

Iron Butt 101

Long Distance Riding Tips

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My Long Distance Riding Background

- Long distance rider since 1997
- Finisher of the Iron Butt Rally in 1999 (11,271 miles in 11 days)
- Iron Butt Association certificate rides include:
 - Coast to Coast in 36 hours
(San Diego, CA to Jacksonville, FL)
 - 1,800+ miles in 24 hours
- Designer of numerous auxiliary fuel systems
- Technical Editor of the Iron Butt Magazine

Presentation Outline

1. Why Ride Long Distances?
2. The “Prime Directive”
3. Choosing a Motorcycle
4. Popular Motorcycle Modifications
5. Dealing with Weather
6. Apparel
7. Other Gear
8. Training
9. Questions?

Why Ride Long Distances?

Why Ride Long Distances?

1. Learning how to successfully ride 1,000 miles per day makes all other riding more pleasurable.
2. Long distance riding is often required to get to interesting and beautiful places that you would otherwise never experience on a motorcycle.
3. Competitive long-distance rallies are a great sport.

Why Ride Long Distances? (continued)

4. You get to have a cool license plate frame!



IBA President
Michael Kneebone's
License Plate

The Prime Directive

The Prime Directive

Maximize comfort and safety while riding.

- Keep this objective in mind when considering all decisions related to long distance riding.
- You should not be focused on riding fast or skipping meals or enduring pain or going without sleep.
- When preparing for long distance riding and while on the road, you should be focused on maximizing comfort and safety while riding.

Choosing a Motorcycle

Suzuki GN125?



Keith Keating finished the 2001 Iron Butt Rally on a Suzuki GN125, riding 7,460 miles in 11 days. This bike is about as far as you can get from satisfying the Prime Directive (maximize comfort and safety).

Important Features to Consider When Choosing a Motorcycle for Long Distance Riding?

1. Comfortable Saddle
2. Good Lighting
3. High Fuel Capacity

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No. All of these features are achievable with aftermarket parts and therefore should not affect a purchase decision.

Key Motorcycle Design Features for Long Distance Riding:

Features that maximize comfort, safety and efficiency that are not easy to achieve with aftermarket parts.

Critical Design Features:

1. Comfortable Ergonomics (especially the ability to stand on the pegs)
2. Good Ride and Handling
3. ABS Brakes (especially important at night and on unfamiliar roads)
4. Durability
5. High Alternator Output (spare capacity of 175 watts per person for heated gear and 100 watts for auxiliary lighting and other accessories)

Important Design Features:

1. Low Vibration
2. Good Thermal Management
3. Adequate Power
4. Good Fuel Economy
5. Electronic Cruise Control
6. High Load Carrying Capacity
7. Tubeless Tires (fixing flats easier)
8. Center Stand (necessary for quickly fixing flat tires)

Desirable Design Features:

1. Tip Over Protection
2. Good Wind Protection
3. Off-Pavement Capability (especially important for some endurance rallies)
4. Shaft Drive

Key Design Features and Author's Ratings* for Long-Distance Riding

Critical Features:				
Ergonomics				
Ride and Handling				
Durability				
ABS Brakes				
Alternator Output				
Important Features:				
Vibration				
Thermal Management				
Power				
Fuel Economy				
Electronic Cruise Control				
Load Carrying Capacity				
Tubeless Tires				
Center Stand				
Desirable Features:				
Tip Over Protection**				
Wind Protection				
Off-Pavement Capability				
Shaft Drive				

* Poor: ●○○○, Fair: ●●○○, Good: ●●●○, Very Good: ●●●●, Excellent: ●●●●●

with optional equipment, * very good with aftermarket modifications

Key Design Features and Author's Ratings* for Long-Distance Riding

Critical Features:	Honda Gold Wing			
Ergonomics	●●●●●			
Ride and Handling	●●●○○***			
Durability	●●●●●			
ABS Brakes	Optional			
Alternator Output	●●●●●			
Important Features:				
Vibration	●●●●●			
Thermal Management	●●●●●			
Power	●●●●●			
Fuel Economy	●●●○○			
Electronic Cruise Control	●●●●●			
Load Carrying Capacity	●●●●○			
Tubeless Tires	Standard			
Center Stand	Standard			
Desirable Features:				
Tip Over Protection**	●●●●○			
Wind Protection	●●●●●			
Off-Pavement Capability	●○○○○			
Shaft Drive	Yes			

* Poor: ●○○○○, Fair: ●●○○○, Good: ●●●○○, Very Good: ●●●●○, Excellent: ●●●●●

with optional equipment, * very good with aftermarket modifications

Key Design Features and Author's Ratings* for Long-Distance Riding

Critical Features:	Honda Gold Wing	HD Sportster 1200N		
Ergonomics	●●●●●	●○○○○		
Ride and Handling	●●●○○***	●○○○○		
Durability	●●●●●	●●○○○		
ABS Brakes	Optional	N.A.		
Alternator Output	●●●●●	●○○○○		
Important Features:				
Vibration	●●●●●	●●○○○		
Thermal Management	●●●●●	●○○○○		
Power	●●●●●	●●○○○		
Fuel Economy	●●●○○	●●●○○		
Electronic Cruise Control	●●●●●	N.A.		
Load Carrying Capacity	●●●●○	●●●○○		
Tubeless Tires	Standard	N.A.		
Center Stand	Standard	N.A.		
Desirable Features:				
Tip Over Protection**	●●●●○	●○○○○		
Wind Protection	●●●●●	●○○○○		
Off-Pavement Capability	●○○○○	●○○○○		
Shaft Drive	Yes	N.A.		

* Poor: ●○○○○, Fair: ●●○○○, Good: ●●●○○, Very Good: ●●●●○, Excellent: ●●●●●

with optional equipment, * very good with aftermarket modifications

Key Design Features and Author's Ratings* for Long-Distance Riding

Critical Features:	Honda Gold Wing	HD Sportster 1200N	BMW K1600 GT	
Ergonomics	●●●●●	●○○○○	●●●●●	
Ride and Handling	●●●○○***	●○○○○	●●●●●	
Durability	●●●●●	●●○○○	?	
ABS Brakes	Optional	N.A.	Standard	
Alternator Output	●●●●●	●○○○○	●●●○○	
Important Features:				
Vibration	●●●●●	●●○○○	●●●●●	
Thermal Management	●●●●●	●○○○○	●●●●○	
Power	●●●●●	●●○○○	●●●●●	
Fuel Economy	●●●○○	●●●○○	●●●○○	
Electronic Cruise Control	●●●●●	N.A.	●●●●●	
Load Carrying Capacity	●●●●○	●●●○○	●●●●●	
Tubeless Tires	Standard	N.A.	Standard	
Center Stand	Standard	N.A.	Standard	
Desirable Features:				
Tip Over Protection**	●●●●○	●○○○○	●●●○○	
Wind Protection	●●●●●	●○○○○	●●●●○	
Off-Pavement Capability	●○○○○	●○○○○	●○○○○	
Shaft Drive	Yes	N.A.	Yes	

* Poor: ●○○○○, Fair: ●●○○○, Good: ●●●○○, Very Good: ●●●●○, Excellent: ●●●●●

with optional equipment, * very good with aftermarket modifications

Key Design Features and Author's Ratings* for Long-Distance Riding

Critical Features:	Honda Gold Wing	HD Sportster 1200N	BMW K1600 GT	BMW F650GS
Ergonomics	●●●●●	●○○○○	●●●●●	●●●●●
Ride and Handling	●●●○○***	●○○○○	●●●●●	●●●●○
Durability	●●●●●	●●○○○	?	●●●●○
ABS Brakes	Optional	N.A.	Standard	Optional
Alternator Output	●●●●●	●○○○○	●●●○○	●●○○○
Important Features:				
Vibration	●●●●●	●●○○○	●●●●●	●●●○○
Thermal Management	●●●●●	●○○○○	●●●●○	●●●○○
Power	●●●●●	●●○○○	●●●●●	●●●○○
Fuel Economy	●●●○○	●●●○○	●●●○○	●●●●●
Electronic Cruise Control	●●●●●	N.A.	●●●●●	N.A.
Load Carrying Capacity	●●●●○	●●●○○	●●●●●	●●●●●
Tubeless Tires	Standard	N.A.	Standard	Standard
Center Stand	Standard	N.A.	Standard	Standard
Desirable Features:				
Tip Over Protection**	●●●●○	●○○○○	●●●○○	●●●●●
Wind Protection	●●●●●	●○○○○	●●●●○	●○○○○***
Off-Pavement Capability	●○○○○	●○○○○	●○○○○	●●●●○
Shaft Drive	Yes	N.A.	Yes	No

* Poor: ●○○○○, Fair: ●●○○○, Good: ●●●○○, Very Good: ●●●●○, Excellent: ●●●●●

with optional equipment, * very good with aftermarket modifications

Popular Modifications for Long Distance Riding

Saddles

- Few stock seats are comfortable enough for long distance riding.
- 80+% of the motorcycles in the 2011 Iron Butt Rally were equipped with aftermarket seats.
- 70% of the aftermarket seats were built by just three California companies that share a common heritage:
 - Russell Cycle Products
(original design by Bill Mayer Sr.)
 - Bill Mayer Saddles
 - Rick Mayer Cycle

Features of Comfortable Saddles

- Wider (“wings”)
- More supportive, especially at the widest part of the saddle
- A “pocket” to sit in

Stock K1600GT Saddle vs. Rick Mayer



Stock F650GS Saddle vs. Custom Corbin



Auxiliary Fuel Pillion Tank



Auxiliary Fuel Fuel Tank Plate Modification



Brass Fitting
Epoxied in Place

Auxiliary Fuel on Pillion (And Other Popular Modifications)

Cee Bailey's
Windscreen

Garmin GPS478
Valentine V1
J&M CB

Radiator and
Oil Filter Guards

Scott Oiler

Engine Protection Bars

D.I.D. Chain



Auxiliary Fuel “Tail Dragger” Tank



Auxiliary Lights (and Other Common Modifications)



Aeroflow Windscreen

Hydration System

Aux Fuel

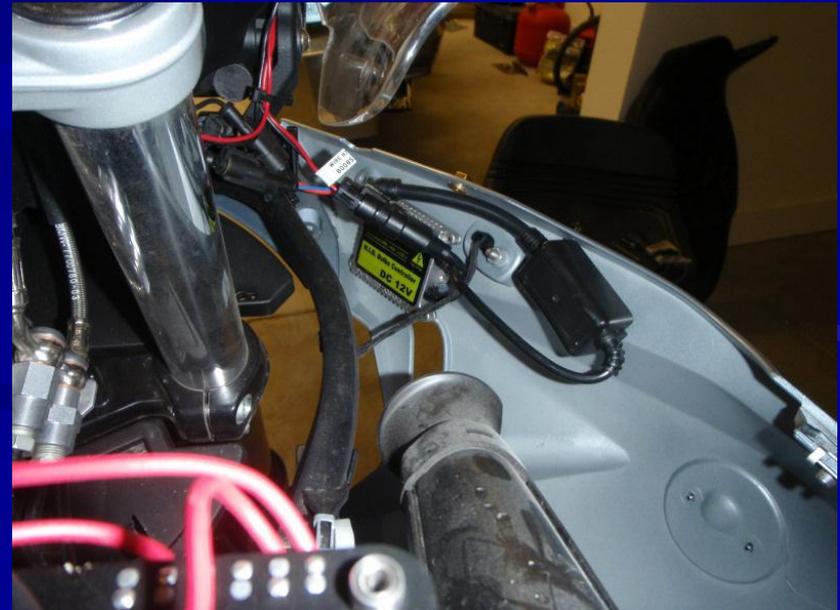
PIAA 910s

Throttle Lock

Russell Saddle

HID Retrofits

(triple the light w/ less current draw)



Tire Pressure Monitoring

Long distance riders average one flat tire every 50,000 miles. If you ride far enough, it's only a matter of time before you are going to have to deal with a flat tire.

Doran 360M TPMS



Tire Repair

12-Volt Compressors are a Better Choice Than CO2

“Sticky String” is Preferred by Most Riders



Add Needle Nose Pliers

High-Volume Hydration System



Dealing With Weather: Rain, Cold, and Heat

Rain

1. Rain Suits – Waterproof suits you either put on before it starts raining and suffer the discomfort of having no vents open or put on after it starts raining to prevent your wet clothes from drying out when the rain stops.
2. Removable Waterproof Liners – All of the disadvantages of rain suits at a higher price and longer time to install/remove.
3. Vented Suits with a Built In Gore-Tex Liner – What all long distance riders eventually graduate to.

Temperature

- Being warm-blooded, humans must maintain a core temperature within a few degrees of our 97-99°F normal temperature.
- If we get just 5°F hotter or colder, we are seriously impaired.
- 10°F hotter or colder, we die.

Cold Temperatures

- In cold weather, we can stay warm with insulation or with electric gear.
- To avoid the need for bulky, uncomfortable apparel, all serious long-distance riders carry and frequently use an electric jacket, even in the summer.
- Especially at night, electric gear is useful even when the temperature is in the 60s.

Hot Temperatures

- In hot weather, insulation doesn't work because some cooling is necessary to deal with about 140 watts of heat generated by our metabolism. The body must be cooled.
- The available cooling mechanisms depend on the ambient temperature.

Cooling Mechanisms

1. Conduction
2. Convection
3. Radiation
4. Evaporation

Conduction

- The transport of energy by means of direct physical contact in the absence of relative motion.
- Conductive heat transfer can be very significant for a body immersed in water, but air is such a poor conductor, that conduction plays a fairly minor role.

Convection

- The transport of energy by the means of the motion of air surrounding the body being at a different temperature.
- At zero wind speed, there is a minor amount of convective heat transfer associated with the motion caused by the temperature differential between the skin and the air.
- At non-zero wind speeds, convection becomes significant if the air is at a different temperature than the skin.

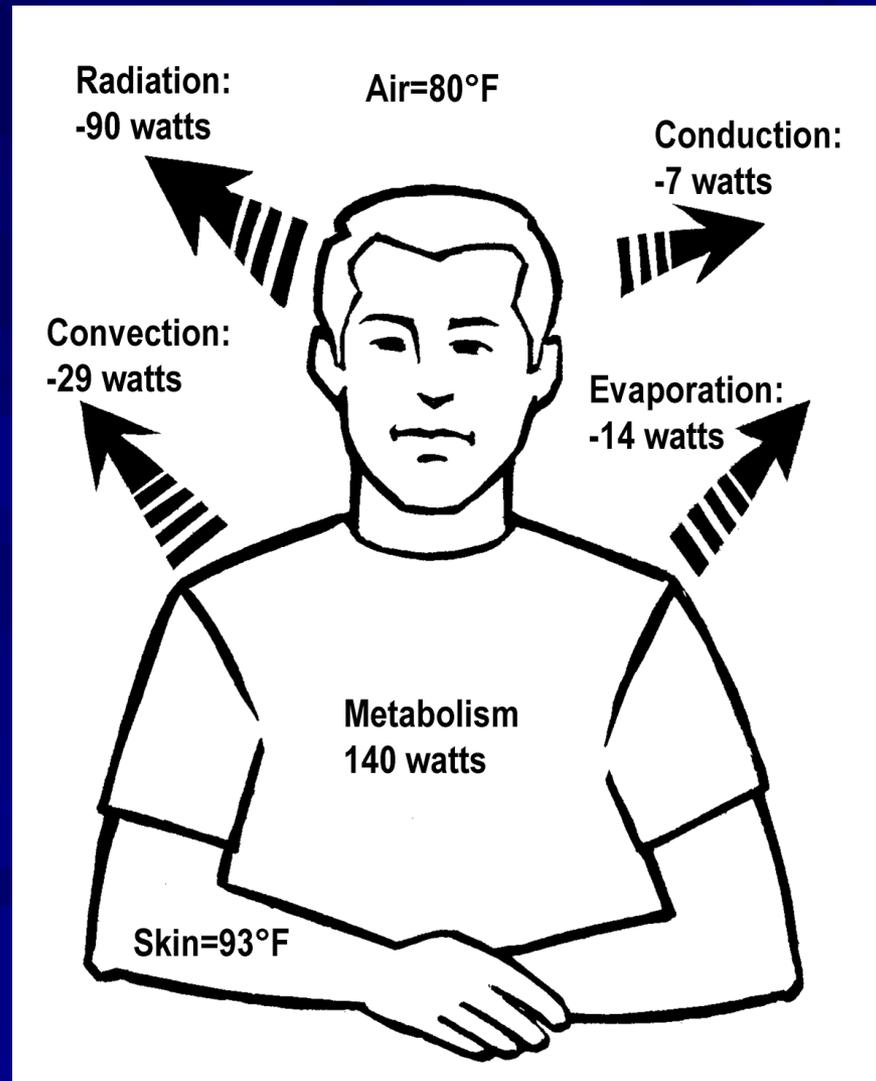
Radiation

- A form of heat transfer that does not depend on direct physical contact with the surroundings, only on the temperature differential.
- Heat radiates from a hotter surface to colder surroundings.
- In still air, radiation is the primary cooling mechanism for the human body, but only when the air temperature is significantly lower than the skin temperature.

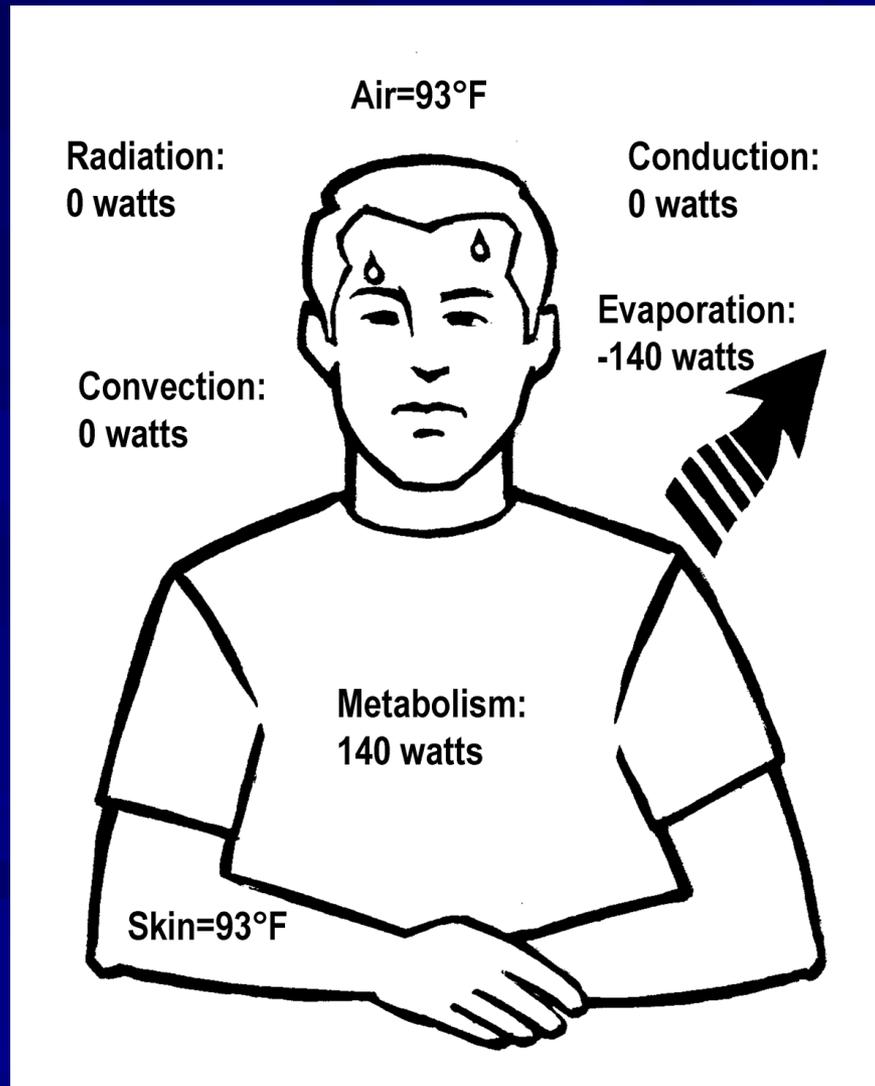
Evaporation

- The cooling mechanism associated with perspiration (which is about 99% water).
- Evaporation is an insignificant factor when the air temperature is significantly lower than the skin temperature, but it becomes the dominant cooling mechanism as air temperature rises.
- Evaporation becomes the only cooling mechanism when the air temperature exceeds the skin temperature. Achieving effective evaporative cooling is therefore critical to surviving when the temperature is 93°F or higher.

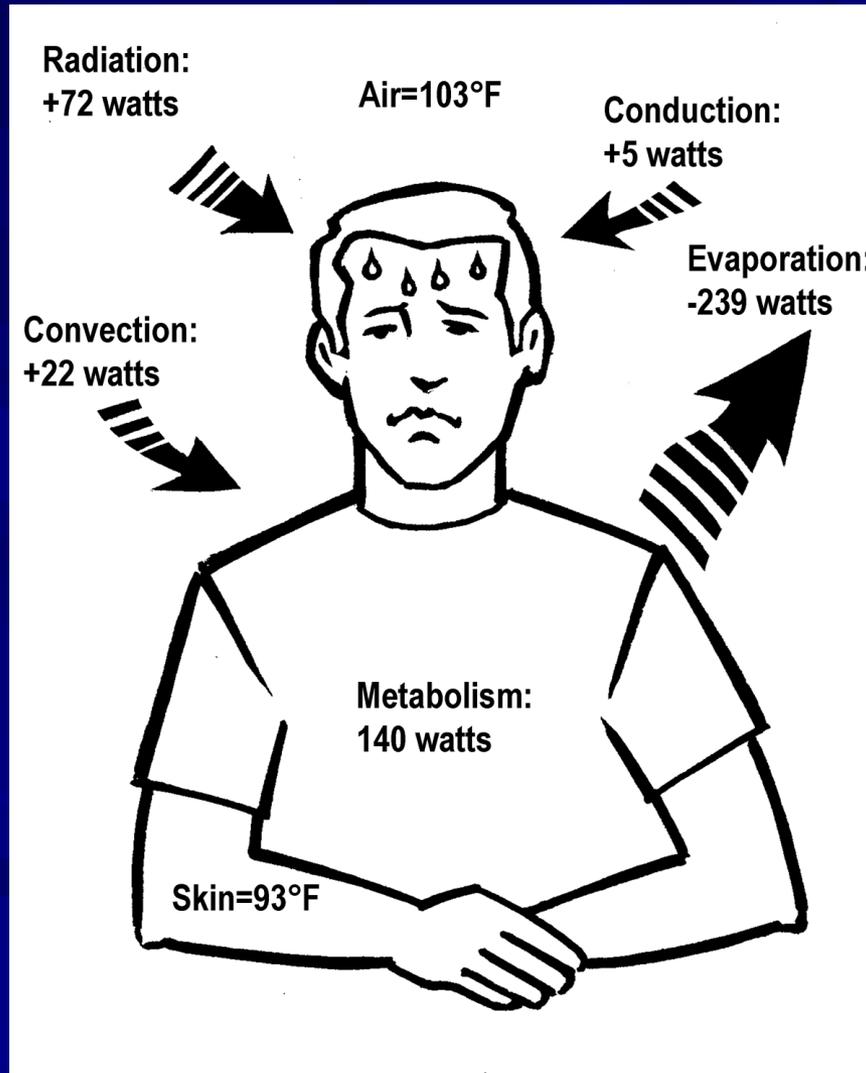
Heat Balance in 80°F Calm Air (Required Evaporation: <1 oz./hour)



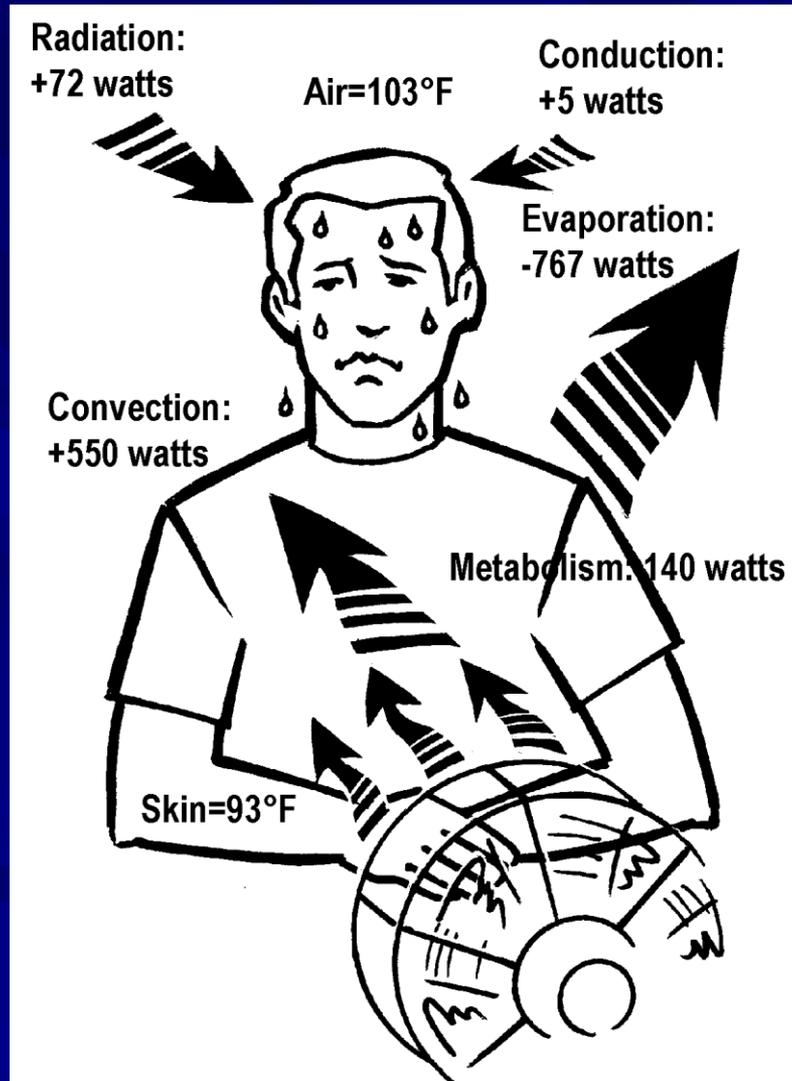
Heat Balance in 93°F Calm Air (Required Evaporation: 7 oz./hour)



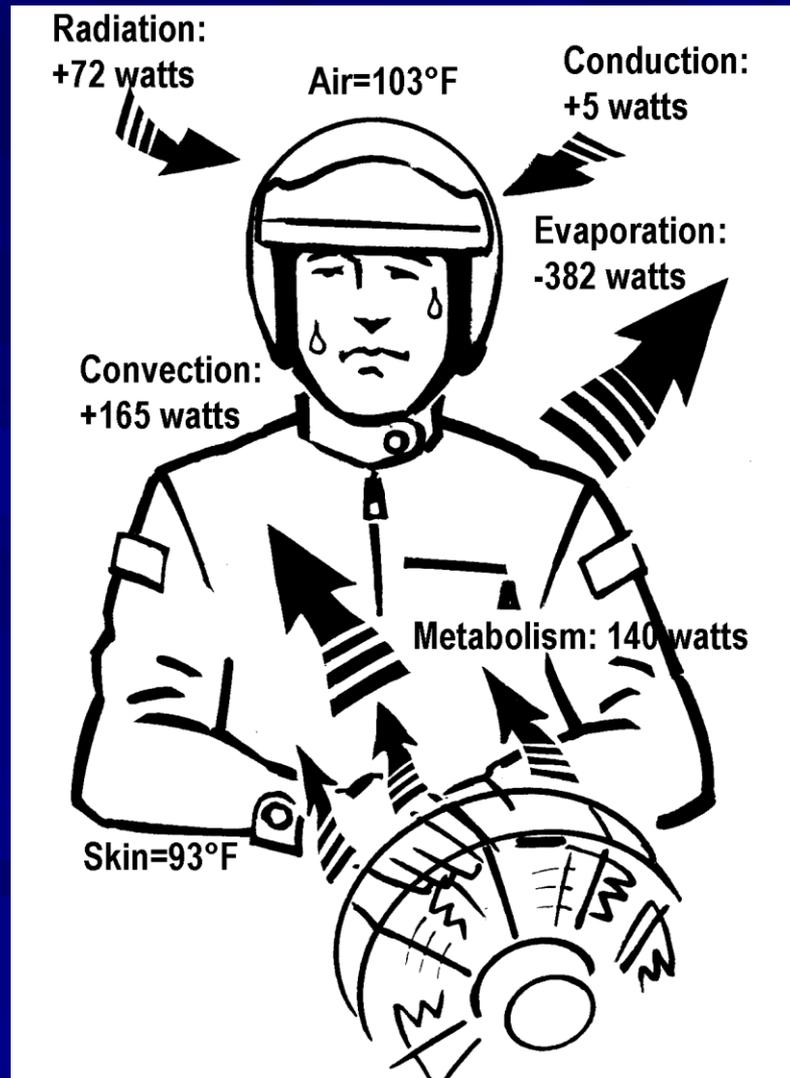
Heat Balance in 103°F Calm Air (Required Evaporation: 12 oz./hour)



Heat Balance in 103°F Wind (Required Evaporation: 39 oz./hour)



Heat Balance at 103°F, Vented-Windproof Suit (Required Evaporation: 19 oz./hour)



Minimum Water Consumption With Low Wind Speed Over Skin

Temperature	Required for Evaporative Cooling	Total Water Required	Water Needed Every 4 Hours
80°F	< 1 oz./hour	3 oz./hour	12 ounces
93°F	7 oz./hour	10 oz./hour	40 oz. (1.3 quarts)
103°F	19 oz./hour	22 oz./hour	88 oz. (2.8 quarts)
113°F	32 oz./hour	35 oz./hour	140 oz. (1.1 gal.)

Note: The values shown reflect ideal conditions with no heat being absorbed from the motorcycle.

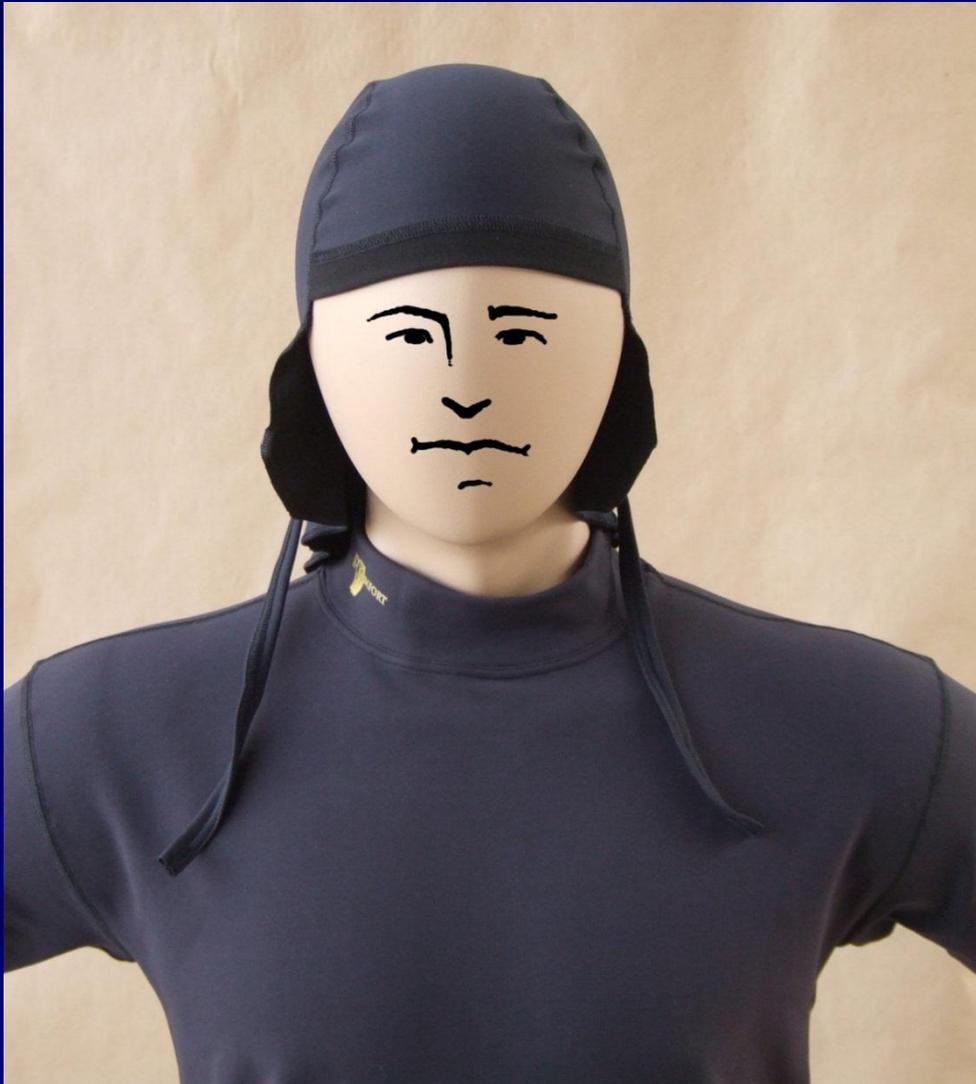
Cooling Vests?

- They work, but...
- Require re-soaking on long rides
- Uncomfortable in high humidity
- Most long-distance riders think they are not worth the bother.

(Note: LD Comfort top can be used like a cooling vest without the need to carry a separate garment.)

Apparel

Dual Layer Wicking Undergarments



LD Comfort
helmet liner and
top.

Dual layer fabric
transfers moisture
to the outer layer
and the inner
layer keeps the
skin dry.

LD Comfort Riding Shorts



Same Dual layer fabric. Highly effective.

The single most important undergarment.

Dries quickly after hand-washing in mild soap and water.

Electric Jacket



“Warm & Safe”
jacket with stretch
panels shown



Schuberth C3 Flip-Up Helmet



Lightest weight flip-up (3.51 lbs.), pin-lock anti-fog insert, very quiet, excellent ventilation, fits round heads best

Aerostich Roadcrafter Suit



Gore-Tex lined,
all-weather
comfort, excellent
protection, new
water-proof zipper
in 2011

Gloves

- Warm Weather:
BMW Rallye
- Rain or Cool Weather:
BMW ProSummer →
- Electric: Warm and Safe
brand shown



Waterproof Boots

- BMW Allround



- TCX Matrix 2



Other Gear

Flashlight Options



2 D-Cell Maglite (top), AAA Fenix LD01 (bottom)



Power LED technology provides more light and longer run time in a much smaller and lighter flashlight.

2 D-Cell Maglite 37 Lumens



Fenix LD01

85 Lumens (and lots of spill light)



Fenix LD20

180 Lumens



Fenix TK40

630 Lumens (comparable to a headlight)



From the IBA Archives of Wisdom:

1. Don't make last minute changes to your bike before a long ride (especially electrical changes).
2. Avoid caffeine (and other stimulants).
3. Eat light, but don't skip meals.
4. Immediately get off the road and take a short nap as soon as you are feeling the least bit sleepy.
5. Maintain a check list.

My Packing List

Wallet

Cell phone

Knife

Always in Riding Suit:

Gloves

LED key chain light

Lip balm

Ear plugs

Ear plug speakers

Neosporin (for ear plugs)

Quarters (lots) and other change

Spare keys and remote

Baggie for receipts

Registration wallet w/ extra credit card

Usually Wearing:

LD Comfort top and shorts

Wicking socks

Overnight Trips/Rallies:

Passport (when required)

Cell phone charger

Laptop and charger

Digital camera

Screamin' Meanie

Extra Wicking Socks

Under Armour shorts/tees

Woolite soap

Tennis shoes

Blue jeans

Windbreaker or fleece

Prescriptions

Toiletry kit, including:

Clotrimazole and Visine

Insect repellent

Spare headset cord

Spare Heat-troller

Hydration system

Snacks

Always on bike:

Tire repair kit w/ needle nose

12-volt air pump

Windshield cleaner and towel

Sunscreen

Extra lip balm

Handi-Wipes

Hat

LED Flashlights (1 w/hat clip)

Extra batteries

Duct tape

Tool kit

First aid kit (extra Band Aids)

Bike cover (Aerostich)

Jumper cables

Eyeglass repair kit

Electric Jacket

Spare gloves

Heat-troller

Pen and small pad of paper

Training

Training Tips

1. Develop a consistent routine for gas stops (including storage of receipts).
2. Develop and use a check list for resuming travel after a break (e.g., clean windscreen, mirrors, and faceshield, use lip balm, sunscreen, ear plugs, make electrical connections)
3. Develop a consistent routine for packing gear (a place for everything and everything in its place).
4. Learn how to quickly deploy and remove a bike cover.
5. Practice “power naps.”
6. Exercise on the bike while riding.

Training Tips



Exercise!

The Schwinn
Airdyne is an
excellent tool.

Resources

The LD Riders List:

www.ldriders.com

Iron Butt Magazine

and the Iron Butt Association website:

www.ironbutt.com

“Going the Extra Mile” by Ron Ayres