

"Type T" personalities push themselves to the brink of death for the neuronal rush or to relieve the ennui of modern life

Extreme Sports,
by Glenn Zorpette, staff writer
Sensation
Seeking
and the
Brain

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Deep underwater off Grand Cayman Island, I hovered over an ethereal, sandy tableau that sloped steeply away into an inky void. I had dipped into the upper edge of a twilight world seen by relatively few scuba divers, where the abundant hard corals of shallower water begin giving way to a sparser assortment in which large soft corals predominate. Off to my left, a big eagle ray flapped slowly and serenely, its white-spotted black body undulating against the dark-blue background of the abyss.

I glanced at my depth gauge, saw that it read 200 feet (61 meters) and grinned. Breathing a mixture of helium, oxygen and nitrogen from two of the four large tanks strapped to my body, I was beyond the depths that could be visited safely with ordinary scuba equipment and techniques. I was oddly, ineffably elated.

Over the previous eight days I had made half a dozen dives to depths between 52 and 58 meters, to satisfy the requirements of two courses in technical diving. During all those dives I breathed ordinary air, and the high nitrogen content sometimes brought on a strange mix of drunkenness tinged with a vague unease, as though different parts of my brain were in a struggle over whether enjoyment or terror should prevail. This nitrogen narcosis was most intense on the deepest dives. As a reward for enduring them, my instructor, Kirk Krack, suggested a final dive with the much less narcotic helium mixture, so that I could experience the joy of being deep underwater with a clear head.

As it happened, the day of the dive was my 37th birthday. But down in that sunken realm, I felt very much like an adolescent boy getting away with something naughty. Looking around, I became an awestruck visitor to a beautiful, forbidden zone, to which only knowledge, experience and technology could grant access. I achieved a kind of focus that only the desire to survive can instill. The cares, petty worries and job stresses of my terrestrial life were, at least for the moment, in a different world.

I'm not alone. Fueled in part by television, a few glossy magazines and some best-selling nonfiction books, extreme sports have managed to seize and hang on to at least a sliver of the popular attention span. The various coteries of practitioners are overwhelmingly male, as is the larger group that follows the exploits of the top stars.

Psychologists view an affinity for extreme sports as a form of sensation seeking, a category whose other entries are mostly disturbing—alcoholism, drug addiction, compulsive gambling, reckless driving, and some kinds of violent criminality and suicide. Indeed, as recently as the 1950s the profession saw sport parachutists, mountain climbers and other adrenaline junkies as indulging self-destructive urges and unconscious death wishes.

Because their passions do not disrupt society, extreme sports enthusiasts have not had nearly the kind of scientific scrutiny that has been focused on other sensation seekers. Nevertheless, in recent years a few psychologists have come up with more sophisticated explanations for the behavior, ones that are now largely free of references to pathology.

Temple University psychologist Frank Farley, for instance, identifies people who crave novelty and thrills as "Type Ts." Farley also labels them as either intellectual (examples in-

clude mental iconoclasts such as Albert Einstein and Pablo Picasso) or—in the case of extreme sports devotees—physical. Farley further classifies extreme sports people as "Type T positive physical" to separate them from, say, barroom brawlers, whom he refers to as "Type T negative physical."

Farley and other psychologists have also distinguished a variety of motivations that prompt people to take up this kind of activity. There is the old saw about feeling most alive when closest to death; melodramatic though that may sound, many participants do speak of heightened awareness and stimulation accompanying a dangerous excursion. More generally, most want to know the limits of their mettle and



BRET GILLIAM

TECHNICAL DIVING

experience deep satisfaction after pushing themselves to a new milestone.

Another factor for some is a feeling of restlessness or even rebellion in the First World societies whose endless suburbs, comfortable routines, ubiquitous television and often oppressive liability laws seem to have created a way of life that is safe but deadening and culturally homogeneous and bland.

A minority of people, mainly otherwise mild-mannered men, appear to pursue extreme sports mainly to impress their friends or co-workers. And a smaller group of "counterphobics" engage in risky pastimes out of an almost obsessive agenda to confront deeply rooted fears. But other than these categories of people, participants report experiences pleasurable enough to compel them to engage in the activity over and over again. This fact suggests an underlying neurochem-

ical basis for the behavior, and indeed neuroscientists have begun identifying one.

Their studies have so far emphasized three neurotransmitters, small molecules that carry signals from cell to cell in the brain. Signaling occurs when a change in electrical potential causes one cell to release a neurotransmitter, which quickly diffuses to a receptor on an adjacent cell. The receptor is a protein on the surface of a cell that binds specifically to the neurotransmitter. Each neurotransmitter can combine with



GALEN ROWELL

FREE SOLO CLIMBING

different types of receptors, which react characteristically when they bind to the neurotransmitter.

The three neurotransmitters implicated in sensation seeking are dopamine, which is associated with intensely pleasurable feelings; serotonin, linked to many types of extreme behavior; and norepinephrine, a key player in the “fight or flight” response. The levels of all three in the brain are regulated by an enzyme called monoamine oxidase (MAO). Dennis L. Murphy, a neuroscientist at the National Institute of Mental Health, found in 1980 that sensation seekers generally have low levels of MAO. Because MAO helps to break down and inactivate levels of dopamine, serotonin and norepinephrine, low MAO means higher levels of those neurotransmitters. And according to one speculative theory, people with high resting rates of the neurotransmitters need comparatively more stimulation to become aroused.

More recent theories have focused on the levels of the brain’s receptors, rather than of the neurotransmitters. According to Kenneth Blum, a psychopharmacologist, the levels of two of the five receptors for dopamine are key “controlling factors” in sensation seeking. He says that people who have smaller numbers of these two receptors, designated D_2 and D_4 , must spend more time stimulating the receptors with thrill-released dopamine to get a reasonable ration of excitement in their lives. Serotonin is important, too, he adds, because it stimulates the release of neurotransmitters called endorphins, which inhibit others called GABA, which finally allows the release of more dopamine.

Men are far more likely to have this neural need for excitement; the reason is a result of hundreds of thousands of years of evolution [see “Darwinism and the Roots of Machismo,” on page 8]. Some psychologists contend that sensation

seekers were crucial to primitive societies, because they could be counted on to reconnoiter areas no one else would visit, taste things that no one else would eat and pursue animals others would just as soon let alone.

Much of the thinking on the psychobiology of extreme sports is speculative, because most studies of the brain chemistry of humans are done indirectly. Moreover, there isn’t even much agreement on what constitutes an extreme sport. But a thumbnail review such as the one offered below turns up a few consistencies. One is that most extreme sports evolved from existing pastimes as top practitioners pushed beyond the confines of the sport, oftentimes by borrowing equipment or methods from related disciplines.

These sketches might therefore be seen as snapshots of a work in progress. Its creators may think they are merely satisfying their own urges, but science suggests they are using the expanded technological opportunities of the late 20th century to respond to ancient, evolutionary motives. In time, these people—male and female—may give us more insights into the brain, evolution and why men are the way they are.

Technical diving

WHAT IT IS: A form of scuba diving that exploits technologies and techniques from commercial, cave and military diving to permit excursions to depths below 39 meters.
NUMBER OF REGULAR U.S. PARTICIPANTS: Roughly 10,000.

SPECIFIC DANGERS OF THE ACTIVITY: Decompression illness; oxygen toxicity; drowning after becoming lost in an enclosed environment, such as a cave or wreck.

FATALITY RATE: In 1998, 10 or 11 U.S. divers perished during technical dives, according to Joel Dovenbarger, vice president of medical services for Divers Alert Network in Durham, N.C.

THE “MOUNT EVEREST” OF THE ACTIVITY: The sunken ocean liner *Andrea Doria*, which sits in 73 meters of water off Nantucket Island, Mass. Even veteran divers have been overcome by the combination of strong currents, poor visibility, cold water and the wreck’s labyrinthine interior, which presents many opportunities to become disoriented. (In the summer of 1998 three divers died on the wreck.)

LEGENDARY FIGURE, DECEASED: Sheck Exley, a veteran of 4,000 cave dives, died in 1994 during a 298-meter descent into a vertical cave in east-central Mexico.

LEGENDARY FIGURE, ALIVE: Tom Mount, a cave-diving pioneer and chairman of the International Association of Nitrox and Technical Divers. Mount has logged more than 10,000 dives, including an excursion to 145 meters off Andros Island in the Bahamas.

Free solo climbing

WHAT IT IS: Rock climbing without safety ropes or any other protective hardware.

NUMBER OF REGULAR U.S. PARTICIPANTS: Fewer than 2,000, estimates Jed Williamson, president of Sterling College and editor of *Accidents in North American Mountaineering*, an annual report published by the American Alpine Club.

SPECIFIC DANGERS OF THE ACTIVITY: Falling.

FATALITY RATE: About one every three or four years, according to Williamson.

THE “MOUNT EVEREST” OF THE ACTIVITY: Yosemite National Park’s Half Dome, a 600-meter climb.

LEGENDARY FIGURE, DECEASED: Dan Osman, who died in 1998 while attempting a roped free fall from Yosemite's Leaning Tower, a 365-meter-high granite wall.

LEGENDARY FIGURE, ALIVE: Peter Croft, whose 450-meter ascent of the Astroman route on Washington Column in Yosemite still has not been repeated.

Extreme skiing

WHAT IT IS: A combination of mountaineering and skiing, it involves descents of high, rugged, very steep slopes reachable only by climbing.

NUMBER OF REGULAR U.S. PARTICIPANTS: 15, according to Dean Cummings, winner of the 1995 World Extreme Skiing Championship. A related activity, free skiing, includes other forms of aggressive skiing and has roughly 5,000 devotees in the U.S., according to Lhotse C. Merriam, vice president of the International Free Skiers Association.

SPECIFIC DANGERS OF THE ACTIVITY: Being buried by an avalanche; falling while climbing or skiing.

FATALITY RATE: Between 1993 and 1997, 25 "backcountry" skiers were killed in the U.S., according to Jim Frankenfield, director of the Cyberspace Snow and Avalanche Center; almost all could probably be considered free skiers.

THE "MOUNT EVEREST" OF THE ACTIVITY: Mount McKinley's Wickersham Wall, with its 4,000-vertical-meter drop and average pitch in excess of 40 degrees.

LEGENDARY FIGURE, DECEASED: Trevor Petersen, who died in 1996 in an avalanche in Chamonix, France.

LEGENDARY FIGURE, ALIVE: Doug Coombs, winner of the World Extreme Skiing Championship in 1991 and 1993.

BASE jumping

WHAT IT IS: Parachuting off tall buildings, bridges, sheer cliffs and the like, often at night. (BASE stands for "buildings, antennas, spans and earth.")

NUMBER OF REGULAR U.S. PARTICIPANTS: Fewer than 1,000.

SPECIFIC DANGERS OF THE ACTIVITY: "Overdelaying" opening of the chute.



BASE JUMPING

FATALITY RATE: Approximately 45 people have died since 1980, according to Frank Gambalio, an avid jumper.

THE "MOUNT EVEREST" OF THE ACTIVITY: Many newcomers strive to earn their "BASE award" by making at



DAVID MADISON

DOWNHILL MOUNTAIN BIKING

least one jump off an object in each of the four categories.

LEGENDARY FIGURE, DECEASED: Bob Neely, who died in 1998 jumping off a 381-meter tower in Lee County, Florida.

LEGENDARY FIGURE, ALIVE: Dennis McGlynn, who has made close to 800 jumps, including leaps from cable cars, lighthouses and smokestacks.

Downhill mountain biking

WHAT IT IS: Time-trial race, generally down a ski slope in summer. Average time is about five minutes, during which competitors can hit speeds as high as 105 kilometers per hour (65 miles per hour).

NUMBER OF REGULAR U.S. PARTICIPANTS: A total of 4,666 people competed in the six national championship races held last year by the National Off-Road Bicycle Association (4,088 of these competitors were men).

SPECIFIC DANGERS OF THE ACTIVITY: Losing control of the bike; being thrown from it.

FATALITY RATE: Fewer than one a year, according to Patrice Quintero, communications director for NORBA.

THE "MOUNT EVEREST" OF THE ACTIVITY: The Kamikaze on Mammoth Mountain in Mammoth Lakes, Calif.

LEGENDARY FIGURE, DECEASED: Jake Watson, who was thrown from his bike during a practice run near Bakersfield, Calif., on March 12 of this year and died after hitting a boulder.

LEGENDARY FIGURE, ALIVE: Missy Giove. She was World Cup champion in 1996 and 1997, world champion in 1994 and the top finisher in nine U.S. races. (The premier male rider is John Tomac, who has won more races than any other competitor.)

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