



THE INSTITUTE FOR JEDI REALIST STUDIES

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Situational Awareness 101

A course developed by the Jedi Academy, an affiliate training program of
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Introduction

“There is no ignorance; there is knowledge”

The purpose of this course booklet is to provide the Jedi with the most basic of survival skills and to make them aware of likely situations that they will likely face. Modern society is a wonderful thing, and if you are reading this, you are in a situation in which daily survival is not a concern. Our needs are met for the most part and our survival instincts are put on the back burner. Survival skills were once a part of everyday life, and in some parts of the world, still are. Every person has the proper tool to survive. It is absolutely essential to not lose this and never leave home without it. The most important tool we possess is our mind.

A Jedi must realize that nature is not against us, neither is it with us. It is indifferent to our survival and allows us to survive and thrive if we understand how. If you do find yourself in a survival situation, you are the agent of your own demise.

For the survivalist, the greatest enemy is not the wild; it is ignorance. Ignorance literally kills. A Jedi cannot afford to be ignorant so you must study and cultivate the skills in this primer, diligently. Your greatest asset to bring into the field is your mind and reason.

Discipline of mind and body are paramount to the training of a Jedi and this course will give you skills to aid you in maintaining this during high stress situations.

Lecture 1 – Survival Situations: How do they start?

How do survival situations happen? How do they start? Generally, the answer is fairly simple. As Murphy's Law says, things that can go wrong will go wrong. A life threatening situation is often the end result of several insignificant events. Taken individually, they would have little effect, but when compounded they can kill. Therefore, as has been said in other classes during your Jedi training, pay attention, observe; listen to your intuition and to the Force. Learn to recognize danger signs early so you can take corrective action. Proper preparation can save your life, and that of those who may be with you.

Always prepare yourself mentally for the challenges you may face. The sort of things that would put you in a survival situation happen quickly so equipment preparation is not always an option. You are traveling and break down on a deserted stretch of road. You are out for a day hike and you get lost. There could a disaster that plunges you into the stone age. No matter what the situation is, you are faced with challenges that could all be killers. If you are prepared mentally, you are already using your most powerful tool.

Killing you softly: Enemies to your survival

When you are in a survival situation, there are no guarantees, but proper planning, combined with quality survival training and subsequent practice will prevent many of the below from occurring in the first place.

- Anxiety and fear (these two, when mixed with the power of the imagination, are voracious killers)
- Pain and injury
- Illness
- Cold and heat
- Thirst and hunger
- Wetness
- Fatigue and sleep deprivation
- Boredom
- Loneliness and isolation
- Complacency and the desire for comfort
- Stubbornness (refusal to recognize and stop actions jeopardizing survival)
- Promises (unrealistic guarantees made to self or others leading to stupid behavior)
- "Get-home-itis" (setting and trying to maintain unrealistic time lines)

Before a Jedi can tackle a hostile landscape, it is necessary for a Jedi to conquer the internal mental landscape. Lets find out what obstacles lay before you.

Question:

Do you recognize any of the above 'enemies' from previous occurrences in your life? Imagine a time you have been alone or that you felt times were desperate. Every situation is different, so what bothered you once, may not be an issue the next time around. Perform a little self-assessment and state which if of the above, if any, you think you may be most prone to. Would any of these simply make things unbearable?

Lecture 2 – Survival Psychology and the Importance of Proper Prior Training

So, the poodoo has hit the fan and you are alone or everyone with you is either too stunned or panicked to do anything. What next?

Step one is to take a deep breath. Chill out. Panicked actions will probably do more harm than good anyway.

Survival is 90 percent psychology. When the chips are down, it doesn't matter how many books on survival you've read. If you're a mental and emotional wreck during your survival episode, you're toast. Let's get your mind in order first!

The benefits of a positive attitude are many, and they range from improving your health and aiding disease resistance to putting more money in your bank account. Science has proven that attitude, self-esteem, and humor influence changes in heart rate, hormones, and body chemistry. All living cells respond instantaneously to every thought and feeling we have.

Training in the physical skills necessary to survive is rather easy when compared to the psychological aspect of survival. People who die in survival situations experience psychological death long before their physical bodies give it up. Fear, anxiety, embarrassment, anger, frustration, guilt, depression, confusion, boredom, and loneliness are common reactions to emergency stress. All will attempt to strip you of hope, coercing you into giving up the fight for life. As we will soon see, in life-threatening situations, the line between a survivor's physiological and psychological responses becomes rather transparent.

Prior training for the unexpected emergency is a wise move. It has been proven that repeatedly practicing something makes a deeper and deeper groove within the limbic system, a system which commands certain behaviors necessary for the survival of all mammals. Physiologically, practice makes perfect, or pretty close.

Put up, or shut up

All people thrust into a survival situation go through the process of identifying the particular threat or threats and then formulating a plan to deal with them. The amount of time you have to go through the steps below is dependent upon what's happening. Your reaction to the scenario might happen in a few seconds or days, and will continuously fluctuate as more and more information about your predicament is revealed.

Reaction to the scenario:

1. Recognition phase.
2. Speed (body functions react: blood pressure increases, heart rate quickens, etc).
3. Adaptation or nonadaptation (fainting).
4. Steps taken for survival.

When faced with a stressor our body is put into a “fight or flight” mode. There is actually a third choice; that is to freeze. The fight and flight response are both useful reactions because they can both be harnessed into action. The third response, to freeze comes from overload and is not useful at all.

The increased proficiency developed through practice cuts down on the reaction time needed to perform a skill, thus using a lot less energy. This last point is critical since you will not always have just eaten a good breakfast after a long sleep when the emergency begins. You will usually be ragged around the edges and unraveling fast with few supplies to help ward off death.

Scientific studies regarding learning and memory point directly to the neurons of the brain. An adult human brain contains approximately 12 to 15 billion nerve cells, of which we only use about 4 percent of this potential. Memory, the act of recall and recognition, is based upon two variables. One involves how many senses (sight, sound, smell, touch, and taste) are involved to stimulate the remembering. The more senses that are brought into play, the greater the memory. The other variable assists in forming the pattern for the memory itself. Memory involves repeated firings between dendrites. When a new skill is acquired, the fresh information has a hard time jumping the synaptic gap between dendrites. The first time a new skill is learned and a connection between dendrites made, the brain releases a slippery, fatty protein called myelin. Initially the new information has a rough time crossing over, but eventually, with enough practice and repetition, the connection is fully lubricated and can operate quickly and with minimal effort. The more survival skills an individual has that have been practiced physically and otherwise, the better odds they have for those skills coming to the forefront during a stressful emergency.'

It is really good for your confidence, and hence peace of mind, to be able to do a skill well. This calming influence allows a person to get into action quickly during crisis situations, minimizing the potential for 'freezing'. Becoming immobilized by fear and panic usually results from perceiving a threat as being beyond the ability of the perceiver to deal with.

Situations are stressful to people because they see them as so. All perceptions can be altered with proper training and subsequent practice. Practice reduces response time, which in itself might save your life. The more mock situations you put yourself through, the better adapted you'll be to real-time stress.

The use of imagery can also be very helpful. Playing out what-if survival scenarios, and the correct reactions to them is very valuable. Visualizing a number of correct reactions provides options while further boosting confidence.

The Ten (Eleven) Essentials

The following list, usually referred to as 'The Ten Essentials' highlights the skills and know-how any trained outdoors person should possess. Apart from considering hot temperatures and sleep (the eleventh point) it is a pretty effective list.

1. A positive attitude
2. Fuel to burn: food.
3. Adequate hydration: water
4. Ability to stay warm and dry: clothing
5. Ability to get dry: shelter
6. Ability to get warm: fire
7. Know where you are going: navigation
8. Know the environment: weather
9. Ability to attract help: signaling for rescue
10. Ability to provide help: first aid kit
11. Ability to obtain physiological and psychological repair: adequate sleep

Assignment:

For this assignment choose a likely scenario that you may be faced with. You could be out hiking and lose your way, does your area suffer from natural disaster threats, do you hunt? Apply the challenges you highlighted from the assessment of lesson one and imagine yourself living them. Take some time and imagine what it would be like to experience that situation. Try to feel what you'd feel in that situation. Really put yourself there. Then work through the situation, making the appropriate choices to ensure your survival for a few days. What would you do? (This is a good opportunity to practice your meditation skills.)

Lecture 3 – Why Fear Sucks

While the body's initial response to fear has saved countless lives since time began, the long-term stress of fear sucks, as its damage to the human body has been clinically proven for decades.

When the brain perceives a threat to survival, the sympathetic nervous system (SNS) leaps into action, immediately releasing stress hormones—called adrenaline or epinephrine—into the circulatory system. This reflex action to stress happens automatically and is virtually uncontrollable. The chemical cocktail is the basis for the body's fight-or-flight mechanism and is characterised by several factors, including an increased heart rate (from 70 beats per minute to more than 200 in less than one second), increased cardiac output, higher blood pressure, and increased blood sugar levels. Blood is diverted from organs to the larger muscle groups, resulting in increased strength and enhanced gross motor skills while the breathing rate speeds up, providing greater amounts of oxygen to the muscle groups. At the same time, sweating increases to cool the muscles. Minor blood vessels in the arms and legs constrict to reduce bleeding from potential injuries, digestion ceases, and muscle tremors take over. The pupils dilate, reducing depth perception, while auxiliary muscle performance takes a nosedive, creating blurred vision. And, as if this isn't enough, the field of vision narrows, producing tunnel vision. To a greater or lesser degree, time also appears to pass more slowly, called the *tache-psyche* effect, allowing for increased reaction time to the perceived emergency.

Researchers have spent years figuring out why stress deteriorates performance in combat soldiers, ultimately linking an elevated heart rate to the poor execution of fine and complex motor skills. They found that a heart rate of 115 beats per minute or faster severely compromised fine motor skills. When the heart rate exceeded 145 per minute, complex motor skills began to suffer. In contrast, in times of high stress, gross motor skills were relatively unaffected! Again, all the more reason to keep your outdoor skills and the gear you carry simple in design.

Once this process begins, the SNS keeps control, controlling all voluntary and involuntary systems until the survival threat has passed, personal performance has petered out, or the parasympathetic nervous system (PNS) regains control. The more stressed you are, the more your SNS will take over your world.

Five Factors Dictating the Severity of an SNS Total Body Takeover

1. The severity of the perceived threat.
2. The time available to respond.
3. Personal confidence in skills and training.
4. The level of experience in dealing with the threat.
5. The amount of physical fatigue combined with the present anxiety.

When your body is subjected to stress, the natural balance between the two nervous systems is upset and the flight-or-flight mechanism takes over. As the body's energy is redirected to ensure its survival, its caretaker is thrown into battle as well, and nonessential PNS activities suddenly shut down. As a result of the PNS shutdown, thousands of WWII veterans admitted to urinating or defecating in their pants during combat.

It's a lot of work for the body to maintain such an intense state of alert. At the end of the crisis, the PNS demands attention and the physiological payback commences in the form of feeling amazingly

whipped on all levels. Unfortunately, a survival situation is a continuous roller-coaster of ups and downs, thus the hapless survivor is a slave to intense adrenaline spikes and PNS paybacks. Bit by bit, the body's once natural and useful response to danger starts to chemically wear down the survivor, pitching the person into a state of immense physical, emotional, and mental exhaustion. In summary, human beings have three primary survival systems: visual, cognitive processing, and motor-skill performance. Under stress, all three will fail.

The physiological responses to stress can be broken down into four crucial factors for the survivor:

1. Fear inhibits your metabolic process. Your body produces heat by digesting the calories in the foods you eat. If this is impaired, your body has a harder time regulating core temperature in cold weather. Thus, the onset of hypothermia can manifest much more rapidly. By metabolising food, your body creates energy that can be used to create shelter, signal for rescue, or make a fire.
2. Fear impairs your circulation. Basic first-aid training stresses the importance of the ABCs (airway, breathing, and circulation). Your circulatory system is how your body feeds itself, delivers oxygen to cells, eliminates waste products, and keeps itself warm and cool. In cold weather, blood flow is the primary means by which your body maintains its peripheral temperature, which is automatically restricted by the SNS's response to stress! Compromising circulation seriously reduces your odds for survival in both hot and cold climates. In addition, the chances are good that your circulatory system will already be impaired due to dehydration.
3. Fear impairs your good judgment. Good judgment is your number one tool for preventing or dealing with a survival predicament in the first place. Poor judgment calls, without a doubt, are the hall mark of every single outdoor fatality. Occurrences such as auditory exclusion, tunnel vision, irrational behaviour, freezing in place, and the inability to think clearly have all been observed as by-products of survival stress. Do all you can to calm yourself, redirecting your energies away from the fear factors.
4. Fear impairs your fine and complex motor skills. Although these phenomena have been observed and documented for hundreds of years, and formally studied since the late 1800s, there is very little understanding by researchers of just why stress reduces performance.

There are three generic classifications of motor movements or skills involving coordinated action from your body. They are gross, fine, and complex motor skills. Gross motor movements signify action involving the larger muscle groups, fine motor skills involve some type of "hand-eye" coordination, such as threading a needle. Complex motor skills comprise a series of motor movements. The problems lies in the fact that fine and complex motor skills deteriorate rapidly under stress. Highly detailed activities, such as striking a match become very difficult to perform under psychological pressure, rendering all but the simplest of tasks out of the question.

In contrast, gross motor skills are affected, but little, under stressful conditions. So survival gear that that is simple in design (operated by gross motor movements) are much easier to use under stress than striking a match.

Note that two of the four impairments involve basic body temperature regulation. Exposure is the biggest killer in the outdoors. It's a cliché that fear kills, and now you know why.

Knowledge and practice is power. The more training you have dealing with situations that could jeopardize your life, the more efficiently you'll act if placed in that situation.

Physical and Psychological Fear Factors

While the reactions to fear and anxiety are largely the same, anxiety is usually not as intense as fear and persists for a longer length of time, leading up to a specific threat or fear.

Physical symptoms of fear:

- Increased heart rate
- Shortness of breath
- Tightness in chest and throat
- Dry mouth, higher pitched voice, stammering
- Increased muscular tension, trembling, and weakness
- Sweaty palms, hands, soles of the feet and armpits
- Dilated pupils
- "Butterflies in the stomach" (hollowness), faintness and nausea
- Oversensitivity to noise

Psychological symptoms of fear:

- Shock, numbness, denial, helplessness
- Confusion, forgetfulness, and the inability to concentrate
- Irritability, hostility or passivity, stupor
- Talkativeness leading to speechlessness
- Restlessness
- Panic, flight
- Feelings of unreality, social withdrawal, and depersonalisation
- Sadness, crying, sighing
- Auditory and visual hallucinations
- Disrupted sleep and appetite

Helpful Hints for Dealing with and controlling fear

Reading other people's true survival stories is all the proof you'll need that when the going gets tough the tough get going. Throughout history, people have dealt with and surmounted virtually every possible fear imagined. For optimal results in the field or the city, work at cultivating the following tips until the behavior becomes a natural, automatic reaction.

Controlling Fear in Yourself

1. Be prepared. Accept the fact that a survival situation could, in fact, happen to you, and plan accordingly. Aside from physical practice, being prepared involves advanced planning, mental and physical conditioning, discipline, and an intimate understanding of the emergency gear you propose to carry.
2. Train! Accepting that a deadly scenario could happen is not enough. Learn all that you can about survival and what your body can endure, and recognize and understand what your reactions to fear will be. Practicing skills builds confidence and strengthens a "can-do" attitude regarding your ability to survive.
3. Don't run from fear. When you're afraid, take a step back from the fear and just notice it. Ignore the urge to analyze, judge, criticize, evaluate, or try to figure it out. Stepping back provides emotional space and reduces much of the charge around the fear energy.
4. Stay aware of your surroundings. Learn to recognize the early warning signs of dangerous situations. Gain knowledge to reduce the perceived threat of the unknown.
5. Stay constructively busy. Conserving your energy as a survivor is key, yet do all that you can to make your situation more comfortable, reducing difficulties that encourage fear. Staying busy keeps

the mind off fearful circumstances and gives you a sense that you're in control of your destiny.

6. Keep your imagination in check. Stick to the known facts by separating the real from the imagined.
7. Adapt to your surroundings. Prepare yourself to think and act like an animal without judgment over your actions. In a sense, if you can't beat fear, join it. Formulate plans B, C and D before they're needed.
8. Discipline yourself to think positively. Even when talking to yourself, strive to use positive, "I AM" statements such as, "I AM going to make it out of here" and "I AM going to be rescued."
9. Adopt a positive survival attitude. Keep things in perspective and focus your attention firmly on the goal of getting rescued.
10. Use proper breathing exercises to lower the heart rate and reduce stress.
11. Ask for help. Whether you're currently walking upon a spiritual path or not, it's never too late to start. Ask for help from whatever matches your belief system: deities, spirits, the Force, etc.
12. Use humour. Kind humour transforms crummy attitudes.

Controlling Fear in Others

1. Be a positive example. Maintain a calm presence and keep control, even if you feel out of control; inspire courage, hope, and the willingness to keep trying.
2. Maintain discipline. Work toward finding and maintaining order and harmony within the group in a gentle, yet firm manner. Search out people's strengths and assign them focused tasks to assist the group. Giving people things to do lessens feelings of helplessness, and takes their mind away from the current situation, while giving them a sense of control regarding their destiny.
3. Exercise positive leadership. Be firm, determined, confident, compassionate, decisive, honest, and humorous.
4. Stay alert for early signs of fear in others, and, when recognized, deal with them immediately. Knowing how the people in your group react to and deal with stress is priceless. Be intuitive to the needs of others and offer whatever support you can. Remember that one rotten apple can spoil the bunch.
5. Cultivate teamwork and mutual support early on. Perhaps no other experience on Earth will require such a tightly knit and supportive group for success than the survival situation. The group that initiates and maintains a positive mental and emotional outlook, putting all of its efforts and concerns into the welfare of the entire group, is an extremely powerful force for staying alive.

Assignment:

In order to learn to control fear we have to experience it. Choose a fear that you can safely experience. Are you afraid of the dark? Snakes? Heights? Find a way to experience that situation in a controlled environment. For instance, if you're afraid of snakes (or other animals) go to a zoo where you can be close to an animal without being in any danger. While doing this, note how you respond to the fear. Pay close attention to your breathing and muscle tension. What are you thinking about? Once you have noted these reactions begin to reign them in. Focus on your breathing so it is even and more comfortable. Relax your tense muscles. If you feel frozen make yourself move. Reign in those thoughts and focus on thoughts that encourage your positive response. "I am safe here."

If you're unsure what to try, contact a faculty member for help. Remember, safety is paramount. We don't want you to be in any actual danger, just to trick your mind into thinking you may be. Also, don't push this too hard, the goal is to overcome the fear not overwhelm yourself. Just like beginning a physical training program, if you push too hard you can make the process less effective than if you eased into it.

Lecture 4 – Dealing with the Survival Scenario: Attitude, Adaptation, and Awareness

Give up and die. Emergency scenarios from around the world are rich with examples supporting this very simple statement. The following words, borrowed from Desert Rat Dave Ganci, are vital to the survivor: attitude, adaptation, and awareness. Cultivating their attributes will allow you to face obstacles within a positive light. Remember, however, that there are no guarantees that you'll live. Anyone who promises you differently (especially if they stand to make some money out of it) has forgotten how very powerful Mother Nature can be.

Attitude

The most important of them all is attitude. Maintaining a positive attitude or "will to live" is critical to your survival. If your attitude falls, you'll fall with it. Inherent to a positive attitude is the willingness to try; and if there is failure, the willingness to try again and again. Researching real-life stories of survivors and the horrific ordeals they've gone through and defeated will put your crisis into perspective. This knowledge supports a "Yes I Can" attitude essential to your well-being and the others in your group. As a bonus, maintaining a positive outlook on life generally makes your life more pleasant, and enable you to deal with everyday challenges more easily.

Prior training in survival skills boosts confidence and improves your actions under stress. The fact that you've undertaken this training proves that you value life in general, especially yours, the ones you love and those whom you can help. It increases self-confidence and causes you to believe that you, in fact, can survive because you've consciously taken the time to acquire the tools to do so. Never give up. Although it's important that you carry a positive attitude, it doesn't replace the need for you to carry a well-designed survival kit.

Adaptation

Begin to cultivate an appreciation for doing more with less. Practice the ability to squeak out whatever you can from the resources presented to you. The power of adaptation allows you to discover multiple uses for each item carried in your kit.

Animals are instinctual. They have little bias about meeting their needs by whatever means work. You cannot afford to be choosy when caught in a jam. In order to live, you have to recognize and exploit every resource and option available. Talking about survival scenarios is hypothetical at best, because each situation will be different and every person will react differently to his or her particular situation, adapting or not adapting. In addition, essential survival gear can be lost or damaged, requiring the former owner to improvise.

Awareness

You must become like the master adapter, the coyote, all senses alert for whatever might be of use. Without proper awareness, it's easy to walk by the water-filled cattle tank or miss the Jeep travelling the next ridge over. It's similar to walking down a seedy big-city street. If you insist on watching your feet instead of the road ahead with all its interesting characters, your chances of being mugged increase dramatically. Awareness also includes having the foresight to properly prepare for your journey. Pay attention to your surroundings! Your life may depend on this in the wilderness or the wilds of our cities.

Exercise:

Developing awareness of your surroundings: For this exercise, you will need to take a walk. Developing the sort of perception required to survive must be practiced first hand. When you watch animals in the wild, they

are very aware of that which is around them. For this exercise we will focus specifically on how to see in the wild.

When you observe an animal moving through nature, their eyes are not focused on the ground. Even when moving at a run, their eyes are fixed on the horizon line. This is where you need to focus your vision. You miss a lot of that which is around you when you are looking down or even at the trail. To practice this, it is not advised to walk at a quick pace especially in the beginning, as there is a danger you could trip over an obstacle. Move at a slow walk, and focus your eyes on the horizon around you. As this proceeds, your peripheral vision will kick in and you will begin to comprehend more of your surroundings. The more you practice this, the better you get and the more you will see. This can also be done while stationary if you do not feel safe walking it.

This for this lesson, try taking a walk through a park or wooded trail and see how much you can see at once. Make note of it in your journal.

Lecture 5 – What it takes to stay alive: Common powerful personality patterns for peak survivor performance

The following personality traits were found, at least in part, among those who have lived through life-threatening events. The list was compiled by folks who collect information on survivors. Keep in mind that these attributes make for a happier person in general, whether in the bush or the city.

Common personality traits of survivors

- The ability to keep calm and collected.
- The ability to improvise and adapt.
- The ability to make decisions.
- The ability to endure hardships.
- The ability to figure out the thoughts of others.
- The ability to hope for the best and prepare for the worst.
- The ability to maintain a sense of humour.

Calm and Collected

The ability to stay calm and collected sounds trite, but it is the foundation of a positive survival mindset. It is the ability to prevent fear and panic from taking over your world. Prior training, whether physical, mental, or otherwise helps you deal more effectively with this problematic pair. It's physically necessary at times to STOP your body to allow greater clarity to surface.

S = Stop

T = Think

O = Observe

P = Plan

A = Act!

The "S" stands for stop, which means to physically stop what you are doing, sit down, and clear your mind while attempting to lower your heart rate for greater mental and emotional clarity.

The "T" stands for think. Now that you have stopped your body, think about your situation.

The "O" stands for observe. While you sit thinking about your situation, observe all you can about your surroundings and the options you may have. Doing so allows the brain to analyse and identify threatening information gathered through the senses.

The "P" stands for plan. While you sit thinking about your situation and observing the possibilities, you start to form a plan.

Once the threat or threats have been assessed, the brain forms a strategy to deal with the issues at hand. This strategy will be affected by several factors, including prior training and practice, exposure to similar events in the past, fatigue, dehydration, and so forth. Once a plan has been developed, the brain shoots it off to the central nervous system for actioning. Depending on your predicament, this can happen almost instantaneously or over a period of several hours or days.

The Swedish word for stop is stopa. Try to use this to remember the above.

Improvise and Adapt

The ability to improvise and adapt allows you to make use of every opportunity. It enables you to pack survival fear with more than one function, gear that allows for creating other gear. Travelling to

any developing country, or even rural areas in your own country, imparts a profound respect of what can be done with limited resources.

Make Decisions

The ability to make decisions allows you to thoroughly yet quickly formulate a game plan and then to follow through on it.

Be decisive and take responsibility for your decisions. Gather all the information possible about your surroundings and situation, formulate a plan, then do something about it! If plan "A" doesn't work, go to plan "B", and so on. Keep in mind that doing something about it might mean remaining where you are and conserving energy while awaiting rescue. Don't be afraid of failure and embarrassment by creating a game plan that doesn't work. You've already messed up, or you wouldn't be in the situation—so what have you got to lose? Emergencies involving several people will need special finesse and leadership to obtain the intelligent discipline and organisation required for success.

Endure Hardship

A survival situation is not comfortable. By its very nature it will tax you physically, mentally, emotionally, and spiritually. Your ability to endure hardship will be tested to its fullest extent. There are two great enemies to your survival and to life in general. One is the desire for comfort and the other is complacency. If this sounds like a summary of 90% of the Western World, maybe that's just a coincidence. Desiring temporary comfort can spur you into making decisions that are irrational—all at the expense of a whim—and may be what puts you into a compromising situation in the first place. Comfort isn't bad, but there is a time and a place for it. You do want to make yourself as comfortable as possible during your episode, physically and otherwise, but don't chicken out and let a whim jeopardise your life. Training body and mind far in advance of emergencies helps you deal with potential hardship. Realistic survival training cultivates a positive attitude and propels your mind into the land of "I know I can" instead of "I think I can".

Figure out the thoughts of others

Is the ability to work out the thoughts of others a psychic skill? How can intuition work to your advantage? Put yourself into your rescuers shoes. Which directions will they come from? Where might they go first? What will they expect you to do as a survivor? Being sensitive to your surroundings includes the people in your party. Watch members of your group like a hawk for symptoms of fear, hypothermia, dehydration, and a host of other things.

Hope for the Best and Prepare for the Worst

"The Ability to Hope for the Best and Prepare for the Worst" is a heavy statement taking into account two major concepts. Hoping for the best is maintaining a positive attitude regardless of the seeming difficulties at hand. Preparing for the worst is just that: proper preparation. Get into the habit of doing both.

Maintain a sense of humour

Humour is the oil that greases the squeaky wheels of humanity, and it has a great effect on human psychology and physiology.

Lecture 6 – The difference between survival and primitive living

If you fail to get yourself and those with you out of a modern (common) survival situation, you will all die. It's not like the local shop is closing at 9:30pm, you're down to your last six-pack, or you've got a flat tire three blocks from home. It's a serious, life-threatening situation with little regard for the environment or anything else. You may resort to felling live trees, burning obnoxious petroleum products, or doing other unpleasant things that are necessary to keep yourselves and those with you alive. You will be subjected to tremendous mental, emotional, and physical stress. You will need to strictly abide by the laws of how the body loses and gains heat through conduction, convection, radiation, evaporation and respiration. Often, unless you are very lucky, you won't be given a second chance if you blow it.

There are very few rules, but your main goals are to regulate core body temperature and get rescued from your predicament as soon as possible.

The Modern survival scenario

Survival situations come in many shapes and sizes and can last for various periods of time. However, the average survival scenario lasts for 72 hours, or three days. Statistically speaking, this is the amount of time that passes before searchers find you dead or alive— as long as you have someone searching for you. Average response time after a disaster is 3 days as well. The point of this course is betting on the fact that you'll be rescued within a three-day period—mostly because you DID bother to tell someone where you were going. This obviously doesn't mean that you should give up if your predicament lasts longer, but instead means you will have to try even harder. Never give up trying to survive and keep that PMA.

If your position is known, stay put. Someone will be along to find you when you do not return on time. If you deviated from your path or got lost, again, stay put. They will find you, but it may take longer. The only reason to move is for safety or water. If you do move, leave markers and signs. If with a vehicle, stay with it.

START A FIRE. If you have fuel for it, it gives many benefits. It allows you to be seen, it gives you warmth during the night, keeps animals at bay and it is a constant companion which will improve your PMA.

Generally, if you get into trouble these days you will fall into the modern survival category.

Primitive living

A primitive living situation is a long-term commitment. There is no getting rescued as you're already home. These will usually be after a disaster of some sort.

Differences

There can be some confusion regarding the difference between a modern survival scenario and primitive living skills. They are two completely different scenarios whose main objectives overlap; the main objective in each is to stay alive, one short-term (statistically) and one long-term. For the average outdoor recreations, primitive skills should take a backseat to learning modern survival skills if learning to survive is the main intention. In other words, learn how to use sticks to make a fire AFTER you learn how to use the matches.

That said, all modern survival skills originated from primitive skills, and it can be empowering to know both. If you are looking for a course on modern survival skills, look for an instructor who knows their primitive skills too, if possible.

One of the main illusions confusing a primitive situation and a modern one is the importance of food. Remember, the average modern survival scenario lasts three days or less. There are people who have fasted for forty days and Jesus wasn't the only one. A normal well-nourished adult has sufficient fat stores to live for sixty to seventy days, admittedly in a controlled clinical setting. Soldiers in the field, when subjected to serious food restrictions have routinely maintained a relatively normal workload for up to nine days. During World War II, the well-known Minnesota starvation studies found that a loss of less than 10 percent of body weight did not impair physical performance. It was only when the subject continued to starvation pattern for longer periods of time, and lost more body weight that physical performance began to nose-dive.

It's an unfortunate fact that most modern people would probably use more calories dinking around trying to set up a series of dead-fall traps than they'd use by conserving their energy and focusing on regulating their body temperature. Most of us have ample calories stored around our bodies to get us through the most compromising survival situations. If on the short term, scavenge and be opportunistic don't pass up a free meal.

Water is your primary concern. Locate a source of water, and there are many ways to do so. Research the area you will find yourself. If the weather is a concern, move to find shelter as well.

Assignment:

Take a moment to look at your current and near future living situations. In what ways could you end up in survival situations? Think of your daily life as well as vacation/travel situations. If necessary, research natural disasters in your area of the world and get a feel for their likelihood. Have you taken any steps to prepare for these possibilities before this course?

Lecture 7 – Reducing the Threat of the Survival Situation: The Seven P's

There's an old saying called "The Seven Ps" that, if adhered to, can prevent many survival situations from occurring. The Seven Ps stand for Proper Prior Planning Prevents Piss-Poor Performance. Essentially it's the same as the old Boy Scout motto "Be Prepared"! Careful planning, particularly if going out to the wilderness but this applies everywhere, is the foundation for a safer experience and it's pretty easy to get information in the Information Age that we are now living in. It involves taking the time to thoroughly research as many aspects as possible regarding your activity and destination. Proper planning allows you to identify and understand potential dangers for your particular excursion and helps you develop a detailed equipment list, a healthy and realistic activity time line, alternate plans, and an emergency back-up plan(s).

At the very least, indigenous peoples living the world over always had with them some semblance of a survival kit. One of the reasons these native people revered their elders was that there were so very few of them! Another saying I'd like to share with you is "Confident, Cocky, Careless, Dead" which I read in a fictional story somewhere, it is quite a realistic saying however in regard to potentially dangerous situations. A survival circumstances has a direct effect upon your life and those you love. Don't just rely on the Force, stack the deck in your favour by using a combination of modern gear, common sense, humility, and good training.

The Preparation Game: Check Off All Five for a Rewarding Backcountry Experience

1. **Physical Preparation:** Outdoor activities are synonymous with physical stress and unique sanitary conditions. Maintaining a proper level of physical fitness, health, and hygiene is strongly recommended.
2. **Mental and Emotional Preparation:** Self-confidence is the key and is the result of proper prior planning, skills practice, personal belief systems, and your overall backcountry experience.
3. **Materials Preparation:** Pack the right equipment for the job (maintained and in proper working order) and know how to use it. Having back-up equipment for critical goods is wise in case of loss or failure.
4. **Dangerous Scenario Preparation:** Weird stuff happens. Play out possible nightmare scenarios with others in your party, including travel routes, leadership roles, and relevant environmental emergencies.
5. **Spiritual Preparation:** A strong grounding in a presence larger than oneself is an extremely powerful force and imparts the gift of a positive, holistic eagle's-eye view of the current situation and life in general.

Note: Outside of an ever-changing Mother Nature, the proverbial wild card lies in human nature and how it reacts to stress. Make every effort to get to know the other people in your group before a crisis strikes

Exercise:

There is no such thing as being too prepared. For this exercise, plan a 3 day trip to what ever wilderness surrounds you. Let us know the hazards you will face and the equipment that you bring. You are allowed only that which you can fit into your vehicle. If you are found to be lacking something important, your instructor will ask you how you plan on improvising it.

You do not have to actually take this trip. You also do not have to actually own the desired equipment. What would you want to bring if you had it? Keep in mind this can also be used to help you better prepare yourself and help you take a real life tally of your resources.

Lecture 8 – The Most Common Way to Push Up Daisies in the Outdoors

Your first and worst challenge in a survival situation will be the weather. It can kill in as little as a few hours. Finding shelter is important. Know the warning signs of suffering from the weather.

The optimal ambient temperature in which humans are able to maintain body temperature without stress is 79 – 86 degrees F, or 26 – 30 degrees C. Dying of exposure is the single biggest risk in a survival situation.

Exposure is a generic term for dying of hypothermia or hyperthermia. Mammals and birds are warm-blooded, or homeothermic, meaning they can maintain a relatively constant inner-body temperature, whereas other creatures such as reptiles are cold-blooded, or poikilothermic, meaning their body temperature varies according to the temperature of the environment.

In humans, core body temperature alternates in cycles throughout the day. While daily activity is responsible for some of this cycling, our body's circadian rhythm accounts for most of it. For the average person, inner temperatures are usually lowest in the early morning, around 97.9F (36.6C), with late-afternoon having the high at around 99.3F (37.3C). Age is also an important factor, as some thermoregulatory responses are not fully developed until after puberty. Older people also tend to sweat less in reaction to heat, have a reduced vasoconstrictor response and shivering in response to the cold. Additionally, although body-temperature regulation is similar between men and women, there are some subtle differences in females, including a smaller blood volume, lower haemoglobin concentration, smaller lean body mass and heart, greater percentage of total body fat, greater surface-area-to-mass ratio, smaller shivering response, higher body-temperature set point for sweating, and thinner extremities. Females also have the added bonus of monthly temperature variation related to the menstrual cycle, pregnancy, and menopause.

Hypothermia

From the Greek word hypo meaning "under", "beneath" or "below" and the Greek therme meaning "heat". Hypothermia is the dropping of your body's core temperature below 98.6F (37C). If your core temperature drops to 92F (33C) or less, you'll be unable to help yourself if you're travelling alone.

Hyperthermia

From the Greek hyper meaning "over", "above", or "excessive" and the Greek therme meaning "heat". Hyperthermia is the raising of your body's core temperature. Anyone who's ever had a fever knows how terrible a few degrees above normal can feel. At 107F (41.6C) the physical cells within your body will begin to break down.

Fluctuation in core body temperature, high or low, of even a few degrees can severely compromise your ability to survive. To control its inner temperature, the body must be able to sense a change in environmental temperature, and respond accordingly. To do so, the body is equipped with receptors that sense hot or cold in the skin, muscles, and brain that begin physiological changes to quickly deal with outside extremes. Many variables contribute to the development and severity of hypothermia and hyperthermia, including a person's age, gender, health, nutrition, and body size: exhaustion; exposure; duration of exposure; wind; temperature; wetness; medications; intoxicants; and prior adaptation to heat or cold. Regulating core temperature is called thermoregulation and is made possible by the wondrous physiological responses and reflexes called vasoconstriction, vasodilation, shivering, and sweating. Aside from basic physical necessities such as airway, breathing, and circulation, thermoregulating body temperature is of prime importance.

Temperature regulation in humans represents the balance between heat production from metabolic

sources, such as digesting food, and heat loss from respiration and evaporation (sweating) and the physics of radiation, convection, and conduction.

When it's cold

In a cold environment, body heat is conserved first by the constriction of blood vessels near the body's surface (vasoconstriction), keeping the majority of blood (heat) in the core. Doing so allows the body to use the skin and underlying fatty layer as insulation.

The one area of skin that doesn't constrict blood flow is the scalp, which remains at a fairly constant temperature regardless of outside extremes. This is one reason why the head (and neck) loses and gains heat so quickly. In its attempt to regulate temperature, the body is a master at changing blood flows to the skin. With blood vessels dilated wide open in hot weather, it can circulate in the skin alone more than four quarts of blood every minute. In cold weather, blood vessels constrict skin blood flow to an amazing 99 percent of the former, a mere 0,02 quarts per minute! Ironically, when temperatures continue to drop, blood vessels in the skin dilate (vasodilation) and, if temperatures drop further, alternate back and forth between dilation and constriction in the body's attempt to ensure that the skin remains undamaged from the cold. The result is your red nose, ears, hands, and other appendages in the wintertime. If outside temperatures continue to plummet, however, surface blood vessels constrict continuously.

The second response to cold is shivering, which burns energy and hence increases temperature. Shivering decreases when CO₂ levels raise (e.g. in a poorly ventilated shelter) or when there is less oxygen in the air (e.g. at higher altitude). Alcohol also diminishes the shivering response. Effectively, you don't want to take anything that will either dilate or constrict your blood vessels, you don't want to be dehydrated, and if you are wearing limited clothing these increases in metabolic rate won't stop you from losing heat to the environment.

When it's hot

When it's hot, heat must be lost to maintain body temperature. Increased surface blood flow through dilated blood vessels, especially in the arms and legs disperse heat through a maximum body surface while avoiding the insulating effects of body fat. Again, dehydration will impair this function, as evaporation is the main tool your body uses to stabilize core temperature.

Below you will find a signs and symptoms chart for hypo and hyperthermia. Being able to recognize the signs and symptoms of exposure in yourself and others is most important, as these are the body's warning signs that something is seriously wrong.

Hypothermia

Early Signs and Symptoms

[core temperature 95 °F (35 °C) to 96 °(35.5 °C)]

- Shivering
- Decreased awareness
- Unable to think or solve problems
- Apathy
- Confusion
- Skin pale and cool to the touch
- Numbness (stinging pain)
- Loss of dexterity
- Deterioration of fine and complex motor skills

Advancing Signs and Symptoms

[core temperature 93 °F (33.8 °C) to 94 °F (33.3 °C)]

- Obvious shivering
- Stumbling
- Little or no effort to protect oneself
- Unaware of present situation

Advanced Signs and Symptoms

[core temperature 91 °F (32.7 °C) to 92 °F (33.3 °C)]

- Intense shivering
- Difficulty walking
- Thick or slurred speech
- No effort to protect oneself
- Skin appears ashen gray and cold
- Possible hallucinations

The Death Zone

[core temperature 87 °F (30.5 °C) to 90 °F (32.2 °C)]

- Shivering comes in waves
- Unable to walk
- Speech very difficult to understand

If the core temperature continues to drop, shivering will cease, breathing and pulse will appear absent, and the skin will become blue. Death quickly follows.

Hyperthermia

If elevated core temperatures remain constant or continue to rise, death will rear its ugly head.

Signs and Symptoms of Heat Stroke

[core temperature 103 °F (39.4 °C) to 106 °F (41.1 °C)]

- Disorientation and confusion
- Hot, flushed, potentially dry skin (classic heat stroke) or hot, flushed, sweaty skin (exertional heat stroke)
- Elevated body temperature
- Rapid, bounding pulse or rapid, weak pulse
- Initial deep breathing, rapidly progressing to shallow breathing, followed by absence of breath
- Dilated, sluggish pupils
- Delirium
- Little or no effort to protect oneself
- Unaware of present situation
- Seizures
- Stroke
- Coma

Signs and Symptoms of Heat Exhaustion

[core temperature 101 °F (38.3 °C) to 102 °F (38.3 °C)]

- Excessive thirst
- Profuse sweating
- Headache
- Dizziness
- Nausea, vomiting
- Generalized weakness, decreased appetite
- Disorientation and confusion
- Cramps
- Weak, rapid pulse with shallow, rapid breathing
- Cool, pale, moist skin
- Decreased awareness or unconscious

Signs and Symptoms of Heat Cramps

[core temperature 99 °F (37.2 °C) to 100 °F (37.7 °C)]

- Thirst
- Profuse Sweating
- Headache and dizziness
- Nausea, vomiting
- Generalized weakness
- Spasms of the voluntary muscles and abdomen after exercise and exertion in a hot environment
- Deterioration of fine and complex motor skills

Lecture 9 – How your body loses and gains heat

There are several physical means by which your body may lose or gain heat. By recognising the general physics involved in heat loss and gain, the survivor can intelligently assess virtually any situation placed before them and deal with the problems one by one.

Conduction

Conduction is the transfer of heat via direct contact with an object, including hot and cold air against the skin. The direction of heat flow is always from a warmer to a cooler temperature. Substances vary a lot in their thermal conductivity, water has twenty five times the conductivity of air, while muscles have nearly twice the tissue conductivity of fat. Because your feet always touch the ground (or other parts if you are sitting or lying) it is necessary to have insulation in hot and cold environments.

Convection

Convection is the transfer of heat through currents in air and liquids. Classic convection, experienced by all who have been outside is the wind. "Wind chill" causes existing outside air temperatures to feel a lot colder than they actually are and is a common killer of outdoor enthusiasts, as it greatly increases the possibility of death through hyperthermia. In contrast, hot desert winds feel like a hair dryer on the skin, sucking away your evaporating sweat so quickly you might not think it is as hot as it is 'cos you aren't sweating. Unfortunately when sweat evaporates so quickly it doesn't do much to cool the body.

Radiation

Radiation is the act of losing or gaining heat through radiation. There are two types of radiation we are concerned about, terrestrial, or long wave radiation comes from fire, people, and everything else that has a temperature higher than absolute zero. Radiant heat emanates from your entire body, and it accounts for about 45% of total heat loss from a nude body in neutral conditions. Interestingly enough curling into the fetal position can reduce this loss by up to 35%, by minimising your exposed body area.

Short wave radiation comes from the sun, and can heat a person three ways, directly on the skin, reflected off of particulates in the atmosphere, and reflected off the ground. It is absorbed to a greater extent by darker clothing and skin pigmentation.

Evaporation

Evaporation is the act of losing heat through the conversion of a liquid to a gas. For people in a hot environment, heat loss is primarily through sweating, with a little from exhaled moisture. In a cold environment, however, clothing that is sweaty from over-exertion will increase your chance of hypothermia.

Respiration

Respiration is the act of losing heat and water vapour through the respiratory surfaces of the lungs while breathing. The air you inhale must be humidified by the body in order to be used effectively. When this vapour is exhaled, at high altitudes the heat loss can rival that of sweating. Usually respiration is a minor source of heat loss, though a lot of water can be lost through the breath.

Cold Temperatures

In summary, walking around in cold temperatures without insulated footwear or lying on noninsulated ground (conduction) while wearing sweaty cotton clothing (evaporation) in the wind (convection) without the ability to make a fire (radiation) can kill you.

The Cold Weather Bottom Line

1. Produce Heat

Exercise using the body's larger muscle groups; eat calorie-dense foods, especially carbohydrates frequently throughout the day; create fire in conjunction with space blankets or other reflectors if possible; locate south-facing (Northern Hemisphere) or north-facing (Southern Hemisphere) microclimates for maximum sun exposure; hydrate using warm/hot fluids with dissolved hard candy or other sugars when available.

***DO NOT SWEAT** if you warm up so much that you produce sweat, you may as well pour a bottle of water over yourself. You are finished if you do. Reduce workload and do not push so hard you sweat.

2. Decrease Heat Loss

Wear proper clothing especially in the head, neck and torso areas; replace wet clothing with dry; create or find shelter from the elements; decrease surface area while increasing volume; avoid or insulate the body from cold surfaces. Dress in Layered clothing.

3. Avoid becoming exhausted (60 percent rule)

Working at 60 percent allows the body to burn fat reserves instead of using up glucose and glycogen stores. Get adequate sleep and rest.

4. Reduce internal and external constriction

Avoid ingesting vasoconstricting substances; tight clothing, equipment and footwear.

5. Stay hydrated

Drink warm to hot liquids if possible; urine should appear 'clear'.

6. Stay aware of what's happening

Be conservative. Don't take unnecessary chances. Cultivate and maintain a positive attitude.

Hot Temperatures

In hot temperatures, radiation from the sun (times three) can seriously heat up conductive ground surfaces. This helps produce heated convective winds capable of evaporating sweat very fast, with little cooling effect for the body. Add whatever exertion you are doing at the time and there is a serious possibility of dehydration, hyperthermia and death.

The Hot Weather Bottom Line

1. Reduce heat gain

Stay in the shade, create or find shelter, insulate the body and avoid hot surfaces by going above or below scorching ground temperatures if possible; seek cooler north facing (Northern Hemisphere) or south facing (Southern Hemisphere) microclimates with minimal sun exposure; avoid physical exertion during the afternoon; wear appropriate clothing; keep hydrated; save movement for early morning, late evening or night.

***DO NOT REMOVE ALL YOUR CLOTHING** it is natural to want to remove clothes to stay cool, resist removing all your clothes. It is better to have sweat soaked clothes to keep in the water than let it evaporate into the wind.

2. Increase heat loss

Increase surface area while decreasing volume; wet clothing if possible, especially the head, neck, trunk and groin areas; increase air movement; lie on or against cooler microclimates.

3. Avoid becoming exhausted (60 percent rule)

Working at 60 percent allows the body to burn fat reserves instead of using up glucose and glycogen stores; rest and conserve during afternoon heat. Get adequate sleep.

4. Reduce internal and external constriction

Avoid ingesting vasoconstricting substances; tight clothing, equipment and footwear.

5. Stay hydrated

Drink cool to cold liquids if possible; urine should appear 'clear'; shut mouth and breathe through the

nose; limit talking.

6. Stay aware of what's happening

Be conservative. Don't take unnecessary chances. Cultivate and maintain a positive attitude.

Lecture 10 – Your first line of defense

Remember the list you made for you trip out to the woods? Let's revisit that.

Hopefully right at the top of the list, you've come up with the following two needs: clothing and water. Your body produces over 300 BTU's of heat every hour, a BTU being a British Thermal Unit, the amount of heat it takes to raise the temperature of 1 pint of water 1 degree F. In a cold weather situation, the simplest way to stay warm is to trap this heat using insulation or 'dead air' space in the form of clothing, adding and removing layers as the outdoor conditions warrant. Additionally, physical exercise, fire, shelter, and calorie-rich foods all help keep ones core temperature at the optimal 98.6°F (37°C). As I can attest to, writing this lecture series in the cold of a New Zealand winter, even mild cold can significantly decrease your dexterity and muscle response. The critical temperature for retaining manual dexterity is 54°F (12°C) while touch sensitivity is 46°F (8°C).

Tips for Cold Weather Clothing

- Warm hat: Brightly coloured, loose-fitting, insulating, wind-resistant wool or synthetic material.
- Gloves: Non-restricting, insulating wool or synthetic material.
- Underwear: Non-restricting, non-chafing, moisture repellent synthetic material.
- Remember to use sunglasses in snow.
- Base Layers (top and bottom): Dark-coloured, moisture wicking, non-irritating, formfitting yet non-restrictive wool, silk or polypropelene material. Avoid cotton!
- Insulation Layers (top and bottom): Light or dark coloured, non-restricting, easy-on-and-off, ventable, easy to pack, resists moisture accumulation such as wool or synthetic material. Add and remove layers as needed.
- Environmental Layers (top and bottom): Bright or dark coloured, light weight, loose fitting, ventable, wind and water resistant, abrasion resistant, synthetic material shell.
- Socks: Insulating, form fitting yet non-constricting wool or synthetic socks. Avoid cotton! Well fitted, broken in, water resistant, insulated boots.

In hot weather, sunburn becomes a real risk. Sunburn, apart from being painful, can cause fluid loss and decrease your ability to keep yourself cool. Clothing protects your skin both directly from the sun rays and also from ground reflection. The most important factor in determining how a fabric will block UV radiation is the tightness of its weave, its colour and whether or not the fabric is wet or dry. Clothing with special sun-protection treatments are becoming more common too.

In hot weather, where the ambient temperatures are at or above body temperature, your body will rely primarily on evaporation. Your sweat is 99% water and 1% salt and potassium. That salt is precious. Any liquid evaporating from your skin will cool you, so in an emergency situation don't be afraid to dampen your clothes with non-potable water or even urine (yes, I saw you flinch. Be realistic here folks. It's an emergency).

High humidity levels, especially 70% and higher seriously restrict the evaporation process. Even if you have plenty of water, your body cannot cool itself sufficiently and you risk dehydration and hyperthermia. This is where clothing can help, especially cotton, as it is hydrophilic and holds moisture (such as your sweat) and helps it to evaporate more slowly and perform its designed task of cooling you off.

Tips for Warm Weather Clothing

- Sunglasses for protection against UV radiation and blowing particles.

- Wide-brimmed, light-coloured, hat of breathable material and a light coloured, cotton-bandana neck protection (or legionaires hat).
- Base Layer: Fairly new, loose-fitting, light coloured cotton t-shirt.
- Underwear: loose fitting, non chafing cotton material.
- Insulation / Environmental layers: Oversized, light coloured, long-sleeved, abrasion-resistant, cotton material (I find that linen and silk can be good too). Add and subtract layers as needed. Same for pants, preferably long pants.
- Insulating, formfitting yet non-restricting wool or synthetic socks. Avoid cotton! Well-fitted, broken in, insulated, lightweight boots.

The Layering System

With the layering system, clothing for both hot and cold environments falls into the following three sections: base layers, insulating layers, and environmental layers. Base layers are used against the skin, trapping air close to the body. They should be made from a fabric that insulates while transporting (wicking) water vapour away from the body and should also not irritate or constrict. Insulation layers are added or subtracted between the base and environmental layers as outside temperatures warrant. Environmental layers protect against outdoor elements such as wind, rain, snow, sun and plants, and should be lightweight, durable, loose fitting, wind and water resistant and easy to vent excess moisture buildup. Be aware that 'Water resistant' and 'Water proof' are two different things. The former 'breathes' to an extent to let body moisture escape, the second is a vapour barrier, which can be useful in some conditions but dangerous in others. You can tell the difference between the two types of fabric by blowing on the fabric in question from the inside out and feeling for your escaping breath on the other side. If you feel warm air, it's water resistant. Water proofing and breathability are the oil and water components most coveted by outdoor enthusiasts in an environmental layer. Unfortunately, if you work at or above 50% of your maximum capability, then no fabric on the market will be able to do justice to both concepts.

All clothing systems, for any climate, requires dead-air space or insulation. Insulation is more effective when worn in several thin layers as opposed to one thick layer, as it allows you to not only adapt to changing temperatures, but the air space between the layers also insulates without adding any bulk or weight.

When you plan to be exerting yourself, it is best to 'run cool', by wearing slightly less clothing than required. This is an effective way to prevent sweating. In cold temperatures, sweaty clothing severely compromises its ability to insulate.

In hot climates, clothing protects you from direct radiation, hot winds, scorching ground and nasty little biting critters. Loose layers of the appropriate material increase air flow while slowing the evaporation of sweat.

Properties of clothing materials

Cotton

Cotton is hydrophilic, meaning it transfers sweat from your skin to the material itself, which makes it poor at wicking wetness away from the skin. It will become damp just from humid air. Once it is wet, it feels cold, loses most of its insulating properties, and causes you to lose heat 25 times faster than when its dry. This means it is a very poor choice for wearing in cold climates, and a very good choice for hot climates. It's insulation factor is 0, so you are going to need something more in the cold but a good choice in the heat.

Polypropylene

Polypropylene is hydrophobic, it resists absorbing moisture. This means it transfers moisture from the skin across the fabric itself to other clothes or the air. This makes it very good at wicking sweat away from the skin. It is reasonably cheap and easy to care for. Ironically enough though, it is SO good at wicking moisture that the wicking action can use more body energy (in a survival situation) than many other fabrics. Because of this, polypropylene should only be worn when energy loss is not critical. I'll add my personal experience with this fabric as well, if you have sensitive skin you may react to it.

Wool

Wool is poor conductor and a great insulator. It is hygroscopic, which means it readily absorbs moisture, but suspends the water vapour within the fiber itself. Water can absorb 35-50% of its own weight in water before it feels cold and wet, and it retains more heat than synthetic fabrics as it dries, and doesn't wick quite so well as polypropylene. It is an ideal fabric for most conditions. Unfortunately, it can feel scratchy. I have this problem myself, and the trick is to look for very good quality wool, preferably from merino sheep as they have finer wool. Alpaca and angora, while not quite so warm are also good choices and less likely to cause reactions. Wool retains its insulation properties even when wet.

Polyester

Polyester is probably the most widely used fabric for outdoor clothing. Pile fabrics made from this are good insulators; they can absorb a reasonable quantity of water before they feel cold; and they are hydrophobic. Different ways of weaving the fabrics can give different insulation and wind-stopping abilities. It can be more compact than wool and dyed in very bright colours, suitable for being found in. Additionally, nearly 80% of polyester is made from recycled plastic bottles.

Nylon

Nylon is quite tough and usually used in environmental layers. It can be good at repelling wind and water and can be coated to make it waterproof. It does not tend to be breathable. It is compact and lightweight and water evaporates from it quickly. Best as an outer shell.

Down

Down is compressible, has significant loft and is very warm for its weight. It is an amazing insulator when it is dry. Unfortunately, it is also hydrophilic and is even worse than cotton in wet and cold environments, losing almost all of its insulating properties and it is very hard to get dry.

A tried and true acronym for winter wear!

C = keep yourself and clothes clean

O = avoid overheating

L = wear clothes loose and in layers

D = keep dry

Freezing Foolsies

Cold feet can be the bane of all outdoor enthusiasts (or people trying to get to sleep, if you're anything like me). At its most extreme, the cold could mean you lose toes or even your entire foot to frostbite.

You can wear two or three pairs of 'new' (i.e. not holey) woollen socks by themselves in cold and dry conditions. Reserve the most worn socks for the outermost layer. It can be worthwhile carrying a

couple of extra pairs of wool socks with you if you go tramping, being sure to keep them dry in a zip loc bag; these socks can be used if your footwear is lost or damaged.

To keep the feet dry, put on a thin synthetic sock, then put the wool sock over that. The synthetic sock will wick moisture away, and that wool will hold it and still remain warm despite the moisture.

Water

Water is a necessity. Seventy five percent of people are chronically dehydrated, even before they face a survival situation. Thirty seven percent mistake the thirst mechanism for hunger pangs. Lack of hydration is the number one trigger for daytime fatigue.

Dehydration is deadly in both hot and cold weather. Less water in your blood means thicker blood, which circulates more slowly and with more effort. In regard to temperature regulation, it hinders the body's ability to lose excess heat or circulate needed heat. When the volume of blood and interstitial fluid decreases, water is removed from the cells. This causes them to shrink, damages cell membranes. Platelets stick together. The list goes on and on.

Although dehydration triggers the secretion of water conserving hormones, exposure to cold weather (especially without protection) actually increases urine production. When the surface blood vessels constrict from the cold, this decreases the area for the blood to pass through and increases blood pressure, the body recognises this and increases urine production to decrease blood pressure again (remember homeostasis). Additionally, if your body is cold your kidneys are less effective at concentrating urine. All this adds to net water loss.

So, how do you know if you have enough water in your system? Well, thirst should never be an indicator of when or how much to drink. Being thirsty indicates you are already dehydrated. If you are in hot temperatures, drink a little more than your body seems to want. If you are with company, watch them like a hawk and make sure they drink adequately. The best way to tell if you are maximally hydrated is the colour of your urine. It should be largely clear and in copious quantity.

*resist eating snow raw. It will frost bite your lips and mouth and end up making things worse for you in the long run. Better to fill your canteen with snow and use body heat to warm it before drinking.

Four Factors for Faster Hydration

Hydrating quickly for maximum efficiency at work or in the woods

There are four factors to consider for achieving maximum hydration in the shortest period of time. While its nearly impossible to get all of these out in the field, its pretty easy in the office.

1. Adequate volume
2. Temperature
3. Minimal salts, carbohydrates, and sugars
4. Carbonation

Adequate Volume

The trick to maximum hydration in the shortest period of time is ensure that the water moves past your stomach and small intestine and into the large intestine where it is absorbed. Drinking an adequate amount of water (i.e. feeling like a bloated pig) coerces the stomach into moving the water past the opening between your stomach and small intestine, called the pyloric sphincter. Don't drink so much that you'll throw up, that is counterproductive.

Temperature

Putting an icy cold drink into your stomach (or a very warm one) upsets your bodies temperature regulation system. Water that is near body temperature to cool is most rapidly absorbed by your body. In cold weather, warm to hot drinks can help keep your core temperature stable. Drinking cooler (not iced) water in hot weather helps to keep you cooler.

Minimal salts, carbohydrates, and sugars

Drinking fluids with minimal salts, carbohydrates and sugars helps your body to treat your drink like drink, not food. The more food like stuff the water contains, the longer it will stay in the stomach and small intestine to digest. Electrolyte replacement can be an issue at times, but most of us realistically have little need for them. It is best to avoid eating when water is a factor. Digestion uses valuable water.

It can be worthwhile flavoring barely potable water to help you keep it down (if it really comes down to the line). Consider diluting the overall concentration more than that which is recommended, if you do need to do this.

Carbonation

Really hard to get this out in the field, of course, but in a work situation the pressure from carbonated liquid helps to push it past your stomach and into your large intestine more quickly. Taking some Alka-seltzer tablets is a quick and dirty way to carbonate water with just a hint of sodium, which is a potential asset in hot weather as long as you have plenty of it. You don't want the ones with added aspirin.

Hyponatremia

Of course, drinking too much water without an adequate salt intake can cause problems. Sodium (salt) is a required element for the body to function properly and is lost in sweat and urine. Hyponatremia means a low concentration of sodium in the blood and can be a real threat in a survival situation where you are exerting yourself in hot weather. It is caused by lost sweat (salt and water) being replaced by only water (no salt), which dilutes the sodium in the blood stream. Unfortunately, symptoms of this condition are pretty similar to that of dehydration, such as nausea, muscle cramps, disorientation, slurred speech, confusion, and in later stages, seizures, coma and death. Use additional care when taking aspirin, ibuprofen, acetaminophren (Tylenol) and other anti-inflammatory medications that can affect kidney function, as these may compound hyponatremia. The good news is that minor hyponatremia can be effectively treated (or avoided altogether) by eating extra salty foods or adding a small quantity of table salt to drinking water when necessary.

Bodily Waste

Don't pass your bodily waste in or near water courses or catchment areas. You might need to drink that water at some point!

Summary

Adequate water. Adequate clothing. Let at least two trusted people know where you are going and when you'll be back. Know how to signal for rescue. Keep a good attitude. This is minimal. The icing on the cake is having a good survival kit (and I'll include a disaster preparedness kit too) and knowing how to use it. But even then, there are no guarantees.

Lecture 11 – About your rescuers and helping them to help you

All of the previous lectures have one assumption...that someone is going to be looking for you if you get in trouble. If no one knows you've decided to take a walk, if no one knows when to expect you back...well, you can see how much trouble you could be in, should you be unlucky. Part of being 'situationally aware' is knowing that the unexpected occurs, and as such you should be leaving a 'game plan' with at least two trusted people, even if you are just planning on going for a local 3 hour walk. Do it before each and every outing.

You will need to tell your two people the following:

WHERE you will be going

Very, very important. Ideally you'd have a photocopy of a topographical map with your destination and route of entry highlighted with a marker. If this impractical, explain what you'll be doing by creating a homemade map, with a list explaining the destination in bullet form, with one or two line descriptors. If you can't manage the ideal, simply tell two people where you are going and make sure they understand their role if you don't return as scheduled.

WHEN you will return

This is the detail that will commence an initial response from your rescuers. If someone knows where you are but doesn't know your return time, you might have a long wait ahead of you. I recommend that you build in added time for the return trip, for example, if you plan to be back at noon, give yourself 3-6 hours to play with and say that you'll return at 3pm or 6pm. This allows extra time to have a bit of fun or fix that flat tire before a horde of rescue personnel come after you. Give rescuers as much advance notice as possible in which to conduct their search. If your friend said he'd return at noon, and you notify local authorities at 10pm, you've wasted away important daylight hours that the rescue personnel could have been using. All emergencies are time sensitive to have a successful outcome, some more so than others. The time you start feeling like you should call someone is the time to start calling someone. The rescue teams would rather get started and have a radio call 15 minutes later that your friend had showed up than be robbed of daylight and risk finding a corpse. Regardless of being overdue, weather factors and terrain variables may push back the time searchers will commence looking for your buddy. If your friend or loved one is travelling in rugged terrain that is familiar to a search and rescue group, they may know that a hike listed as 6 hour might really be 10, so they probably won't leave at the drop of a hat in that situation.

WHAT vehicle you are driving

(or what means of transport you are using)

Include as much detail as you can, such as the model and make of the vehicle, color, license plate and any other distinguishing characteristics. This can help rescuers identify your vehicle at the trailhead.

WHO is in your party

It is helpful for the rescuers to know how many people, male and female and even different ages. If anyone has any medical conditions be sure to add that, and also the full names of the party members, to help if rescuers are 'calling out' to them.

WHY you're taking the trip

This isn't to be nosy, but letting people know what activity you will be pursuing will give them an idea of what sort of gear you have and what factors might influence your behaviour in regards to route finding, campsite location and attraction to geographical features. Some examples are if you are going geocaching, mountain biking, or hiking.

The tin-foil tip-off

One handy thing you can do is to take an impression on a heavy-duty piece of tinfoil of the footwear that you will be wearing during hiking, putting your name on it if you are with a group. You'll need to do this on soft ground or on a piece of clothing so that it will take a good imprint. You can then leave the imprints on the dashboard of your car or somewhere else it is easy to view them, so that rescuers will have a better chance of tracking you. Don't leave a note with your return time, or you might return to find your hubcaps missing!

Be sure to notify your two trusted people upon your safe return, so that they don't contact rescue personnel!

Introducing the typical Search and Rescue Victim

The typical SAR victim is someone who does not have the cognitive powers to save themselves. The most common would be Alzheimer's patients. After that are the other brain disorders. Children pull in after that. After that we have the weekend warriors that go out hunting, fishing or other such activity.

Read the following passage and be honest with yourself about how well it relates to you.

"The average SAR victim is a composite outdoorsman (for example, hunter, fisherman, skier, hiker, climber, boater, photographer). Most do not do any of these activities well and are not members of organized groups that specialize in these pursuits. Most reside in densely populated areas and travel some distance for recreation and outdoor pursuits. They usually travel too fast and too far to acclimatize well to the terrain, altitude, and environmental conditions encountered. Interviews show that they also generally ignore signs of weather change, environmental hazards, body indicators, and written warnings concerning danger or safety."

Factors Contributing to Survival Situations and Search and Rescue Missions

- Improper clothing, footgear, or both.
- Lack of rest (fatigue).
- Lack of adequate water (dehydration).
- Hypothermia or hyperthermia.
- Too ambitious an undertaking for skills or proficiency.
- Poor physical condition, lack of motivation, or both.
- Inadequate or improper food.
- Little or no planning.
- Inadequate party for the goal, and lack of leadership.
- Itinerary confusing or not known to others
- Individuals could not recognise a physical, mental, or environmental threat.
- No preparation for adverse weather.
- Unfamiliarity with terrain and lack of map or compass.
- "It can't happen to me" philosophy

(From Wilderness Medicine)

Search Procedure

Knowing how a search proceeds may help you place your clues as well as understand why it takes so long to be found. You typically realize you are in trouble and start hoping for rescue long before you actually see a rescuer. This wait is difficult don't give up. It may make it a bit easier if you know why it takes so long.

First, be aware that searches do not start the minute you get lost. Nobody is going to come looking for you until you are reported overdue. Your in town contact should contact the sheriff's office (or other agency if SAR is not a sheriff's office responsibility). The SAR deputy will evaluate the situation. If someone can give good evidence that you are in trouble (eg. they saw you fall or heard cries for help) rescuers will be called immediately. Otherwise the deputy will probably check things out before starting a search. Is your car really still at the trailhead? Are you in the latrine or a nearby bar?

Only after the deputy is satisfied that there is a need will SAR personnel be called out. Then since most of them are volunteers it usually takes hours for the search to actually start. Rescuers have to leave their jobs or families, pack the necessities, and drive to the staging area. The search may also be delayed by the necessity to plan and organize. It makes little sense to just send people out "thataway" without coordination and intelligent direction.

The planning team will try to determine a reasonable search area and divide it into manageable sectors. Each sector will be assigned a probability based on how likely the team thinks it is you are in that sector. High probability areas will be searched first (if appropriate resources are available). This team will also decide what type of search they want for each sector. Normally few if any searchers leave headquarters until some planning is done.

Then depending on circumstances it may take more hours for a team to reach its assigned sector. Of course the search itself also takes time. If they find you, great. If not, they report back any clues they may have found and how likely they think it is they would have found you had you been in that sector. Based on this information the search may be redirected.

It may help place your clues if you know how a typical search and rescue operation proceeds. Usually the first searchers into an area are "hasty teams," small teams lightly equipped and assigned to search the areas of highest probability. They check known shelters, areas near where you were last seen, open areas where you might go to try to be seen, etc. This is a reason to not move far, you will be leaving the areas likely to be searched first. Try to place some of your clues in these obvious areas and you will likely be found faster. Searchers usually carry binoculars so clues on open hillsides are very effective. Hasty teams typically have very limited manpower so they can search only the most likely spots. Try to put something there to help them.

Hasty teams and other ground searchers also typically try to make a lot of noise. If you hear them of course you should respond. They will yell, blow whistles etc. Portland Mountain Rescue protocol is to blow two blasts on a whistle and maybe yell, then listen for a few seconds for a response.

Depending on weather and availability, air searchers may also arrive quickly. Obviously they can search open areas more effectively than dense woods and brush. Try to stay in the open and have clues visible from the air. If you see an aircraft which appears to be searching for you the best position is spread eagle, flat on the ground. You will be easier to see that way than in any other posture. Aircraft may be either helicopters or fixed wing. Obviously a helicopter has much better ability to pick you up but fixed wing aircraft are often more readily available. Of course if you are spotted from an aircraft you should stay put till they can get someone to your location.

Other searchers likely help out are dog teams and trackers. Trackers will be looking for clues in places like "track traps," areas you may have been which show tracks easily. Dog teams are usually assigned to areas of highest probability and will try to pick up your scent.

Larger teams of ground searchers may also be deployed. With more people available the search can expand to a wider area than what was possible with the hasty teams etc.

Depending on the situation, special skill resources may also be called. These include water rescue units, technical climbers, cave searchers etc. Searchers will not be assigned to tasks they cannot carry out safely so if you are in a hazardous place you can expect to see these specialists rather than ordinary searchers such as explorer scouts. Of course that also means a delay if those specialists are not readily available. Be patient.

The idea of early stages of a search is to find clues. Of course searchers will be happy to find you (referred to as "the ultimate clue") but they know there are more clues than lost people. Typically they find clues in some places and not others and then move personnel to the areas where the clues indicate you are likely to be. Most searches end fairly soon after the early stages because the clues reduce the area and often point quickly to the actual lost person.

Another search technique often used is confinement. People will simply wait at natural boundaries such as passes and stream crossings. The idea is to intercept you if you are about to wander out of the area. Your part in this is that you should *never* cross roads or natural barriers. The first assumption is that you will wait there so the search is confined to the prime area until it is rather certain you are not there. Vehicle searchers usually patrol the roads and will probably find you quickly if you just sit tight.

A common method is the use of attractors. An attractor is anything you are likely to see or hear and be attracted to. Common attractors include the aforementioned whistles and yelling by search teams. These are moving attractors so the best response is to yell or whistle back to get searchers attention, then wait for them to come to you. Other attractors are fires (bright at night, smoky during daylight), car horns, sirens etc. You may have to walk to them since they are stationary and probably too far away for your voice to be heard.

Later stages of a search may involve "grid searching," lines of people spaced 100-300 meters apart (open grid) or closer (closed grid). If you leave appropriate clues the search should never reach this stage. This is manpower intensive, slow, and often reserved for when we think we are looking for a body or an unresponsive subject. Try to leave enough clues to be found without this technique, and certainly enough that closed grid searching is not necessary. Grid searching, especially closed grid, is so time consuming that lost people may die before being found if it becomes necessary.

Conclusion

This concludes the first lesson in situational awareness. We have covered the most likely killers no matter where you find yourself. The first being your mental attitude, the second, the environment. If your mind is not prepared to calmly and rationally take stock of your assets, threats and options, you are already defeated. Once you have sorted yourself out, you can start working with what you have. The weather and climate will kill you no matter where you are if you are not prepared. Below freezing weather will kill you just as quickly in the city as it will in the woods.

Our upcoming lessons will focus on specifics of likely situations that you will face. As most of us live in an urban environment, our next lesson will focus on situations you will likely face when placed in a city setting. Keeping aware of where you are, who you are with and what is going on, will keep you safe in a setting that is so easy to believe that you really are safe.

Please give feedback for this course in your Journal and please talk about any sections that were unclear, could be expanded or could use work. Feed back is important toward the evolution of this program.

Finally thank you for completing this lecture series. I hope you decide to continue your training with awareness as a focus.

Andy