldiers are adequately trained in using their



NVGs before they attempt demanding tasks during periods of limited visibility. Even with the de-misting shields, the NVGs are effective only for a limited time before they become fogged to the point of being more a liability than an asset. The climbing must be planned so that there are periods in which to cool off and clear the fog.

Meticulous pre-combat checks must be performed on the goggles. A climber should not have to discover, while trying to negotiate a strenuous overhang with marginal handholds, that an NVG's battery is weak or that one of its friction knobs is loose.

In addition, because a climber must alternately look at handholds and footholds that are close to his face and then at more distant features on his

route, the students must focus their NVGs so that they can see both near and far. One eyepiece must be adjusted for near vision and the other for distant vision.

The Mountain Warfare School makes sure all students receive some training in the following: the human eye, types of vision, dark adaptation, night viewing techniques, visual illusions, environmental considerations, and the operation of the NVGs themselves to achieve proper focus.

After receiving training on their NVGs, and after performing during daylight hours all of the tasks they will then have to perform during hours of darkness, the students must go through several nighttime performance tests wearing their goggles before being allowed to climb. Among these are a knot test, a focus test for both near and far vision, and pre-operation checks on the equipment. During a night climb, the school uses three instructors for each student not only for safety reasons but also to aid the students throughout the exercise.

After completing a nighttime balance climb, the students must then complete a nighttime rappel with NVGs. Emphasis is placed on the following before these climbs are attempted:

- When moving together on easy terrain at night, roped-up climbers must be closer together than during daylight, and when more than one team is climbing, the interval between teams must be shorter. The climbers must be more deliberate and more careful to avoid dislodging stones.

- A climber who strays from the climbing route during daylight may be able to work his way back onto the correct route. At night, though, he will usually have to climb all the way back down to get back on course; otherwise, he is likely to get even farther off.

- The members of a climbing team usually have to stop moving together and start their actual climbing sooner at night than during daylight conditions, and they have to climb in shorter pitches. The use of more frequent belay positions will cause a slower rate of movement, but this will ensure more

accurate route finding and better communications.

• When climbers are conducting a rescue, it may be possible to illuminate the climbing area with a searchlight located some distance from the area. In this case, a ground observer may help the climbers by communicating route corrections to them. Radio communication can certainly facilitate this process. In a tactical climb, the belayer and the climber may relay simple signals

through prearranged tugs on the rope, although a radio may be necessary to ensure there are communications between the climbing team and the rest of the unit.

Conducting a tactical night climb is one of the most demanding military mountaineering skills. Its success depends on skilled climbers who properly prepare their route and their equipment, and who execute the climb with close attention to each move.

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**Lieutenant Colonel Stephen R. Sands** formerly commanded the 3d Battalion, 172d Infantry and is now commandant of the Army National Guard Mountain Warfare School. He was commissioned through the Vermont Military Academy (Officer Candidate School) in 1971.

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# Profile Physical Training

**CAPTAIN GEOFFREY N. BLAKE**

Physical training in an infantry unit is a daily routine that normally emphasizes aerobic conditioning (distance running, interval training, aerobics) and anaerobic exercises (pushups, situps, weight lifting, and the like). In other words, these programs are usually planned specifically for soldiers who are physically fit. Unfortunately, there is no program for those soldiers who have limiting medical profiles and cannot participate in either aerobic or anaerobic exercises.

Whether a soldier has a temporary or a permanent limiting medical profile, his unit is responsible for seeing that he maintains a level of physical fitness that will enable him to perform his full duties, or those duties he can perform, if his unit should be deployed. More important, the prescribed physical fitness program should assist in his rehabilitation. This is a challenge for the master fitness trainer and for the company commander.

A physical training program of this kind should be designed to produce and sustain an acceptable level of fitness for a soldier who has a limiting medical profile. The specific training objectives

should focus on the development of alternative events that will exercise the parts of the body that are not injured and sustain their strength and endurance.

The master fitness trainer, along with the unit physician's assistant, should



consider each soldier in terms of his profile. Once they have reviewed and verified a soldier's medical profile, they must design an individual workout program on the basis of the soldier's

current level of fitness and the alternative events that can be conducted for the particular limiting medical profile in accordance with Field Manual 21-20, Chapter 6, Figure 11-6. For example, alternative aerobic events that work well are swimming and stationary bicycling. Anaerobic events should be chosen carefully and monitored closely. The medical officer who grants a limiting medical profile should be precise as to what anaerobic events a soldier can and cannot do.

A soldier who is coming off a limiting profile still needs time to work on his body parts that have not been exercised for a while. He should be worked back into the regular physical training routine as quickly as possible, but he should also be given an opportunity to recover completely from his injury during special physical training periods.

For such a program to work, physical fitness training must be conducted in accordance with the field manual. Leaders must ensure that their subordinate leaders give all soldiers positive counseling to establish their fitness goals, performance objectives, and techniques for sustaining or improving