Idaho Adventure Motorcycle Club Newsletter

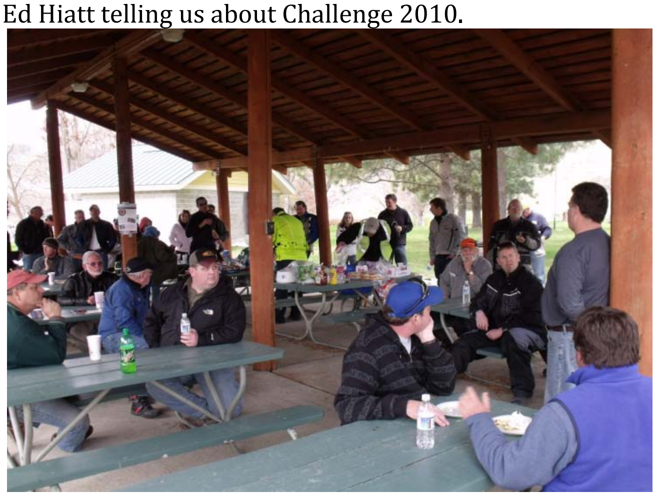
June 2010 *“Discover Adventure Together”* *Issue #2*

IAMC Challenge 2010

By Craig Olsen

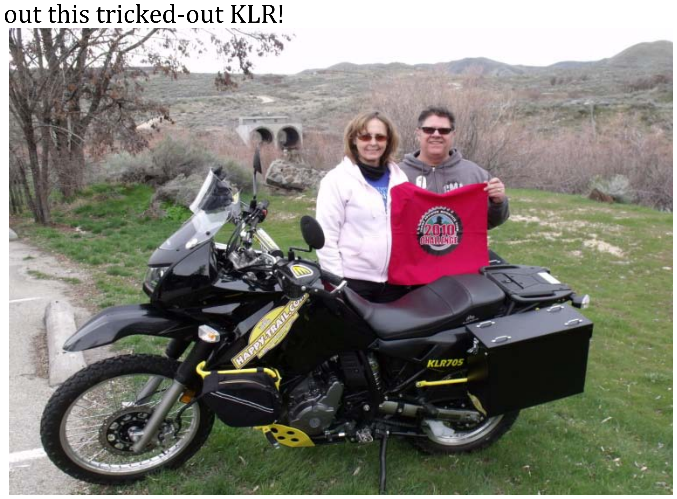
The kick-off event for the IAMC Challenge 2010 was held April 19, 2010, at Discovery Park. With more than 50 club members in attendance, we enjoyed great food and fellowship as we received instruction about the Challenge 2010 and challenge bandanas and T-shirts were issued to those who had signed up. Here are just a few pictures of the event courtesy of Chuck Scheer.

Ed Hiatt telling us about Challenge 2010.



Terri Hiatt issuing Challenge bandanas & T-shirts.

Tim & Sherry Bernard displaying their bandana – check out this tricked-out KLR!



Eight weeks into the IAMC Challenge 2010, 42 different riders have already visited 19 out of the possible 45 sites. Several riders have already made it to multiple sites with 12 of them visiting 5 or more sites as of the writing of this article (May 30th). One rider has already visited 14 sites! Congratulations RWC! We will have to work harder to catch up to you.

Coming soon to the forum section of our website (motoidaho.org), according to Terri Hiatt, will be a list displaying all challengers, the number of sites they have visited, and the prize level they have achieved to date.

Have you figured out the mystery site yet (#-30)? Each week a new word is added to the riddle. Currently it reads, *“A spooky place in the middle of the face of a piece of…”*

Visit the website regularly to learn more about site #-30, follow the challenge, and post your pictures. Don’t know how to post your pictures? See the first topic in the forum section to learn how….. *Now it’s time to ride!*

Motorcycle Camping – Sleep System

By Ryan William Cantrell

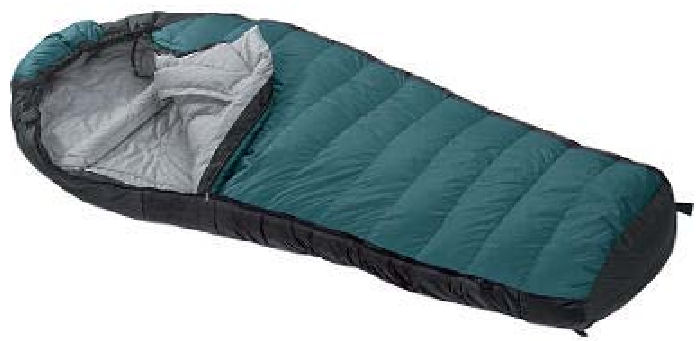
Overlooking your sleeping bag and sleeping mat is a common mistake to new motorcycle campers. However, it's an essential component to a successful and comfortable weekend. Your sleeping bag should keep you warm, while your sleeping mat keeps you comfortable. They work in conjunction with each another, and each component is equally important.

Let me start off by saying this – sleeping bag manufactures don't always tell the truth. If you see a synthetic sleeping bag that has a rating of 20-degrees, but packs down to the size of a basketball and costs $30… don't even think about trusting that bag down to 20-degrees. The 20-degree rating means you won't catch hypothermia and die at 20-degrees – it does not mean you'll sleep warm and sound on a 20-degree night. Know your facts when you're shopping for a sleeping bag, and DO NOT trust the manufactures rating system when you're determining what bag to buy – use it only as a reference point.

In general, there are two types of sleeping bags – those filled with synthetic materials (Polarguard 3D, Primaloft Sport, Thermolite Extreme, Quallofil, and Lite Loft, Dacron 88, Holofil II, DuPont Fiberfill II, Permaloft, Microloft, Acryloft and DN500, etc, etc) and those filled with down. We'll briefly look at each type, but if you want more comprehensive information, simply do a Google search and you'll find a wealth of information at your finger tips. A quick trip to your local knowledgeable outfitter will also do the trick.

The key to staying warm is loft. Loft is the buffer that your sleeping bag creates from the cold air around you by lofting up off your body. The greater the loft, the greater the zone on insulation surrounding you and the warmer you stay. Down lofts far better than synthetic. However, if your bag were to get wet (don't let your bag get wet, dummy – use a waterproof bag), a down bag loses most of its lofting ability (only retains 20% of its lofting properties) while a synthetic will retain about 65% of its lofting ability.

Synthetic sleeping bags are generally less expensive for the same temperature rating as a down bag. As noted earlier, they retain some of lofting characteristics when wet, but they also dry faster. Synthetic bags withstand abuse far better than down bags and require less maintenance. Due to their inexpensive nature and the fact that they require less attention, they're often the bag of choice for amateur campers and those new to the sport.



(Typical synthetic sleeping bag)

Down bags pack smaller, weight less, have a higher warmth to weight ratio and are generally more expensive for these reasons. When a down bag is properly cared for however, it can last 3 times longer than a well cared-for synthetic bag. The cost and quality of a down bag is related to its fill – 600 fill means that one ounce of down occupies 600 cubic inches. A good down bag will be around 500 to 600 fill. A fill of 600 to 700 is considered very good. An 800 fill is superior and generally quite expensive. Fill also represents how much downy feather and quill is present in the bag. The higher the fill number, the more downy feather and less quill there is. The key to owning a down sleeping bag is keeping it clean, and knowing how to care for it. A visit to your local knowledgeable outfitter will give you an idea of what products to use to care for your bag, and how to go about it.

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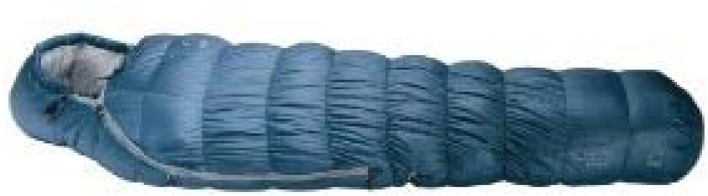


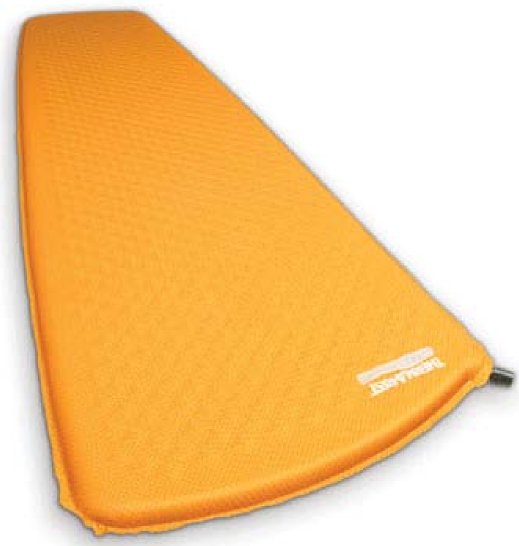
(Typical down sleeping bag)

When you go to buy your next bag, and while you're still in the store, get into the bag (yeah, people might think you're a little nuts). If it feels too tight or short, don't buy it! If you're not comfortable in the store, you're not going to be comfortable in it for 8 hours a night somewhere in the woods.

You're better off buying a bag that's too warm than too cold – you can always unzip the bag a bit if you're hot… but you can't do much to make it warmer in the middle of the night. Personally, I have multiple sleeping bags because I'm a camping nerd. Amongst others, I've got a negative 20-degree synthetic that I use for early season (when I don't mind packing heavy), and a 20-degree down bag for the summer season when I'm trying to pack light.

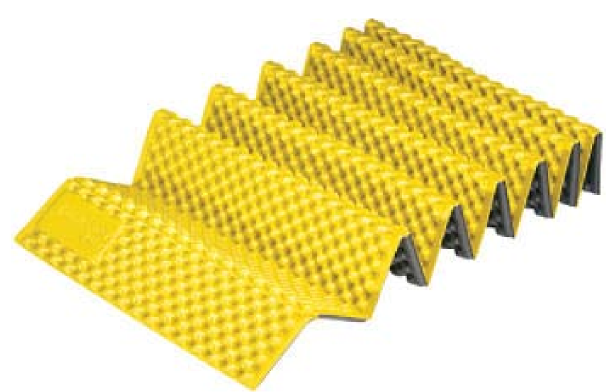
Sleeping pads are the second key piece of equipment to a good night's sleep. There are a lot of mats out there, but we'll break them down into self-inflating, manual-inflating and foam pads. Your sleeping pad is not to be overlooked! Do your research, and don't skimp on your sleeping pad – it supports your weight for 8 hours while you sleep. The purpose of your mat is two fold: 1) to keep your body of the ground, and 2) to provide you some insulation from the heat-sucking earth beneath you.

One of the most common self-inflating pads is the ThermaRest. The upside to them is their lifetime warranty (according to their website) and the fact that you don't have to manually blow them up. They also insulate well (therefore keeping you warmer in your sleeping bag). The downside is their pack size (they're quite bulky), and they will eventually leak (as all inflatable pads do, at some point) and have to be repaired. They cost approximately $75.



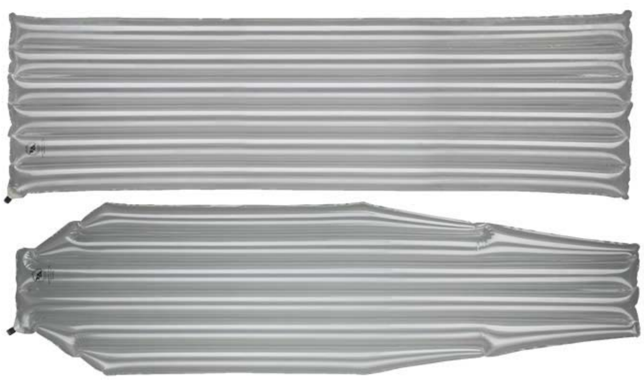
(Self-inflating ThermaRest pad)

The Z-Lite foam pads are used my some (myself included, on occasion) because they never leak, leaving you on the ground in the middle of the night. They tolerate an exceptional amount of abuse and last a very long time. They're very light to carry, weighing in at only ½ pound. The downside is that they do not keep your body off the ground nearly as well as an inflatable pad – therefore they're not as comfortable. Their pack size is comparable to the ThermaRest self-inflating mattress (20 in. x 4 in. x 5.5 in.) and cost is around $30.



(Z-Lite foam pad)

My personal choice for 90% of my nights on the ground is a manually-inflatable (you must blow it up) mat, such as the Big Agnus. A 230 lb man can comfortably sleep on his side, and never have his hip touch the group with this mat. The Clearview mat packs down to the size of your two fists stacked on top of each other, and it weighs less than a pound. Cons include the fact that they're bound to get a hole in them someday (a more durable model may be purchased that packs larger, weighs more, and costs more), you have to blow it up each evening (mine inflates in less than two minutes), and they're the least insulating of the three choices (though a Big Angus with down insulation built into it may be purchased for this reason). Cost is around $30 for a Clearview, all the way up to $110 for a down insulated Air Core.

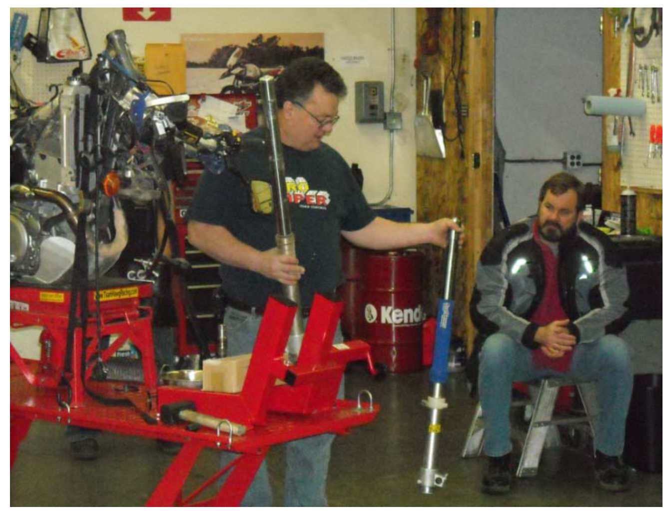


(Big Agnus sleeping mats)

This concludes sleeping bags and sleeping mats. Next time we'll take a look at cooking systems. Remember, that no matter what gear you have, you need to get out and use it. What you're using isn't nearly as important as the fact that you're out there using it! So get out and ride! There are already a dozen rides posted on motoidaho.com for this summer – many of them overnighters. Sign up for one, and get out there! See you on the trail…. RWC

Suspension 201

By Ed Hiatt



Earlier this year Ed Hiatt put on a suspension tech-day at Happy Trails in which he reviewed with us the basics of setting up and adjusting your motorcycle suspension to optimize our bike's performance and make our riding more enjoyable and safer. Here are some of the points he covered. The picture above is courtesy of Chuck Scheer.

Overview

Many assume their new bike is ready to ride as delivered from the factory to the showroom floor. Then, to increase performance most riders focus on adding power, but do little to actually tune their suspension. Motorcycle manufacturers commonly build bikes using a "one size fits all" approach. But you can often significantly transform a bike's ability to perform, as well as improve safety, by making a few simple adjustments to the suspension and geometry. The springs and geometry are the foundation for a bike's response to Rider Inputs. Preload compresses the spring before any weight is applied to it. Preload is adjusted to set Sag. Proper Sag setup provides sufficient suspension travel to absorb bumps, with enough travel held in reserve at the top of the stroke to keep the wheels firmly on the ground following a dip, bump, etc. Rebound damping prevents springs from overshooting and oscillating during recovery from bumps. Compression damping assists the springs to absorb braking forces, the impact of bumps, and overshooting during compression. There are many other variables to consider but the Rider is the biggest variable of all. Rider weight, body position, riding style, skill, & where you choose to ride all influence suspension decisions.

The suspension has two primary functions: 1) Smooth out the bumps in the road and keep you comfortable; 2) Keep both tires in constant contact with the road surface to maintain maximum possible traction. Number 1 is nice to have. Number 2 is critical!

So, what should a good suspension setup feel like? There are several things to evaluate. First of all, you don't want the motorcycle to do anything bad when cornering on rough surfaces, whether on the street, track, or trail. When you are negotiating a curve under rough conditions, are you feeling relaxed and confident or feeling tense waiting for an undesirable effect? Things that normally make riders lose confidence (and traction) are: a) a sharp jarring sensation; b) a loose feel; c) a wobble or weave.

A combination of all these problems is possible. A loose feeling is generally due to inadequate damping forces that allow the motorcycle to wallow and move; thus, making the bike not hold its line on a trail, or arc in a curve. Excessive damping or spring rates in some cases cause harshness, but there are often more instances where an overly soft setup causes the suspension to begin to bottom and feel hard. At the end of the day, predictable traction is what good suspension is all about.

While riding straight and level (not cornering), the rider should also attempt to feel what is going on. The wheels should follow undulations smoothly and the wheel should feel like it is following the surface you are riding on. There should not be sharp jarring sensations coming through to the rider, yet there should be a good feel for the road or trail surface being transmitted.

When a larger bump is encountered, the wheel should move to absorb it without skipping and without much secondary motion. The bike should remain level and stable after the bump has been negotiated. Your suspension should feel like it is moving smoothly, and a rare bottoming of the damper unit or fork is acceptable when encountering extreme conditions. For what good is a suspension's full travel if you don't ever use all of it?

In general, a rider looking for touring comfort will look for a softer setup that gives the best isolation from the surface. A rider more interested in off road riding often prefers a firmer feel that allows the motorcycle to make quick transitions with less energy being dissipated by the suspension components. If you find that the shock is bottoming, try increasing damping about 3 clicks. Conversely, if the shock never bottoms when on rough terrain, try reducing damping about 3 clicks. Experiment with the adjustments and take good notes of your original settings, as well as the changes made. How your suspension feels to YOU is what is most important.

Rider Input

One of the very most important factors in a motorcycle's suspension operation is actually the rider's input. During acceleration and deceleration, a motorcycle's weight will transfer backwards and forwards, respectively. On a typical motorcycle, the rider can transfer 150 - 200 pounds of weight from one wheel to another by just changing the throttle positions by a few degrees. For this reason, throttle changes should be made smoothly. Whacking open the throttle will cause the rear suspension to rapidly extend, as well as become less compliant to the surface irregularities (resulting in loss of traction or massive weight transfer).

When applying the front brake, the front suspension WILL compress. The front damping and spring work together to manage these forces.

Brake application should be smooth, even when applied rapidly. The correct application of braking forces allows the suspension to transfer the braking energy to the front tire in a way that allows the tire to take a set and conform to the ground where it can develop traction. Snapping on the brake will lead to traction loss. The front compression damping controls the onset of the brake forces while the spring is what will ultimately provide the support and resistance to bottoming while on the brakes. Overall, you should feel a confidence-inspiring and comfortable ride that adds to the total experience.

Acceleration

The rear suspension is strongly affected by the chain forces under acceleration. Hard acceleration will cause the rear of the bike to rise up countering the additional load that is transferred from the acceleration forces. This fact together with the forks' extension will raise the bike, adding ground clearance. The forces on the rear suspension also cause it to feel firmer under acceleration caused by the application of more throttle. These control facts are a useful tool when cornering or crossing rough terrain!

When a rider rolls on the throttle, they should feel the forks extend smoothly and the rear of the bike should take a set (the rear comes up slightly) in a way that is smooth and confidence inspiring. Rolling off the throttle should cause the rider to feel that same weight transfer reverse in a smooth way, and the rear will add compliance while the front fork should settle back to a neutral position.

Deceleration

Deceleration will lower the front of the bike when entering a corner, as the front wheel gains traction. The steering geometry will become a little quicker as the weight transfers to the front wheel and compresses the fork. This knowledge can also be a great tool for cornering!

When braking, there will be brake dive on any motorcycle with a pro-dive suspension (like the typical telescopic forks). You should be able to feel the front lower during braking but it should be smooth and confidence inspiring, as opposed to the feeling of front end collapse. When braking medium hard (not doing a stoppie) the forks should still offer good feel, as well as some amount of bottoming resistance when encountering bumps.

Springs & Damping

Most springs on a motorcycle are made of steel. A coil spring absorbs and stores energy from a bump as it compresses, and then gives it back as it extends. The amount of energy is specified by the spring rate: how many inches or millimeters the spring will compress under a load in pounds or kilograms. For a given spring, more coils means a softer overall spring rate. If you shorten the spring buy cutting off coils, it becomes stiffer. If the springs are too stiff, the ride can be harsh, and there will be less weight transfer under both acceleration and deceleration. If the springs are too soft, the bike will have a plush feel and bottom out frequently. Even small bumps will use up all the available travel.

The question is, "When are the springs just right?" The optimum is the softest possible spring which bottoms occasionally, but infrequently. The Spring Rate affects how much spring travel is used up by a given bump. A spring can be anything that compresses under a load and expands back when the load is removed. A progressive spring's resistance rate increases as it is compressed. The air at the top of the forks acts as a special progressive spring to help avoid bottoming out. The oil level must remain high enough to cover the cartridge to avoid starving cartridge valves. Too little oil also reduces the ability of the forks to dissipate heat. So, proper oil level and air content can be very important components of your suspension system. Many riders seem anxious to evacuate air from their forks frequently, when that might actually be the opposite of what's needed depending upon the application. Consulting a suspension professional is always a good idea.

Springs are great, but they have a problem. If there is inadequate damping, a spring will continue to oscillate until the stored energy is eventually

converted to heat. Adding damping to a spring assembly improves suspension performance in several ways.
Rebound Damping slows the extension of the compressed spring and converts some of its stored energy into heat by forcing oil through a precisely engineered valve. Rebound damping also helps prevent the spring from over-shooting as it extends. Wallow during cornering or acceleration is a function of inadequate damping. Typically there is more than 2 times the damping force on rebound as on compression. The amount of Rebound Damping can be increased or decreased by adjusting the opening in the needle valve which regulates oil flow by turning a screw (in or out), changing the shims in the valve stack to make it easier or harder for the oil to pass through the rebound valve, and changing the weight of the oil.

Compression Damping helps the spring resist compression and, by forcing oil through a sophisticated valve, converts energy into heat which would otherwise have been stored in the spring to be released later. Compression Damping prevents the spring from overshooting in its movement as the suspension responds to a bump or abrupt braking forces. The amount of Compression Damping can be changed using the same procedure applied to Rebound....adjust the compression needle valve by turning the screw, valve & shim stack design, and oil weight selection. Turning the needle inward constricts oil flow (increasing damping), while backing it out allows oil to flow more freely (reducing damping).

Preload & Sag

Once you have the correct springs for the weight of the bike and rider, dialing in a suspension always starts with Sag. Free Sag is a measure of how far the suspension sinks (compresses) under the weight of the bike alone. Loaded or Rider Sag is a measure of how far it settles under the combined weight of bike and rider. Fuel is in the tank for both measurements. Setting sag focuses on adding just enough Preload to maximize the ability of the springs to keep the wheels in constant contact with the ground.

Adjusting Preload does NOT change the spring rate. Reducing Preload does not make the spring softer, and conversely, adding Preload does not make it stiffer. This is a very common misconception held by many riders. However, adjusting Preload DOES changed how much suspension travel is available to extend the suspension when the bike is unweighted over a bump, the crest of a hill, or anytime it needs to extend to maintain tire contact over a depression. Performance is best when the suspension is normally working within the middle range of its available travel.

Going through the process of setting sag may indicate there is a mismatch between the springs, the rider, and the bike. The springs may be too hard and stiff, or they may be too soft. The following examples may help clarify the relationship between springs, preload, and sag.

1) A heavier rider has a bike coming from the factory with a relatively soft spring. The suspension uses up too much of its travel under just the weight of the rider. It will likely bottom out over a small bump or in light braking....a potentially unsafe condition. To remedy this, substantial Preload is added to the springs in the forks, as well as the shock, until sag is reduced to within the desired range. But it is still a bike with a soft spring for this rider. A little bump and some light braking will still use up a lot of travel. A big bump and hard braking will likely bottom out the suspension. This leaves only the tires to cope with these additional loads and still maintain traction. Leaned hard over in a turn, this rider has little travel left in the suspension to cope with bumps - just when he needs all the help he can get.

2) The opposite extreme is the lighter weight rider who rides a bike equipped with hard, stiff springs. To get enough loaded (Rider) sag, Preload will be backed off until there is almost none at all, or even negative preload in a shock with a threaded collar. When the rider gets off the bike, due to the low preload, Free Sag is more than we want under just the weight of the bike by itself. So what is wrong with that? The problem here will be that while the forks and shock were designed to have a total

travel of 4", the bike may only use half that, or even less, due to the stiff springs. The forces the rider encounters over bumps will be harsh and abrupt, and the ride will not be forgiving. If the spring is actually loose when the handle bars or tail of the bike is lifted, the wheels on the bike will be unweighted over a bump or even the crest of a hill. This topped out suspension is "uncontrolled". Traction = weight x friction. With no spring pressure available to press the tires against the ground, there is no weight! No weight = no traction. Not good!

Final Thoughts

There is no stock answer to tell us what exactly we need to do in every case. The overall picture in determining the correct spring rate and settings includes a rider's style and preference, the design of the motorcycle, as well as the nature and condition of the road, track, or trail traversed. Be willing to experiment and HAVE A TEST STRATEGY.

Begin your suspension experience with one possibility in mind: Things may seem pretty good as they already are, but they might be made better. Sometimes much better! If you already have a perceived handling problem, then you have a reason to experiment with some changes. If you don't, then you still have a reason to experiment.

This was the situation for me regarding my WRR. I liked the suspension. In fact I thought it was the best **stock** suspension that I've ever had on a true dualsport motorcycle (not a plated race bike). But there were a few nagging issues for me....my style....and where I like to ride. I began experimenting to isolate the best settings for me. The process was very valuable as it helped me identify the specific things I wanted my suspension to both do and not do. Then I discovered that I still desired something more....something beyond the adjustment range of the stock components. So, I consulted a real suspension professional. The changes he made were relatively simple, yet VERY effective. Now, it does everything I want (or could reasonably expect) a dualsport bike to do. Anyway, I'm just thrilled with the results. In my next article, I'll share more details about the changes we made to my WRR suspension.

The above article comes from a Dualsport motorcycle web site the author did a much better job explaining it than I can. I hope you have enjoyed and will put it to good use. (Ed Hiatt)

Hypothermia & Hyperthermia In Managing Motorcycle Riding Risk

By Craig Olsen, M.D.

In the April issue of this newsletter we discussed the relationship of fatigue in the management of motorcycle riding risk. In this issue we will briefly review two more risks common to our sport – hypothermia and hyperthermia. Our marvelously created bodies have the ability to thermo regulate, remarkably maintaining our core body temperatures at 98.6 °F plus or minus 1.4 °F under a wide range of conditions. When our ability to thermo regulate is overwhelmed by thermal extremes and/or contributory factors, we can develop either hypothermia or hyperthermia, both of which can be potentially lethal.

Hypothermia is defined when the core body temperature drops below that required for normal metabolism (defined as 95.0 °F). This occurs when body heat is lost (usually due to exposure to cold) faster than it can be replenished. We lose body heat primarily through skin (90%) and lungs (10%) via four mechanisms: [1]

1. *Radiation* – due to thermal gradients between our body and any ambient environmental temperature below 98.6 °F. Largely the surface area of exposed body and the temperature gradient determines this. The

more surface area exposed and the greater the gradient, the larger will be the loses in body heat due to radiation.

2. *Conduction* – due to molecular transference of heat energy through direct contact between objects. Water conducts heat away from the body 25 times faster than air because it has a greater density and therefore a great heat sink capacity. Generally conductive heat loss accounts for about 2% of overall loss. However, with wet clothes the loss is increased 5x.

3. *Convection* – a conductive process where one of the objects is in motion with its surface molecules being heated, moving away and replaced by new molecules that are also heated. The rate of convective heat loss depends on the density of the moving substance (water convection occurs faster than air convection) and the velocity of the moving substance. Wind chill is an example of the effects of air convection. A wind chill table gives a reading of the amount of heat lost to the environment relative to a still air temperature.

4. *Evaporation* – heat loss from converting water from a liquid to a gas. Perspiration, sweating and respiration are forms of evaporative heat loss. As body moisture is lost through these various evaporative processes, the overall circulating volume is reduced leading to dehydration, which makes the body more susceptible to hypothermia and other cold injuries.

Signs and symptoms depend on the degree of hypothermia. [1-3] Look for the "umbles" – stumbles, mumbles, fumbles, and grumbles which show changes in motor coordination and level of consciousness. In mild hypothermia (core temperature 98.6-96 °F) shivering is involuntary, ability to do complex motor functions is impaired, and the periphery is vasoconstricted (blanched skin). With moderate hypothermia (core temperature 96-93 °F), addition to the above, the victim will manifest a dazed appearance, loss of fine motor coordination, slurred speech, violent shivering, irrational behavior, and apathy to their condition.

With severe hypothermia (core temperature 92-86 °F) shivering will occur in waves until it finally stops, they collapse – usually into a fetal position, pupils dilate, pulse rate decreases, and breathing becomes shallow. At a core body temperatures of 86 °F and below, the victim begins losing consciousness, breathing becomes erratic, and fatal cardiac arrhythmias develop.

Individuals developing hypothermia are also vulnerable to other cold-related injuries including: 1) frostbite (freezing of body tissues), 2) gangrene (death of tissues from interruption in blood flow), 3) chilblains (nerve and small blood vessel damage – usually in the hands or feet – following prolonged exposure to above-freezing cold temperatures), 4) trench foot (damage to nerves and small blood vessels from prolonged immersion in cold water). [3]

Immediately seek medical attention for anyone who appears to have hypothermia. First-aid measures that can be initiated in the interim include: [1,3]

1. *Reducing heat loss* – add additional layers of dry clothing, remove any wet clothing, increase physical activity, and seek warmer shelter.

2. *Adding fuel and fluids* – carbohydrates provide the quickest source of energy for sudden brief heat surge. Maintain adequate hydration. Hot liquids can provide both calories and a heat source, but avoid caffeine, which is a diuretic and cardiac stimulant. Also avoid alcohol, which is a vasodilator causing increased peripheral heat loss, and tobacco/nicotine, which is a vasoconstrictor increasing the risk of frostbite.

3. *Adding heat* – fire or other external heat source. In cases of severe hypothermia handle the victim gently since any excessive, vigorous or jarring movements may trigger cardiac arrest. [2]

Hyperthermia is an elevated body temperature (above 100-101 °F) due to failed thermoregulation and occurs when the body produces or absorbs more heat than it can dissipate through the mechanisms enumerated above. When elevated body temperatures are sufficiently high, hyperthermia becomes a medical emergency requiring immediate treatment to prevent disability and death. [5]

A number of heat-related illnesses may develop in the progression of hyperthermia. [6] These include: 1. *Sunburn* – an injury to skin produced by overexposure to ultraviolet radiation from the sun's rays and may result in first degree burns (reversible injury to epidermis – outer layer of skin – manifested as redness with mild swelling and minimal discomfort) or second degree burns (reversible injury to epidermis and dermis manifested by blister formation, intense splotchy redness and severe swelling and pain). Sunburned skin loses its ability to effectively dissipate heat thus increasing the risk of hyperthermia. 2. *Heat rash* – caused by excessive sweating during hot, humid weather and is manifested by a red cluster of pimples or small blisters usually occurring on the neck and upper chest, in the groin, under the breasts, and in elbow creases. 3. _Heat cramps_ – muscle pains or spasms (usually in the abdomen, arms, or legs) that may occur with significant sweating during strenuous activity as a result of depletion of body fluids and salts. 4. _Heat exhaustion_ – results as the body's response to an excessive loss of water and salt in sweat and is manifest as heavy sweating, paleness, muscles cramps, tiredness, weakness, dizziness, headache, nausea or vomiting, and fainting. The victim's skin may be cool and moist, the pulse rate may be rapid and weak, and breathing may be fast and shallow. Untreated, heat exhaustion may progress to heat stroke. 5. _Heat stroke_ – a continuum of the above with the addition of confusion, seizures, and unconsciousness. Body temperature may rise to 106 °F or higher within 10-15 minutes. The skin is red, hot and moist or dry (no sweating), and the pulse is rapid and strong. Untreated, heat stroke can cause death or permanent disability.

Treatment consists of moving the victim out of the sun and into a cooler shady place. Remove any excessive clothing and cool the body by covering it with damp sheets or by spraying it with cool water. Air may be directed onto the body with a fan or newspaper. If conscious, have the victim drink cool water or another nonalcoholic beverage without caffeine. [5-7]

Prevention is the best medicine when it comes to dealing with hypothermia or hyperthermia. [8] Drinking plenty of fluids (non alcoholic and non caffeine) is fundamental to both conditions. The adequacy of hydration is best accessed by the amount and quality of your urine – it should be copious and clear rather than infrequent and concentrated (dark yellow). Replenish electrolytes depleted through sweating with fruit juices, sports beverages, or electrolyte substitutes (Elete Electrolyte Add-In©). On longer, multiday rides consider a hydration system (CamelBak or equivalent) for more consistent and constant rehydration. When in remote areas, consider carrying a water filtering/purification system to insure that you are not caught without drinkable water.

Protection from sunburn is important regardless of the ambient temperature. Use a sunscreen with SPF (sun protection factor) of 30 or greater, preferably one that blocks both UVA and UVB rays. [9]

Proper clothing and appropriate riding gear are the best protection from both cold and heat. Polypropylene is better at wicking moisture from perspiration and sweating away from the body facilitating cooling during hotter weather and preventing dampness during colder weather that may lead to excessive body cooling. Layers of cotton or wool outer clothing retain body heat better in the cold weather but impede heat dissipation during hotter temperatures. A baklava or face and neck mask along with windproof riding jacket and pants help prevent excessive heat loss. Extra warm gloves or heavier gloves with glove liners also help. An electric heating vest, gloves, seat and/or grips may be beneficial as well. Appropriate rain gear will keep you dry, preventing excessive heat loss from riding in wet clothes. In hot weather evaporative cooling vests and neckerchiefs along with mesh and vented riding jackets and pants help with dissipation of body heat.

Any riding, especially adventure riding, can be work. The more difficult the riding terrain, the more energy expended (and thus more body heat generated) riding it. Pace yourself, particularly in hot weather, and make frequent stops to rest (in a shady area if possible) thus allowing your body to adjust and dissipate excessive build up of body heat. It is best to use a buddy system when riding in either extreme of heat or cold.

Be prepared and plan for the unexpected. Complacency in riding preparation can get you into trouble. During a recent ride to Jordan Craters, I watched the ambient temperature drop over 30 ° (from 86 °F to 52 °F) in about 20 minutes as an unexpected thunderstorm came through. With only a riding jersey and no rain gear or extra layers of clothing, I got soaked and cold 30 miles from nowhere. Fortunately, the rain lasted only 20 minutes and by another 20 minutes the sun came back out, and the temperature rose to 78 °F. I was lucky and did not develop hypothermia, but I could have had the inclement weather conditions persisted longer. You will have more enjoyable and safer adventure riding by keeping aware of these two riding risks and preventively preparing for them.

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