

How To Ride A Motorcycle Off Road

Riding Techniques for Large Dual-Purpose Bikes

By David Petersen (aka Mr. BestRest)



Reading this Article won't make you an expert Off Road rider, but it might teach you a few things. It might give you a few pointers, and it might help you improve whatever Off Road skills you now have. This Article covers the Basics. It's not a substitute for expert instructors who can take you to the field and give you 1-on-1, hands-on instruction.

Why Did I Write This Article?

I wrote it because I want to raise your understanding of what it takes to ride Off Road. I want to educate you and empower you so that you'll be able ride to the places I ride, and do things that I enjoy doing. My purpose is not to sell you BestRest gear <http://www.bestrestproducts.com>. (By way of full disclosure you should know that I own the company). Yes, I make or sell gear that's mentioned in these pages but I'll try to avoid turning this Article into a sales pitch. If you choose to buy some of my gear that's great, but that's not my motivation for writing.

Every day I talk to customers who call my shop to place an order. During our conversations they ask my opinion about gear they'll need for Off Road riding. They also ask me to describe riding techniques, help them with trip preparation, and more. I share what I can, time permitting. I concluded I could do a better job if I put my ideas down on paper so that others could benefit from my riding expertise (or lack thereof).

What makes me qualified to write this Article? Some might say I'm clearly NOT qualified, since I hold no racing titles or other awards that publicly proclaim my competency. Point taken, I'm not offended. Others might say I'm possibly qualified because I've ridden a variety of bikes for fifty-plus years, and because I've ridden a few noteworthy adventure routes. Others might say the mere fact that I've survived that many years aboard 2 wheels makes me eminently qualified. Read the entire Article then you can decide whether I'm qualified. During the process you might learn a few things you didn't know, or you'll be reminded of things once learned, but forgotten.

A special thanks to my long time riding buddy Steve Irby. We've ridden together for several years and we've taken some pretty memorable trips on our BMW's. Steve provided some of the photos in this Article.

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Addendums: Check the last page of this Article for recent updates. When I have time I blend them into the article. Until that happens, any recent changes are posted as the last lines of the Article.

1 **Introduction and Overview**
2

3 What's "Off Road" riding? For this Article it means riding away from the pavement, on surfaces that include gravel
4 roads, unimproved dirt roads, wide trails, and the occasional cross-field excursion. This Article is not about hard-
5 core off roading, single-track alpine trails, enduro riding, or motocross riding.
6

7 Reading this Article will NOT make you an expert off road rider, but it might give you some tips that improve
8 whatever off road skills you possess. If you don't already have off road skills, it might inspire you to get some
9 training that will get you started in the world of adventure riding.
10

11 This Article is written for the average guy or gal who rides a big-bore dual-purpose motorcycle like a BMW F800GS,
12 R1150GS, R1200GS, Suzuki V-Strom, Wee-Strom, Kawasaki KLR, KTM 950/990 etc. etc. etc. I'll refer to the
13 reader/rider as a guy, but this also applies to any gal who reads these pages.
14

15 In this Article I'll be using the abbreviations "OR" or "OR'ing". Either term means Off Road Riding.
16

17 As with most learning disciplines, there's some classroom time you've got to serve before you get to text that
18 describes field exercises. That's where I'll talk about the actual skills and techniques of OR'ing. Be patient and
19 wade thru these pages. You'll want to have a full understanding of the foundations. Don't try to run before you
20 learn how to walk.
21

22 **Why Ride Off Road ???**
23

24 Why would you want to ride OR? Ninety percent of the world's roads are unpaved. If you limit your travels to the
25 pavement, you're missing out on a lot of fun. There's a new world of adventure and 2-wheeled excitement that
26 begins as soon as the pavement ends. You can be part of it. All you need are some helpful tips, some educational
27 materials, a few accessories, perhaps some training classes, and soon you'll be ready to ride your bike OR.
28
29

30 One reason people don't ride OR is that they're afraid they might damage their bike, or injure themselves, or get
31 into a situation they can't handle. My goal is to cut those Boogie Men down to size and help the average rider step
32 out of his comfort zone. The rewards are substantial.
33

34 Want to learn more about riding OR, in some of the most beautiful country found on the planet? Want a good
35 resource page for OR routes? Check this site:

36 <http://www.backcountrydiscoveryroutes.com/blog/>
37

38 For the best professional OR training I recommend Rawhyde Adventures. <http://www.rawhyde-offroad.com/>. They
39 run the official BMW Off Road Training School. There's no better place to learn how to ride OR. They don't pay me
40 to recommend their school – I do it because I believe that Jim Hyde and his Staff run the best show out there. They
41 can take a rider who's clueless when it comes to OR'ing, and turn him/her into a reasonably competent adventure
42 rider.



43
44

45 **Feedback from Readers**

46
47 Since this Article is intended to educate, it's important that the materials be accurate. If you find an error in the text
48 please bring it to my attention and I'll make corrections when time permits. Email me: info@bestrestproducts.com or
49 <http://www.bestrestproducts.com/t-contact.aspx>. If you write please refer to the date at the lower left of the page,
50 the line number, and the specific topic or underlined header. I'll make corrections as needed. What I've written is
51 my own opinion, based on personal experience or the experiences of experts in the field. That doesn't mean I'm
52 right or that my methods are written in stone. Differing opinions or techniques don't necessarily mean the
53 information is faulty or inaccurate. I'll change my Article if you can convince me there's a better method, a superior
54 technique, or a different way to solve a problem. I don't claim to have a monopoly on the brain market, even though
55 some of my friends call me "Mr. Know-It-All".

56
57 **Sharing This Article With Others**

58
59 I intend for you to share this Article with others. None of these techniques are "owned" by anyone, myself included.
60 All of the information found on this page is available in the public domain. However, for legal reasons the text in this
61 Article is copyrighted. Please don't copy it word-for-word and post it elsewhere, unless you first get my written
62 permission. When you do share it with others, please credit the source and list web page address. Contact me if
63 you have questions about this policy.

64
65
66 **Article Updates**

67
68 This is a work in progress, constantly changing, constantly being updated, almost like a blog. You'll see the date
69 and time of the Article in the lower left corner of the page. Make sure you're reading the latest version. You can
70 download the updated Articles from the BestRest website.

71
72
73 **Disclaimer**

74
75 It seems silly to have to write this paragraph, but there are a few really dumb people out there who need a written
76 warning for everything. They need a poster telling them that hot coffee can cause burns, or that they can get paper
77 cuts from opening an envelope, or that jumping your motorcycle across a raging stream may result in broken bones.
78 Duh. You'd think those hazards would be apparent and people would take precautions, but some don't. For this
79 reason I'll warn you ahead of time that the information shown on this page is not all-inclusive, it was not written by
80 an expert, it may contain errors, and it contains information that may not be applicable to your situation. If you ride
81 a motorcycle you assume a level of risk, and if you ride a motorcycle OR you'll assume additional risks. Do us a
82 both huge favor - don't bother reading this page or try to follow the techniques I described on this page if you're not
83 willing to assume full and complete responsibility for your own actions. Speaking bluntly – put on your man pants.
84 Don't blame me if you do something stupid on your motorcycle. Don't sue me if you try a technique described on
85 these pages, but in the process you fall down and get a boo-boo. These methods and techniques worked for me,
86 but they may not work for you. I've tried to describe them as best I can, but many things get lost in the translation.

87
88 Neither the author nor BestRest Products, LLC assumes any responsibility whatsoever for personal injury or
89 damage to personal property, as a result of the information described or techniques shown on these page.

90
91 Use some common sense. If you're running short on what (these days) seems to be a rare commodity, we offer the
92 BestRest Common Sense Kit for a nominal fee. Unfortunately the Kit doesn't work for everybody and it doesn't
93 come with a money back guarantee. <http://www.bestrestproducts.com/p-342-common-sense-kit.aspx>

94
95
96 **Other Off Road Riding Resources**

97
98 Looking for other sources of material about Off Road Riding? Here's a few:

99

- 100 1. Adventure Lifestyle website – a new page devoted to expanding the ranks of big bore off road riding. This
101 page acts as an informational hub for adventure riders. You'll find info on trusted vendors, info on
102 upcoming rides, and you'll find the best source for riding instruction. <http://www.rawhyde-offroad.com/>
103
104 2. ADV Rider forum. You'll need patience to sort thru all the threads. As with most online forums, there's
105 going to be a few contributors who might challenge your patience. Ignore them. <http://www.advrider.com/>
106
107 3. Google the words "how to ride off road" and you'll get hundreds of hits. We found this site helpful:
108 <http://www.flamesonmytank.co.za/offRoad.htm#Big>
109
110

111 **Reading A Manual VS Field Exercises**

112
113 There's only so much you can learn from reading about OR riding, just as there's only so much you can learn about
114 flying an airplane from reading a flight manual. Yes, you can learn a lot from these pages, but there's no substitute
115 for actually putting your butt on the saddle and riding out of the garage. Take the techniques I've tried to describe to
116 you and go out in the real world and carefully practice those techniques. Practice by yourself and practice with your
117 friends. Discuss the techniques. Think about them. Envision them. Let them be absorbed. Only then will you be
118 able to call upon them when you need them.
119

120 In order to become proficient at OR'ing, you'll need to test your limits. You don't want to test them in the midst of an
121 unexpected obstacle along the trail. Instead you want to test your limits in a controlled setting, according to your
122 own terms. The best place to test them is under the tutelage of training professionals. They'll put you in real-world
123 scenarios, they'll do it in a safe fashion, and they'll give you lots of positive reinforcement.
124

125 We strongly recommend RawHyde Adventures in California – they're the Masters. They also put on seminars and
126 rallies at BMW and other motorcycle dealerships across the US. <http://www.rawhyde-offroad.com/>
127



128
129 If you're in the Seattle/Tacoma area you can also attend courses by Puget Sound Safety. <http://pssor.com/>
130
131



132 **Will You Get Hurt Riding OR?**

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134 Maybe... If you ride OR, you're going to fall down, it's inevitable. It may be a 2 mph tip-over, or a 10 mph washout.
135
136 Properly attired, you should escape injury. Properly trained you can avoid most of the situations that would result in
137 a fall and possible injury. Motorcycling is an inherently a risky sport, but the risks are acceptable when you consider
138 the rewards. Personally I've never broken any bones, but I've had some sprains and scrapes and cuts along the
139 trail. I've also bruised my ego, which probably hurt as much as any fracture.
140
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142 Riding OR carries about the same risks as downhill skiing. A few skiers will break their leg and a few OR'ers will
143 break their leg. Consider the risks and consider the benefits.
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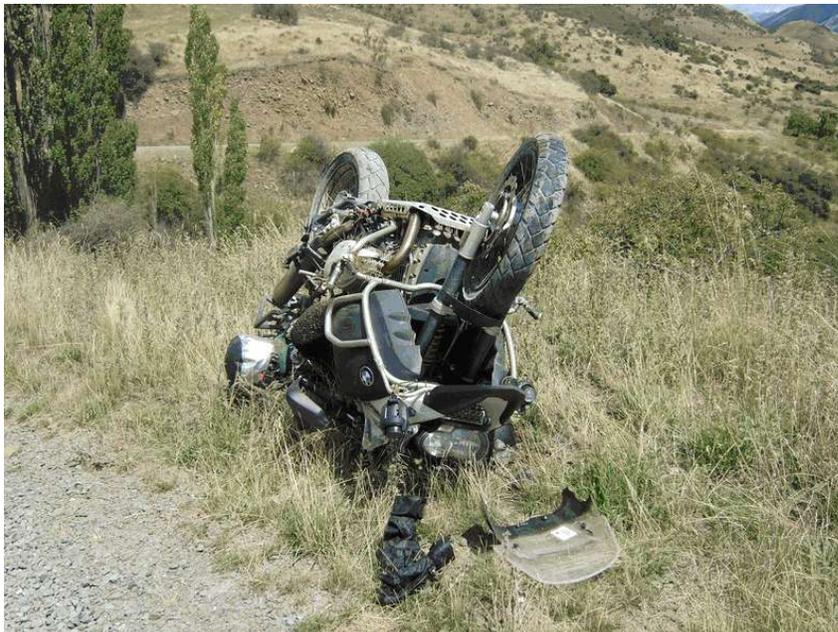
146 **Will You Damage Your Bike Riding OR?**

147
148 Maybe... Guards, shields, and other hard parts will minimize the consequences of most tip-overs. If you ride OR
149 long enough you can expect to replace the occasional turn signal, rear view mirror, or other dangly-bit. A few

150 scratches on the saddlebags testifies to your willingness to tackle the OR world. Some consider their scratches as
151 a badge of courage, or a rite of passage. If you don't want to risk any damage, leave the bike in the garage and
152 take the bus. A clean, unblemished bike testifies to life spent in the garage, to a rider who plays it safe, and to a
153 rider who doesn't go into the boonies and challenge the terrain. At least that's the way I see it.

154
155 Just because you venture OR it **doesn't** necessarily mean your bike will end up looking like this. Some riders fear
156 this kind of scenario so much that their bike never leaves the pavement. With proper education and practical skills
157 training the chances of this serious damage are pretty small, about the same as getting hit in the noggin by a
158 meteorite or abducted by aliens.

159
160 This bike belongs to a friend of mine from Australia. Upside down must be a southern hemisphere thing...
161



162
163
164

Rider Competency Matrix

165
166
167 If you're going to ride Off Road you'll need to examine or disclose a few things about yourself. What are your
168 strengths and weaknesses? What's your OR background? How willing are you to take some reasonable risks, to
169 step out of your Comfort Zone?

170
171 Your level of knowledge and competency starts at zero and progresses as you learn more about OR'ing. This is
172 true whether we're speaking about cognitive learning abilities, or physio-motor skills. You'll need both.

173
174 Where do you fit in the following competency matrix?

Level 1 – Unconsciously Incompetent

175
176
177 This is the rider who doesn't have a clue - he doesn't know what he's doing and doesn't even know that he
178 doesn't know. His OR motor skills are totally dormant. Unfortunately this Level is too heavily populated.
179 Our goal is to thin the ranks of Level 1 and move them up to Level 2.

Level 2 – Consciously Incompetent

180
181
182
183 This is the rider who realizes that he doesn't know what he's doing, so he obtains an education in OR
184 techniques. He recognizes that he's incompetent, but at least that he won't put himself or others in danger.
185 He realizes that he'll eventually need someone to educate him and/or train him so that he can ride his bike

186 in a safe fashion. His motor skills have been wakened from their stupor, but they're still pretty groggy.
187 Most of those reading this Article will fall into this category. We hope to inspire you to achieve Level 3.
188

189 Level 3 – Consciously Competent

190 This is the rider who takes the tips and techniques he's read on these pages, and takes the time and
191 spends the money to practice those techniques. He spends money to get professional training in OR
192 techniques. After receiving training the rider knows what to do in a given situation, and he consciously
193 thinks about it as he performs a specific riding task. His motor skills are partially developed, but he needs
194 practice before he can play with the symphony in Carnegie Hall.
195

196 Level 4 – Unconsciously Competent

197 This is the rider who has read these pages, who went to a training program, who practiced what he learned,
198 and doesn't give a second thought to his riding technique... it's automatic and it's correct for the specific
199 situation. No conscious effort is required on his part. He "flows" as he rides and the bike becomes
200 part of him. This guy is the violin soloist. He makes it look easy.
201

202 Hopefully you'll move upward in the matrix after you've read this Article and taken time to practice these techniques.
203

204 **My Off Road Riding Credentials:**
205

206 Here's what I look like (sorry to disappoint you), and here's two of the four bikes I currently ride. Photo at left was
207 taken at the conclusion of the Continental Divide Route. Photo at right taken on the Oregon Backcountry Discovery
208 Route. The camera lens makes me look much wider and shorter than I really am, or than I'd like to be.
209
210



- 211
212
213
214 1. I started riding motorcycles at the age of about 5. I don't remember the exact age, but I do remember
215 falling down a lot. Maybe that explains a few things....
216
217 2. My Uncle had a H-D / Triumph dealership in southern California. He also had one of the first Honda shops
218 in the US. I grew up around motorcycles and spent many days exploring the woods of Montana on my
219 Honda trail bike.
220
221 3. As a teen I used to ride a motorcycle to a driver's training class so I could get my driver's license - I hid the
222 bike around the corner. Like a kid with his pony, we were inseparable... I think I even slept beside that
223 bike a few times. We kept each other warm.
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4. As a police officer I rode a Kawasaki 1000cc police bikes for several years. I'd often ride it on the dirt trails in and around my patrol area.
 5. I've ridden most of western US on pavement. I manage to putter along pretty effectively.
 6. I've ridden to Prudhoe Bay, Dead Horse, Alaska on a R12GS. That was a long but interesting road that gave me plenty of opportunities to practice OR skills on dirt, mud, and loose gravel.
 7. I've ridden the Continental Divide Route (S-N) on a R12GS. That was a great trip – definitely one for the Bucket List. You'll encounter every imaginable road condition, and you'll see some amazing country.
 8. I've ridden the Continental Divide Route (N-S) on a F8GS. Due to mud in lower elevations and snow in the passes I wasn't able to complete that particular journey. There's always next year.
 9. I also ride a KTM 450 EXC and Suzuki DR200; both are great platforms for practicing OR drills.
 10. I've ridden most of the Washington Back Country Discovery Route before it was officially defined, and did most of that 2-up with Long Suffering Wife sitting patiently on the back. She's a good sport and doesn't mind pushing/pulling when required. She keeps me from doing anything stupid, most of the time.
 11. I've ridden forest roads where I've met Rangers who were truly amazed that I was able to ride out there on my big bore BMW. I've also surprised a few hard-core dirt bike riders who couldn't imagine riding a big BMW up those trails. Their praise made the journey worthwhile.
 12. I've explored most of Washington state's unpaved roads on my BMW, and many of the forest trails in western Washington on my KTM and Suzuki trail bikes.
 13. I prefer to ride OR instead of pavement, which means I TRY to spend most of my time in the dirt.
 14. I've attended a few OR riding schools, which further refined my self-taught skills, and helped me unlearn a few bad habits I'd developed.
 15. I'm not an expert and don't claim to be one; I'm just an average guy who happens to know a bit more than the average rider, when it comes to riding OR. My experience and knowledge might be useful to others.
 16. I'm not a big guy who can physically manhandle a 1200cc motorcycle thru difficult OR situations. Instead I'm short, I'm fat, and some say I'm ugly. Nevertheless I've learned to tame the big bore motorcycles by using subtle techniques, as opposed to brute force.
 17. I learned to ride SLOW before I learned to ride FAST. Well, I suppose FAST is a relative term. To me it's fast, but to others it's apparently pretty slow. In any case, my technique always results in a successful day of OR riding, with minimal mishaps and LOTS of fun.
 18. I have an ATTITUDE (in case you hadn't noticed). That attitude compels me to go places others might consider too difficult to travel on large displacement dual sport a motorcycle. I go anyway.
 19. I do have some common sense (in spite of what others might say), so I don't intentionally perform foolhardy stunts. I know my limitations. I know my comfort zone. I don't mind pushing my riding limits, within reason.
 20. I told you all this so you'd understand that you don't have to be a Superman to ride OR. I'm not. Think of me as a cross between Don Knotts and Super Dave Osborne, with a bit of John Candy thrown in.

Selecting a Motorcycle

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What kind of bike should you select for Off Roding? Several brands and models come to mind. If you're in the market, you can't go wrong with a BMW F800GS, R1200GS, the Triumph 800, the new Yamaha Tenere, and the

281 KTM 640/950/990. Selecting a bike is largely a matter of personal preference. I like the BMW brand, but others like
282 the KTM, so to each his own. The techniques and principles are the same.
283

284 By the time most readers view this page, they already have their bike, so selecting another one is not an option.
285 You'll have to ride what you currently own. You can always plan for the future, dreaming about the next one.
286
287

A few rules of thumb about OR'ing:

- 288 1. The smaller the bike the better, especially when learning new techniques. Learn small, grow big.
289
- 290 2. The less gear you have, the better. Practice OR without all your gear to help you learn the basic
291 techniques. Before you head to the hills you need to demonstrate that you can still perform those
292 techniques when the bike is fully loaded.
293
- 294 3. When heading out on a journey, don't take the kitchen sink. Avoid carrying too much gear, keep weight to
295 a minimum. I seem to have trouble remembering this rule. After the Continental Divide Ride I weighed my
296 gear – it topped the scales at 90+ pounds. I evaluated each item I'd carried, and determined that 25 pounds
297 of it wasn't needed. If you're carrying more than 50 pounds of gear, you've probably got too much stuff.
298
- 299 4. The more you practice your OR technique, the better you become. Reading about it doesn't cut it. Doing it
300 once won't teach you much – you have to practice. Practice, practice, practice.
301
- 302 5. The more you read, the more you'll learn, and the better rider you'll become. Educate yourself, read
303 Articles, watch videos. Don't rely on one source for your OR education (that means you shouldn't rely on
304 this Article as your only source of information).
305
- 306 6. Know your limitations. If you're at Level 2 of the Competency Matrix, don't attempt some ride beyond your
307 ability. On the other hand, don't play it safe all the time. At some point you'll need to test your limits. Be
308 willing to spread your wings, be willing to leave the comfort of your nest. Do it gradually, taking small steps.
309
- 310 7. Smooth is fast. Don't try to ride fast. Instead, ride smooth. Smooth means using proper techniques, at a
311 comfortable pace. Eventually your smooth pace will result in faster speeds.
312
- 313 8. Don't let others set your riding pace. It's common to see a group of riders take off at a brisk pace, with one
314 rider being dragged along at speeds (and conditions) beyond his skill level. Eventually he crashes. Don't
315 let that unfortunate rider be YOU. Ignore your buddy's comments that you're riding like an old man.
316 Remind them that you ARE an old man.
317
- 318 9. Ride only as fast as you're willing to crash. A friend once cautioned me about my riding speeds on my KTM
319 450. He commented that I was going pretty fast, and asked me if I was willing to crash at that speed. My
320 reply was a firm "NO". I was pushing my skill limits so I dialed things down a few notches. Silly me.
321
- 322 10. Check the testosterone at the door. Don't get into a macho match or a pissing contest when it comes to
323 riding OR. You'll lose. It hurts and it costs lots of money to repair the bike (or yourself).
324
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326
327

Common Myth-Conceptions About Riding OR

- 328 1. You don't have to be 6'4" to ride OR. I think of myself as standing 6'8"... ok, to be perfectly honest I'm
329 probably around 5'7" in stocking feet. Being short doesn't keep me off a big BMW R12GS.
330
- 331 2. You don't have to be a weight lifter to ride OR. I'm short and fat and need to work out more. I can't lift the
332 bike with one arm. I don't need to - I'm smarter than that. I use proper technique instead of brute force.
333
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335

- 336 3. You don't have to be able to put both feet flat-footed to ride OR. I can barely touch my toes on the ground.
337 I'm used to that. Once you're underway it doesn't matter anymore.
338
339 4. You don't have to spend a lot of money on gear. When you do purchase equipment or riding gear, spend
340 your money wisely, spend it once, don't buy the cheapest item, and always invest in quality.
341
342 5. You don't have to ride as fast as the other guys. Ride at your own pace. They'll wait for you. If they don't,
343 it's time to find new riding companions.
344
345

346 **Bike setup**

347
348 Following is a list of suggested modifications to your motorcycle. Although not required, these modifications reduce
349 the chances of damage to your bike, PLUS they'll make your OR'ing experience more enjoyable. BestRest makes
350 gear for BMW motorcycles that does a good job of protecting the vital areas.
351

- 352 1. Engine protection - crash bars to protect the engine and gas tank if the bike tips on its side
353
354 2. Skid plate or other engine protection against stumps, rocks, and other obstacles. Don't leave your bike's
355 soft underbelly unprotected, or it'll look like this. A large rock peeled open the oil sump.
356



- 357
358 3. Oil cooler guard, or radiator guard to protect those fragile components against rocks or sticks
359
360



- 361
362 4. Tires – see the specific section on tire selection. Whatever brand you select, they need to have an
363 aggressive “knobby” tread. Street tires don't cut it. Tires that are designed to spend 90% of their time on
364 the pavement riding don't cut it either. You'll want a tread design that's got large knobs for best traction.
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5. Mirrors – you can get folding mirror stalks that allow you to move your mirrors inward when not needed. This is helpful when riding in sand or other technical conditions where the chances of a tip-over are high. Folding mirrors also keep errant branches from grabbing ahold of your bike, wrenching the bars away.
6. Foot pegs - serrated for good grip in wet or mud. Wider is better. I prefer Pivot Pegz because they rotate slightly as you move on the bike, and because they're wide enough to support your arches when standing.
7. Handlebars – they must be adjusted for proper rider position, which means they must be setup so the rider is comfortable standing on the pegs – more on this later.
8. Saddlebags - soft or hard depending on your preference. I like Metal Mule aluminum panniers but there are a lot of choices out there. <http://www.bestrestproducts.com/c-101-metal-mule-products.aspx>
9. Headlight protection - a grill or screen to protect against rocks. A small pebble thru the headlight can cost you \$500. If you ride OR your headlight's going to take a beating. BestRest makes models to fit the BMW R12GS and F8GS. Photo on right shows what a big rock will do when it hits the plastic screen – better to replace a \$30 piece of plastic than a \$500 headlight.



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10. Hand guards - to protect your hands against rocks, brush. In event of a tumble they protect the levers.
11. Handlebar adjustments. Most bikes come with the handlebars rotated backwards to make them comfortable when seated. That position isn't suitable for OR'ing because much of the time you'll want to be standing on the pegs. Loosen the bar clamps and rotate the bars forward until the bars are comfortable when standing. Retighten the clamps. It's important that you carry that wrench in your onboard toolkit so you can make adjustments on the trail.
12. After adjusting the handlebars, adjust the clutch and brake lever so you can easily operate them when standing. You shouldn't have to bend your wrist in order to operate either lever.
13. Some riders prefer to use "bar risers" so the handlebars are raised up about an inch. This allows the rider to stand on the pegs more comfortably because they're not hunched forward over the bars. Even though I'm "short", I still have 1" bar risers on all my bikes. They make standing much more comfortable.
14. You don't need to outfit your bike with auxiliary lights or a lot of other cool accessories like you see in magazines. They look trick but many of them really don't add much to the OR experience. If you do add

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gear make sure it protects the key components, or upgrades known weaknesses on your brand of motorcycle.

15. Spare shift lever – these can get bent or broken. Strap a spare to the frame.
16. Spare brake or clutch levers. If they're easily replaceable, carry a spare. In the event of a complex cast metal brake lever housing and/or hydraulic fluid reservoir you can't carry a spare.
17. Brake pedal / shift lever – Run a section of dog collar chain or a thin steel cable between the frame and end of the brake pedal, and one between the frame and the shift lever. This chain or cable prevents a stick from jamming between frame and pedal, and snapping it off or bending it. If you ride in sagebrush or areas where grass or sticks are abundant these cables are really useful.



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18. GPS. I consider a GPS to be standard riding equipment. Sure, I also carry paper maps, but I rely on the GPS for routing and for keeping track of where I've traveled. Once I get home download the tracks and save them for future viewing and ride planning. I like reviewing my tracks using Google Earth. When planning a big adventure like the Continental Divide Route, a GPS is worth its weight in gold. It holds tracks and routes, and allows you to concentrate on riding, instead of navigating.
19. Suspension upgrades. Most OEM stock suspensions are pretty lame. That means they're OK for street riding, but they fall short when it comes to OR'ing. Most OR'ers invest in aftermarket shocks, which come at a high price, but the results are worth every penny. Suggested manufacturers include Progressive, Ohlins, Wilburs, HyperPro, and others. Consult suspension experts for tips on spring rates, preload, valving and other setup advice.
20. If you go with an aftermarket suspension, make sure you deal with a company that will set the suspension according to your riding style, your weight, and the gear you carry when riding OR. They'll put in a stiffer spring and make other modifications to give you the best ride in the dirt. Tell them your bike, your weight, your riding style, and they'll create a suspension system that really works.

Selecting Tires – Spokes VS Cast Rims – Tubed VS Tubeless

Recommending tires is like recommending motor oil. Everyone has a different opinion. Here's MY opinion:

I've ridden at least 100,000 miles aboard Metzler Tourances. They handle well, but their dirt abilities are very limited. They'll clog up in mud and once that happens they're pretty much worthless. If I'm headed for the hills I change from Tourances to something else that has a more aggressive tread pattern. Expect 8-10,000 miles on a set of tires before they need replacement.

447 Continental TKC-80 tires are pretty tough to beat when it comes to riding in the dirt, which is why they've become
448 the standard for OR'ing. Their aggressive tread grips well in sand, mud, gravel, and loose soil. They're reasonably
449 capable on pavement unless the roads are wet, in which case they're unsettling. Expect to replace the rear tire
450 after 4-6,000 miles, slightly longer for the fronts. This is my preferred tire on the GS's.
451

452 **Heidenau** makes a good dual-purpose tire that's not quite as aggressive as the TKC-80, but delivers twice the
453 mileage. The K60 Scout fits most wheels found on big bore bikes. <http://moto-amore.com/heidenau/index.html>
454

455 You can buy tires online and save lots of money VS buying them at the dealer. Here's a few sources:
456 Southwest Moto Tires <http://www.swmototires.com>
457 Emoto Tires <http://www.swmotorubber.com>
458 Two Brothers Tires <http://www.twobrotherstires.com>
459

460 Learn to change your own tires. You'll save a lot of money when you do it yourself. All you need to do the job is a
461 TireIron BeadBrakr, which is small enough to take with you when you ride in the field. You don't need to spend a lot
462 of on a tire-changing machine. They're nice to use in the garage, but you can accomplish the same task in about
463 the same time with a BeadBrakR. <http://www.bestrestproducts.com/c-98-beadbrakr.aspx>
464

465 Since you probably already have your motorcycle, you'll have to live with the types of rims that the manufacturer
466 supplied, so rim selection is already a moot point. That being said, I believe that spoked rims are far superior to
467 cast rims when it comes to OR'ing. Spokes flex better and absorb hard hits that'll crumple cast or alloy rims. If you
468 have a choice, get spoked rims. Leave cast wheels where they belong – on the pavement.
469

470 If you have a choice between tubed or tubeless tires, go with tubeless. Tubeless puncture repair is a piece of cake.
471 I favor tubeless tires IF the bike is a BMW because they've got a unique tubeless tire/spoked rim system. If the bike
472 is another brand, you'll need to choose the lesser of 2 evils – cast rims or tubed tires. In that scenario I'd go for
473 tubed tires and spoked wheels.
474

475 Tubeless tires can be repaired on the rim. Easy peasy. Tubed tires take more work because they require removal
476 of the entire wheel assembly from the bike, and removal of the tire from the rim. That's a real pain, especially when
477 you're on some lonely jeep trail. But if your bike has tubed tires, that's just what you'll have to do in the event of a
478 puncture. Be prepared when it does happen, which means you'll need to have the tools to do the job.
479

480 My BMW R12GS has tubeless tires, which means I don't NEED inner tubes. But when I was riding to Alaska when
481 riding the CDR I still carried inner tubes. In case of a bad tire cut, I could stuff the tube inside the tubeless tire, and
482 limp to the nearest town where I could get a new tire.
483

484 **Tire Pressure**

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487 Adjusting tire pressure for maximum traction is the single most important thing you can do when it comes to OR
488 riding. When a motorcycle tire rolls across dirt, gravel, or mud, the tire needs to conform to that surface to get
489 maximum traction. If the tire is over-inflated, it won't grip properly. The bike will feel like you're riding on marbles,
490 and you'll feel like you're about to lose control. Pavement riders set their tire pressures somewhere around 34 front,
491 36 rear. Those numbers are WAY too high for OR'ing. The tire skips over the top of the gravel and dirt, the tire is
492 too rigid to conform to the surface, and traction is very poor.
493

494 When riding OR, you'll want to reduce your tire pressures by at least 10 pounds so the tire can grip the ground. The
495 easiest way to do this is with an EZAir gauge. <http://www.bestrestproducts.com/p-44-ez-air-gauge.aspx>
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497 The EZAir gauge also works as an in-line gauge when connected to the CyclePump.
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In the dirt I run my BMW's tires at about 24 front, 26 rear, but in really soft terrain I've gone as low as 12 front, 14 rear. The bike had traction like a John Deere tractor but because the pressure was low I was careful to avoid any sharp rocks.

When pressures are low the tire is at risk of being damaged by rocks, sticks or other hazards. It's a trade-off, a calculated risk. Low pressure = best OR traction. Low pressure = increased risk of puncture or rim damage. If you expect to ride where there's going to be lots of rocks you'll want to keep your pressures fairly high, perhaps at highway pressures of 34 front, 36 rear. Check your motorcycle operator's manual for proper highway pressure.

You'll spend a few hours (or days) riding off road then you'll eventually find yourself back on the pavement. When that happens you'll need to air-up your tires again. Running low pressures at highway speeds is a recipe for premature tire wear and/or sudden tire failure. You'll need to have an on-board inflation system so you can restore your tires to highway pressures. I use the CyclePump. <http://www.bestrestproducts.com/c-10-cyclepump.aspx>. I invented it, I manufacture it, and I sell it around the world. I guess you could say I have strong preference when it comes to tire inflation. Even if I didn't make it, I'd still carry one because it's the best tire inflator out there. You can buy cheaper inflators, but you can't buy a better one.



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Riding gear

What kind of riding gear should you wear? Riding gear is largely a matter of personal preference. Generally speaking, the type of gear worn by pavement riders ISN'T suitable for use OR.

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1. Leather jackets or pants are too hot for OR'ing, plus they may limit your ability to move on the bike. You'll need to be able move around, aggressively.
2. I recommend textile riding gear. Cordura, Kevlar, etc. Spend enough money to get quality gear. Don't buy cheap gear just because of the price. It won't last and it won't perform. You're better off investing in quality gear that costs more.
3. Helmet – get one with chin bar (full face). You'll need to protect your face in the event of a tumble. Open face helmets won't provide adequate protection. I like the Arai XD, but a Shoei or a Nolan flip face is good too. Just make sure you flip down and lock the chin bar down before you start riding OR.
4. Goggles – you'll need them if you're going to be riding in lots of dust (stirred up by other riders). Another reason I like the Arai XD is that I can use either goggles or the face shield, depending on conditions. Most flip face helmets don't give you a large enough opening for goggles to fit.
5. Air Flow - Select a helmet with good flow. You're going to get hot when you ride OR, so you want to have cool air blowing on your face. Your riding apparel should also have good ventilation.
6. Eye protection - don't ride with your eyes exposed. You have a greater chance of getting something in your eye when riding OR, than you do on pavement. I NEVER ride without eye protection, whether it be goggles or a face shield on my Arai helmet. I've got a lot of scratches on my face shield and goggles from branches and other debris.
7. Jacket with armor in the elbows and along the spine. I wear the BMW Rallye jacket, but Klim is great too. Bring lots of money when shopping for riding apparel. Remind yourself that your investment will last for years and it'll give you maximum comfort and protection. Unfortunately it's hard to find good quality riding gear in my size – SF (Short and Fat).
8. Alternative to a riding jacket – wear a polyester jersey and a plastic chest/spine protector with shoulder pads and elbow pads, plus knee pads. A jersey is cooler in hot conditions. That's me on the KTM.



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9. Elbow pads that strap to your arms, if your jacket doesn't already have them.
 10. Pants with hip pads and kneepads. If your pants don't already have kneepads sewn in, get some aftermarket pads that'll strap on. You're going to hit the ground at some point, so protect your knees.
 11. Boots with good ankle and arch support. Street riding boots are not a good choice - they lack proper ankle support and the arch is not strong enough when it comes to standing on the pegs. The boots must come up high enough to protect your shins. Boots with zipper closures don't cinch the boot tight enough to support your foot and ankle. Instead you'll need a boot with heavy-duty adjustable buckle closures. A heavy steel arch is very important because you'll be standing on the pegs for long periods of time. If the arch support is too is weak, your feet will suffer badly.
 12. Gloves - heavy duty, with impact protection on the top of the fingers and thumb. The palm should be smooth, without seams or wrinkles that will cause blisters. The wrist should have a hook and loop cinch strap so the glove can be secured firmly around the wrist.
 13. Rain gear – you'll need to have something to keep you dry when the heavens open up. Removable Goretex liners for your jacket and pants are nice, but the downside is that you have to take off your jacket and pants to put on the liners. When it does rain the outer layers get soaked and they stay that way for the rest of the day. I like FrogsToggs gear because it packs down tightly in very little space and it fits over my usual OR riding gear. When the sun comes out, I peel off the FrogsToggs and my riding gear is still nice and dry. Frogs Toggs also provide some measure of warmth on a cold ride.

Physical Conditioning

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1. Good physical conditioning is important. The better shape you're in, the easier it'll be to ride OR.
 2. Your legs need to be in good enough shape that you can stand on the pegs for long periods, and so you can absorb the bumps and changes in terrain. The physical demands are similar to downhill skiing, but unlike skiing, there's no chalet at the bottom of the hill where you can rest and sip hot chocolate.
 3. Upper body strength is important – you'll be moving the bars with your arms, plus you'll be using body language to help control the direction of the bike.
 4. You don't need to be a body builder, but the better condition you're in, the easier off-road riding will be.
 5. Bring what you have in the way of body conditioning, and make adjustments as needed. After a day of riding OR you'll be wishing you'd spent more time in the gym, less time on the couch.
 6. I break the rules when it comes to body conditioning. Admittedly lazy and fat, I know I should get in better shape before I ride. Recognizing my limitations, I don't over-exert myself. I'm convicted that I need to do a better job of physical conditioning so maybe when I finish writing this Article I'll take my own advice and get off my butt...

Equipment To Carry On The Bike

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1. HelmetLok and Cable. If you leave the bike to eat in a restaurant or shop in a store for vittles, you'll want to secure your helmet and/or jacket. You can also use the HelmetLok for light duty applications like holding up a rope to hang your gear to dry. <http://www.bestrestproducts.com/c-159-helmetlok.aspx>



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2. Motorcycle Recovery System (MRS) – a rope and pulley system designed to help you recover your bike in the event you “park” it in a way that you can’t get it back up on the road or trail.

<http://www.bestrestproducts.com/c-168-recovery-gear-mrs.aspx>



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For a YouTube video showing the MRS, click this link: <http://www.youtube.com/watch?v=1DnDCWvVEag>

3. Tow rope – the Motorcycle Recovery Kit can accomplish this task. Otherwise, carry a nylon strap that’s long enough that your buddy can tow you back to civilization. See the section on towing another bike.
4. Road flare – for signaling to others or for starting a campfire in an emergency. I wrap the flare with plastic and duct tape to protect it from the rain, then I ziptie the flare to the frame.
5. Water. You can carry it in a Camelbak hydration backpack, or somewhere on the bike in a bottle or jug. You’ll need to constantly rehydrate as you ride OR. If you don’t, you’ll suffer headaches and your physical performance will quickly decline. I prefer filling my Camelbak with water, not Gatorade or some other drink. You can’t use those sweetened fluids to wash your face or clean a wound.
6. Fuel. Plan your fuel carefully and make sure you have enough to get from Point A to Point B. Many riders carry spare fuel containers in MSR bottles, or in some other container. One solution for carrying fuel (or water) is the PegPacker. <http://www.bestrestproducts.com/c-114-pegpacker.aspx>
7. Shovel. You may need to dig the bike out of the dirt, or you may need to reconstruct a section of trail so you can make passage. I’ve done that a number of times. My favorite shovel is the folding Glock entrenching tool. It incorporates a shovel, a rudimentary axe (sharpen one edge), you can use it as a hammer, plus the handle contains a saw that’ll cut thru branches up to about 8”. Costs about \$40 on Amazon.



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8. Axe or cutting tool. Use it for cutting campfire wood, for cutting trees or branches that have fallen across the trail. See #6 above. Alternatively I can also carry a small hand-operated chain saw. It's a couple feet of chain saw chain, with handles on each end. With it I can manually cut down a small tree. I've used it to clear trails when riding my dirtbike. Fits in a small pouch the size of a softball.
 9. Tankbag. Keep it small. I like (and I use) the Wolfman Enduro tankbag because it mounts forward on the tank and because its small enough that it doesn't get in my way. If you can't stand on the pegs without the tankbag hitting you in the groin, then it's too big. Remember that your lower regions will probably come into contact with the tankbag at some point during your travels, so keep the items in the bag small, and keep them soft. A large hard camera might not be the best thing to contact in the event of a tumble.
 10. Tank panniers. This means over-the-tank saddlebags. They have soft straps that go across the tank and two storage pouches on either side. Aerostich makes a good system. I like tank panniers because they allow you to move some of your load forward, keeping the bike balanced. I carry these items in my tank panniers: a CyclePump, 1st aid kit, rain gear, personal protection device (bear spray and/or firearm), a few tools, and a water bladder. <http://www.aerostich.com/aerostich-tank-panniers.html>
 11. For BMW F8GS riders with Metal Mule and other crash bars, BestRest makes a set of crash bar panniers that work pretty well. <http://www.bestrestproducts.com/p-243-tank-panniers-crash-guard-bags.aspx>
 12. Duffel bags. You can get waterproof bags from a variety of suppliers. I sell bags made by Ortlieb and Wolfman. Each has its own merits. You decide what's best for your situation.
 13. I use a small Ortlieb Rack Pack on top of each pannier. One holds my sleeping bag and the one other holds the air mattress and folding chair. <http://www.bestrestproducts.com/c-107-ortlieb-bags.aspx>
 14. I use a medium Ortlieb Duffel across the back of the bike, on the luggage rack. It holds my clothing, camp shoes, and other gear. When riding 2-up I orient the bag left-to-right. When riding solo I orient the bag along the centerline of the bike.
 15. Tie down straps. Rok Straps are excellent for securing gear. I've used them for years and they've never failed me. Recently I also started selling Gotcha! Straps, which are wide hook-and-loop straps. I like using them for big duffels, and for securing the entire pannier to the frame for extra security and stability. Check the section on securing gear to your bike for photos.
 - a. Rok Straps <http://www.bestrestproducts.com/c-120-rok-straps.aspx>
 - b. Gotcha Straps <http://www.bestrestproducts.com/c-166-gotcha-straps.aspx>
 16. I also carry one of those goofy octopus bungee nets (8 hooks). It's useful for temporarily strapping on a bag of groceries after a supermarket visit, just before I head for a motel or a campsite. I'm keenly aware of the hazards of bungees and hooks, so I'm extra careful when strapping down my groceries.

686 **Camping Gear**

687 Although this is an Article on Offroad Riding, I'd be remiss if I didn't mention camping gear. After all, one of the
688 purposes of OR'ing is to be able to take the bike to places you'd like to camp. Photo taken on the CDR.
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Setting up camp doesn't take me very long, perhaps 15 minutes. That includes the time needed to pull off my riding gear, pitch the tent, blow up the air mattress, roll out the sleeping bag, and get things ready to cook dinner. If you think I'm quick, my buddy Steve's even faster. I swear he once set his entire camp before I was even able to climb off my bike. Setting up camp quickly and efficiently comes with practice. He's done a lot of it.

Here's a list of what I take in the way of camping gear.

1. Tent. I use a 2-man tent which gives me enough room to hold me AND my riding gear. Because I seldom camp in really cold conditions I selected a lightweight summer tent. It has large vents at the top and a waterproof fly. Not the warmest thing for a shelter, but adequate for a night on the trail.
2. Ground cloth. I carry an old nylon Army poncho. It doubles as a rain cover for me, and also protects the bottom of the tent from water and dirt.
3. Sleeping bag. I like the Big Agnes bags because they have a dedicated slot for my air mattress. Because I ride in the Pacific Northwest, I selected a sleeping bag that will keep me warm down to 32F.
4. Pad or air mattress. I'm getting too old to sleep on the hard ground. I use a 2.5" thick Big Agnes air mattress that slips into the sleeping bag.
5. Air mattress inflator. I've tried 12v inflators, hand pumps, foot pumps. I finally settled on good old lung power as the most efficient way to fill the mattress. It takes about 20 strong breaths.
6. Small stove. I like the Jet Boil stove because it boils water in about 2 minutes. Boiling water forms the foundation all my camp cooking. My camp cuisine consists of rehydrated food, dried snacks, and some fresh fruit I pick up along the route. Hot water's also necessary for my morning coffee...lots of it. I used to brew coffee using fresh grounds and a plunger, but now I use small pouches of Starbucks concentrate because it's easier to make (not because it tastes better). I remind myself that I'm camping so I have to make some compromises in the coffee department.
7. Cooking gear. All I need is a container to boil water (the Jet Boil will do nicely) plus I have a plastic cup for my coffee or an adult beverage. I don't carry pots or pans.
8. Bowls. I carry 2 bowls - both are high temp silicone. They can hold freezing or boiling liquids, act as a bowl or a cup, they nest within each other, and they're squish-able in the saddlebag so they take up very

- 728 little space. I got mine at REI.
729
- 730 9. Plate. I seldom use one, but I do carry a folding plate/bowl made of a sheet of thin plastic. It takes up no
731 room at all because it's only as thick as a sheet of paper. It doubles as a cutting board.
732
- 733 10. Eating utensils. I always have a Swiss army knife for cutting things and doing my McGuyver imitation, plus
734 I carry a Spork (combination spoon/fork).
735
- 736 11. Water. I carry a tiny bottle of water purification tablets, plus I have a Steripen ultraviolet pen for sterilizing
737 questionable water found along the way. I don't carry a purification pump. I don't carry hard sided water
738 bottles. Instead I carry a water bladder made from a box of wine. Enjoy the wine before your motorcycle
739 trip then rip off the box and retrieve the inner bladder. Pull the spigot off the plastic liner and flush the
740 insides with soap and baking soda to remove any residual taste. The bladder fits in my tank pannier or
741 saddlebag. It collapses flat when empty and expands as needed when full. I can carry up to 2 gallons.
742
- 743 12. Snacks. Granola bars, dried jerky, instant oatmeal, dried trail mix, fruit, pudding cups, and other non-
744 refrigerated goodies.
745
- 746 13. Dehydrated food. Go to your local sporting goods store and pick up a few freeze dried entrée pouches. I
747 like the version that feeds 2 people. At the end of the day I'm pretty hungry. I usually don't carry more
748 than 1 or 2 pouches. I can always buy more along the route. Every town has a sporting goods store.
749
- 750 14. Small spade. If you don't want to carry a Glock shovel, carry a small metal spade with a folding handle.
751 It's a necessity when digging a small hole for your toilet needs. Cover up when you're done.
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- 753 15. Toilet paper. Need I say more? Wrap in plastic to keep dry, and pack it toward the top of your gear so it's
754 easy to find when you're in a hurry.
755
- 756 16. Bug repellent. I like the Off! Deep Woods pre-moistened towelette wipes that come in small soft pouches.
757 I carry a pouch in my jacket pocket and a few in my tankbag. When I'm done wiping hands and face, I
758 take the used towelette and tie it to my hat to keep bugs off my noggin. As an alternative to liquid
759 repellents, get clothing that has the bug repellent chemicals impregnated into the cloth. I've got some
760 Buzz Off gear from Ex Officio that works great.
761
- 762 17. Chair. Keep it simple and lightweight. You could use your panniers to sit on, like Steve's doing the photo
763 above. It might seem that carrying a chair is an extravagance, but at the end of the day it's awfully nice to
764 be able to stretch your back in a comfortable chair. I like two styles of chairs – the famous Kermit chair
765 which is comfortable but big and heavy, and I like a 2-legged rocker made by Alite and marketed by Sound
766 Rider. It folds up nicely and weighs about a pound. The chair I carry depends on where I'm going and the
767 difficulty of terrain. If I have a really tough ride coming up I take the Alite folding chair to save space and
768 weight. http://store.mm411.com/index.cfm?fuseaction=product.display&product_ID=1313
769
- 770 18. Organization of my camping and other gear within the saddlebags. Instead of throwing everything in the
771 saddlebag and creating a jumbled mess, you can use small different colored stuff bags to hold your gear.
772 Colors help distinguish cooking gear from food, extra socks from tools, etc. As for me, I use StuffBoxxes
773 to hold and organize my gear. Each StuffBoxx is clearly labeled on top so I know what's inside that box.
774 Simple and easy. <http://www.bestrestproducts.com/c-142-stuffboxx.aspx>
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20. One note about your organizing your gear... know where each item's stored. There's nothing more frustrating than trying to find something you really need, and not finding it. You go thru both panniers and finally find it where least expected. I make a list of my gear, and I always put gear back in the same place.

Emergency Gear

1. First Aid kit, with large bandages. Don't pack it in the bottom of your saddlebag. Have it handy.
2. Instant ice pack for treating sprains. One of those small instant ice packs made it possible for me to ride home after an over-the-bars tumble where I sprained my thumb. It controlled the swelling enough to ride.
3. Cell phone – need we say more? At the very least you'll be calling home to check in. You won't always have a signal but you'd be surprised where I've been on the bike, and still had a couple bars on the signal strength meter so I was able to make a call. Carry a spare battery or a phone charger.
4. Spot tracker – satellite transmitter. Push one button to summon mechanical assistance or emergency help. Especially useful when riding solo. You'll pay to buy the transmitter plus there's an annual service fee but it's money well spent. I use it to send progress points along my journey, and to let Long Suffering Wife know that I'm OK at specific times of the day. This photo shows the cockpit of my F8GS, with GPS, Spot, and radar detector (there were some pavement sections I needed to cross before I hit the dirt)



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5. Food and water. You may be out there for a while. Be prepared for a stay of at least 24 hours.

- 805 6. Space blanket. Provides shelter and keeps you warm if you get caught in the field.
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807 7. Matches. Storm proof matches that'll light when wet, or at least carry a butane lighter.
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809 8. Whistle – you can blow a whistle louder and longer than you can call for help
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811 9. Signaling mirror – catch the attention of passing hikers, motorists, or aircraft. Also useful for touching up
812 your trailside makeup. It's important to look good when you ride OR.
813
814 10. Medical history – with prescriptions, blood type, etc on a medical USB card.
815
816 11. Emergency contact info, prominently available in your wallet. EMT's will want to know who they should
817 contact.
818
819 12. Medications. Take a small supply of your daily meds. Put them in a baggie and clearly label what each
820 pill is for. At the end of a long day's ride I find I have trouble remembering what the big white pill is for and
821 when I should take it, and how many of the small green pills I need.
822
823 13. Credit card, some cash (small denominations) and a loose change for a phone booth or vending machine
824
825 14. Some riders put a small sticker on their helmet that lists their blood type. Seems macabre to me, but it's
826 still a good idea.
827
828 15. Medic Alert bracelet or necklace, as needed.
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Loading Gear On The Bike

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834 Wow! You say – those lists mean you'll be carrying a lot of gear. Yes. But these lists are ones I'd use for a
835 weeklong trip or a major expedition. A one-day ride requires much less gear but I'll still need tire repair gear, 1st aid
836 kit, emergency kit, and my basic tools (at the very minimum).
837

838 Photo at left shows the R12GS loaded for the Continental Divide Route. Photo at left shows the F8GS loaded for
839 the same route a year later, going the opposite direction. Notice some similarities? That's because it works.
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843 The next photos show the gear loaded on the F8GS.



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When I load the bike, I keep heavy loads as low as possible (at the bottom of the saddlebags). I try to distribute gear so the rear of the bike isn't loaded down too heavily. I put light and bulky gear up higher. I strap everything down with two styles of straps:

1. Rok Straps <http://www.bestrestproducts.com/c-120-rok-straps.aspx>



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2. Gotcha! Straps <http://www.bestrestproducts.com/c-166-gotcha-straps.aspx>



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3. Don't use traditional bungee cords. They'll fail when you need them most. They're also a safety hazard – many people are now wearing a permanent eye patch because the bungee popped loose as they were connecting their load. The hook slips suddenly and tries to take out the nearest eyeball. I've nearly had this happen myself. No more bungees for me (except an octopus net for attaching a bag of groceries).

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4. The more gear you load on the bike, the less responsive it becomes. A 100-pound dancing partner is easier to spin around the floor than a 300-pound heavyweight. More weight means you work harder.
 5. The higher the center of gravity of your load, the more difficult it is to control the bike OR. Keep it low.
 6. The more you load the bike with the weight to the rear, the less stable your steering becomes. Your front wheel won't have good traction. Your rear tire will be pushed to the max when it comes to gross weight.
 7. A bike that's loaded heavily in the rear causes a change in riding geometry – your rake increases and you'll feel like you're riding Peter Fonda's Easy Rider chopper.
 8. Without getting into a long discussion about rake and trail and technical things, suffice it to say that as you load your bike try to do it so that the cargo causes the bike to settle evenly, front and rear.
 9. Adjust your rear shock preload to compensate for cargo. On my bikes I crank the rear shock preload all the way up to max. The weight of my cargo causes the bike to settle to where the bike sits level.
 10. A passenger's weight really has an impact on how the bike rides. You'll have to cut down on gear when you have a passenger on board. If you're camping 2-up this presents some real challenges, but it can be done. A passenger limits you OR capabilities, but they can be useful when it comes time to pull or push. Just ask my Long Suffering Wife.

Gear You Should Carry ON YOUR PERSON (and things you shouldn't)

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1. I know a rider who broke 2 ribs because he was carrying a small hard camera in their chest pocket. He showed me the camera – it was slightly larger than a cell phone. The camera still worked after the tumble, so I guess that's a good thing.
 2. One gal wrote me after reading this Article. She confirmed the importance of not carrying hard gear on your body. She had an SLR camera slung around her neck when she took a tumble. It broke 6 ribs. She also stressed the importance of keeping your important papers on your person (passport, license, etc). In this incident her bike caught on fire after she lost control on gravel. The throttle stuck open and eventually the bike burst into flames, burning all the international travel documents stored in her tank bag. She's fully recovered now, and will gladly sell her BMW F650GS twin at a greatly reduced price (shown below).



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3. I only carry soft items in my chest pockets – soft pouches of food, bug repellent, Cycle Wipes lens cleaners <http://www.bestrestproducts.com/c-167-cycle-wipes.aspx>, perhaps a few credit cards and some cash.

- 904 4. I carry my wallet in a pants pocket, on my thigh. It's too thick to carry in my chest pocket (see #1 above).
905
906 5. I don't carry pens or other sharp objects in my chest pocket. Can you say, "sucking chest wound?"
907
908 6. I carry a few small hard items in the lower pockets of my jacket, below my waist. Those items include my
909 wallet and cell phone. (see #1 above)
910
911 7. I don't carry a fanny pack because I find it uncomfortable.
912
913 8. I wear a hydration backpack, which also has outer pockets for small things (whistle, food, mirror,
914 Leatherman tool, etc).
915
916 9. If I'm going to carry a personal locator beacon (Spot Finder), I usually put it in one of the pockets on the
917 hydration pack. That way if I'm separated from the bike I can still summon assistance.
918
919 10. Carrying a backpack or a hydration system on your back comes with some risk – the gear inside can cause
920 injury. Try to keep the gear small, try to keep it soft. Your riding jacket should have some type of hard
921 spine protector to guard you against your backpack contents.
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Tools To Carry On The Bike

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927 1. It used to be that motorcycle manufacturers provided at least a rudimentary tool kit with each motorcycle.
928 The kit was usually pretty basic, but at least it gave you the essentials. In today's economy that kit probably
929 isn't included anymore. BMW took this route a few years ago. You'll have to come up with your own toolkit
930 that you carry whenever your ride. It doesn't do you any good if it's sitting on a bench in the garage.
931
932 2. You'll need tools to remove the wheels for tire repair. Practice at home – remove the wheel from the bike
933 using ONLY the tools in the on-board toolkit. Don't cheat by going for your 12-drawer Snap-On tool chest.
934 If you can't remove the wheel with your on-board tools, then you need to supplement your kit.
935
936 3. You'll need tools to tighten/loosen every major nut or bolt on the bike. That includes the pinch bolts for the
937 handlebars. I once had my bars come loose on a forest service road as I was going over a pass between
938 ID and Missoula MT. It was real feat to ride the bike bars that rotated forward toward the headlight and
939 back into my lap. As soon as I got to a town I bought a proper bar wrench, which I still carry.
940
941 4. You'll need tools for periodic maintenance if those maintenance intervals fall during the time you're on your
942 journey. In other words, if you plan to change oil during your ride to Alaska, take the tools you need to do
943 that task. But you don't need all those tools if you're just doing a 2-day ride in the hills.
944
945 5. Compromises must be made when it comes to an onboard toolkit – you simply can't carry everything under
946 the sun, so you have to make an educated guess and carry an assortment of tools you're most likely to
947 need. A flywheel puller probably isn't needed but a Leatherman multi-tool would be.
948
949 6. Electrical tester (volt-ohm-continuity), male/female splice connectors, and a few pieces of electrical wire
950
951 7. Electrical tape for covering up those emergency wiring projects.
952
953 8. Gaffer tape and/or duct tape. You can make temporary repairs to windscreens, saddlebags, etc.
954
955 9. Zip ties – these are absolutely essential because they can be used for hundreds of purposes. One time I
956 used them to hold the headlight after it came off as I rode thru an abandoned railroad tunnel.
957
958 10. Siphon hose to "borrow" fuel, or to share fuel with others. If you bought Dyna Beads to balance your tires,
959 you can use the empty hose as a siphon tube. <http://www.bestrestproducts.com/c-100-dyna-beads.aspx>

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11. JB Weld for repairing holes in engine cases (5 minute quick-dry type, not the 24 hour overnight curing type)
12. Small vial of multipurpose grease for cables, levers, etc.
13. Small aerosol dispenser of WD40. This can also act as a starting fluid or a fire starter.
14. Small hammer – ball peen type, with a 4" handle (you'll need to cut down the handle yourself)
15. Small file 3-4" long, for easing sharp corners, filing bolt heads, manicures, etc.
16. Vice grips and/or pliers for gripping or cutting.
17. Short piece of hack saw blade. You can hold the blade with vice grips.
18. Small assortment of common wrenches 8-10-11-12-13-14-15 mm, or as needed for your bike



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19. Allen (hex) or torx wrenches as needed for your bike.
20. Leatherman multi tool (or similar brand). This is a MUST-HAVE item
21. Assorted nuts and bolts in common sizes. A few 8mm, 10mm, etc.
22. Spare container of motor oil in heavy duty ziplock bags. It's not a good idea to carry oils in the same saddlebag as your clothing in case of spillage. Consider using OilJugs because they're smaller than a 1-quart bottle of oil. <http://www.bestrestproducts.com/c-24-oil-jugs.aspx>

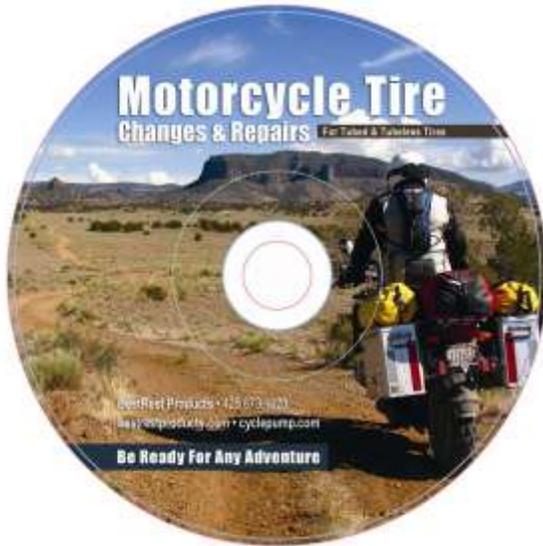


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- 991 23. Special parts your bike might need to fix known issues or weak points. If you ride an R12GS you might
- 992 carry a spare sight glass cover and alternator belt.
- 993
- 994 24. Special tools your bike might need (special wrench needed to fix/repair/adjust the rotary framemis).
- 995
- 996 25. If your bike has a chain drive, bring an extra master link, a short (3-4")section of chain, and a compact chain
- 997 breaker tool.
- 998
- 999
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Tire Repair Tools

The single most common problem you'll encounter in the field is a tire puncture. You'll need to be able to fix it yourself. It's really not that hard. You can learn how to change your own tires and make tire repairs by watching the BestRest Tire DVD. <http://www.bestrestproducts.com/p-291-bestrest-dvd-tire-changes-and-repairs.aspx>



- 1007
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- 1009 1. Tire repair kit - tubed or tubeless depending on your bike. I like the Universal Tire Repair Kit because it
- 1010 repairs both types of tires. I ride a variety of bikes (some with tubes, some tubeless) and this kit gives me
- 1011 the ability to repair any style. <http://www.bestrestproducts.com/p-236-universal-tire-patch-kit.aspx>
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2. Know how to make tire repairs. Practice BEFORE going into the field. Get an old tubeless tire and tube and spend a few minutes practicing. Watch the DVD mentioned above.
3. Carry spare inner tubes (front and rear). Even though I have tubeless tires on my R12GS, I still carry a tube for emergencies. If the tubeless tire has a large cut in it, I can put a tube inside the tubeless tire and still make it back home. If I only have room to carry one tube, I carry the front tube because I can use it in front tire, or I can stuff it in the rear tire even though it's a larger circumference. If I'm carrying a rear tube only, I can't make it fit the front tire in an emergency.
4. Method of tire inflation - 12v inflator, hand pump, CO2, etc. Once the tire is repaired you'll need to inflate. The CyclePump is my preferred method. <http://www.bestrestproducts.com/c-10-cyclepump.aspx>
5. At BestRest we've tested CO2 cartridges and found them to be generally unsuitable for OR'ing. They weigh a lot, they don't fully inflate the tire, they're surprisingly unreliable, and they cost a lot of money. One inflation cycle can cost you around 50 bucks. CO2 is better than having nothing at all, but not by much. Click the link then scroll down the page for a report on CO2 cartridges and see how they worked (or didn't work). <http://www.bestrestproducts.com/p-265-beadsetr-white-paper.aspx>

16 gram cartridges	PSI achieved	Cost to inflate to indicated pressure
3	18.5	\$26
6	35.5	\$38
9	51.5	\$48

Costs based on kit pricing. Refills only available in 3-paks.

45 gram cartridges	PSI achieved	Cost to inflate to indicated pressure
1	13	\$45
2	27.5	\$45
3	42.5	\$75

Costs based on kit prices. Refills only available in pairs. Ya' can't buy 3, we had to buy 4.

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6. Bead breaker to get the tire off the rim. Don't rely on using the sidestand to break the bead, especially if you're traveling alone. Practice before you leave home, using only the gear you're actually going to carry on the bike. I prefer the BestRest TireIron BeadBrakR because it gives me everything I need to change a tire or make repairs in the field. <http://www.bestrestproducts.com/c-98-beadbrakr.aspx>



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7. Tire irons to remove the tire from the rim. See #6 above. You'll also need to know how to use those irons.
8. Changing tires or removing tires from the rim to fix a tube requires special techniques. See #6 above.
9. Mounting lube for tubeless tires, or talc for tires with inner tubes.
 - a. BeadGoop for tubeless tires <http://www.bestrestproducts.com/c-132-bead-goop.aspx>
 - b. TalcTube for tubed tires <http://www.bestrestproducts.com/p-292-talctube.aspx>

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BeadGoop for tubeless



TalcTube for tubes



TalcTube strapped to frame

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Repairs On The Trail

1058 If you ride a motorcycle long enough you're going to have a breakdown on the trail. It happens to everybody,
1059 regardless of the brand you prefer (BMW, KTM, Kawasaki, etc.) Don't laugh at the guy aboard that Brand X
1060 motorcycle that just broke down – you're next on Murphy's list. Tomorrow he'll be laughing at you.

1061

1062 You can minimize your chances of a breakdown by keeping your bike in good condition and making sure you follow
1063 the manufacturer's service recommendations. Get your valves adjusted, fluids changed, etc. before you head out in
1064 the hills. It makes sense to take care of the bike, so it will take care of you. If you neglect your pony, she'll buck
1065 you off and leave you stranded in the middle of Nowhere. When you're stranded in the middle of Nowhere, wild
1066 animals are going to pick your carcass clean. Get the point?

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1068 Your pre-ride inspection is your best opportunity to look for these things: loose components, fatigued brackets, oil
1069 seepage, electrical faults, etc. Sprockets showing signs of wear? Oil level low? Brake reservoir low? Brake pads
1070 getting thin? Battery on its last legs? Intermittent electrical problems?

1071

1072 A post ride inspection and cleaning session also helps you identify potential problems. Oil leaks show up easily
1073 when there's a coating of dust on the engine. You're bike's trying to tell you something – you need to look and
1074 listen. Most mechanical faults give you warnings long before the failure actually occurs.

1075

1076 Breakdowns fall into 2 categories – those you can fix yourself, and those you can't.

1077

1078 Examples of things you CAN fix in the field:

- 1079 1. Tire puncture – see next main topic below
- 1080 2. Loose/missing nuts and bolts – tighten or replace
- 1081 3. Cables out of adjustment – adjust to mfg's specs
- 1082 4. Levers out of adjustment – adjust for proper engagement
- 1083 5. Chain tension and chain lubrication – lube and adjust
- 1084 6. Fluid levels low – add oil or gear lube or coolant as needed.
- 1085 7. Broken levers – replace with a spare, or use vice grips on the part that remains
- 1086 8. Broken wires - splice and wrap with electrical tape
- 1087 9. Punctured engine case - use JB weld to plug the hole
- 1088 10. Fouled spark plug – replace with a spare(s). You also carry a spark plug wrench, right"
- 1089 11. Alternator failure – replace the belt with a spare
- 1090 12. BMW ignition sensor ring failure – if you carry a spare programmed to your bike.
- 1091 13. Lost key – retrieve an emergency spare from your super-secret onboard hidey spot

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1093 Here's some photos of Steve making repairs to his saddlebags. The rough trail caused one bracket to fail.

1094 Fortunately Steve had enough bits, pieces, screws and wire to put things back together again.

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Here's a couple photos of my rear brake lever that got mashed after kissing a rock. Some creative blacksmithing with hammer, and a rock as the anvil put the lever back in operating condition.



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If you can repair a minor issue there's no reason you shouldn't continue your journey. But if the minor issue shows signs of progressing, then it's time to head for the barn where you can make permanent repairs.

Things you CAN'T fix in the field:

- 1107 1. Final drive failure – your power train just left the station without you
- 1108 2. Clutch failure – you can't get power to the wheel, even after adjusting clutch lever and cable
- 1109 3. Snapped chain – unless you have a spare link and chain repair tool
- 1110 4. Clogged fuel filter - unless it's an external cartridge like those found on a small trail bike
- 1111 5. Computer failure - the bike's brain is fried so there's no spark or other electrical
- 1112 6. ABS failure – the brakes probably work but the anti-lock feature doesn't – ride with caution
- 1113 7. Transmission failure – try to get the bike in a gear that works, then limp home
- 1114 8. Battery failure – you might be able to limp home, but don't run your lights or other accessories
- 1115 9. Alternator failure – the diodes are fried so the battery won't charge
- 1116 10. Bearing failures – probably no field fix is possible
- 1117 11. Lost key – Don't have a spare? You're screwed, unless you can hotwire the ignition
- 1118 12.

1119

If you can't repair the bike in the field you have these choices:

- 1120 1. Leave the bike and walk to get help (or double-up with your riding buddy and ride to get help)
- 1121 2. Push the bike to the nearest farmhouse where you can get help or make arrangements to store the bike
- 1122 3. Call for a wrecker – ask for a flatbed truck, refuse to accept a wrecker with a boom hoist.
- 1123 Note – here's where your towing insurance comes in handy. I carry towing insurance thru AAA RV Plus
- 1124 and I also have a plan thru American Motorcycle Assn.
- 1125

1126 4. Have your buddy tow you home or tow you to a service center where repairs can be made
1127

1128 When I'm out riding I'm often wondering how I'll solve a hypothetical breakdown. If the frammiss fails, how would I fix
1129 it? If the gallimeter won't engage, can I make adjustments? If the rotary protmis comes loose, can I tighten it? If I
1130 don't have the ability to fix those problems, I make a mental note to buy a special tool, or otherwise learn how to
1131 make that repair. Those kind of mental exercises help me prepare for a breakdown when it really does happen.
1132
1133

1134 Tire Repairs

1135 The most common repair you'll need to make in the field is when you have a flat tire. Usually the puncture is in the
1136 rear tire. It seems the most likely reason for this is that the front tire rolls over a nail or other obstacle, kicking it up a
1137 bit. The rear tire then impales itself on that object. Depending on tire design (tubed or tubeless) you'll use different
1138 techniques to repair a tire. One tire repair kit will fix both styles of tires: [http://www.bestrestproducts.com/p-236-
1139 universal-tire-patch-kit.aspx](http://www.bestrestproducts.com/p-236-universal-tire-patch-kit.aspx)
1140

1141 Tubeless - If you have tubeless tires it's a pretty quick and easy fix. Locate and mark the puncture. Remove the
1142 nail or whatever it is that's sticking out. Use a plugging kit. Re-inflate the tire. The whole process takes about 5
1143 minutes.
1144

1145 Tubed - If it's a tubed tire you'll need to remove the wheel from the rim. Put the bike on centerstand. Remove the
1146 entire wheel. Break the tire sidewall away from the rim. Demount one side of the tire from the rim. Pull the tube
1147 out of the tire. Patch the tube. Then put everything back the way you found it. This process can take anywhere
1148 from 15 minutes to an hour.
1149

1150 If you want a full explanation on how this is done, get the BestRest Tire DVD. [http://www.bestrestproducts.com/p-
1151 291-bestrest-dvd-tire-changes-and-repairs.aspx](http://www.bestrestproducts.com/p-291-bestrest-dvd-tire-changes-and-repairs.aspx). The DVD does NOT describe the process of removing the wheel
1152 assembly from your particular motorcycle. For that information you'll need to read your owner's manual and/or talk
1153 to your service advisor. Some dealerships put on seminars that teach you how to do this.
1154
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1156 Tire Changes

1157 I won't spend much time on this topic because in order to cover it properly it I'd have to write a separate Article.
1158 That being said, tire changes aren't really that difficult if you know a few tricks and you have the proper tools.
1159
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1161 As an OR Rider, it's helpful if you know how to change your own tires. That knowledge will prepare you for the
1162 times when you need to repair a flat tire, and it'll also come in handy when you need to replace your worn out
1163 knobbies. You can learn the techniques you'll need by watching the DVD mentioned above.
1164
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1166 As far as tire changing tools are concerned, everything you'll need can be found in one compact kit, the TireIron
1167 BeadBrakR <http://www.bestrestproducts.com/c-98-beadbrakr.aspx>
1168

1169 Don't be fooled into thinking that you need to use 18" long tire irons. Irons that are 8-9" long give you plenty of
1170 mechanical advantage, assuming you know how to use them properly.
1171
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1173 Off Road Riding Techniques

1174 OR riding shares the basics of street riding, but there are some BIG differences. It's safe to say that it's easier for a
1175 dirt rider to transition to pavement, than it is for a street rider to transition to dirt. Similarly, it's easier for a camel to
1176 fit thru the eye of a needle than it is for a rich man to enter the Kingdom of God. You get the point... the same
1177 principles apply.... No, it's not impossible to do those things - it's just harder.
1178
1179

1180 I was fortunate - I learned to ride in the dirt long before I learned to ride the street. The subtle techniques I learned
1181 from riding OR easily transitioned to the skills needed on the pavement.
1182

1183 If you're new to the sport of motorcycling don't let your lack of experience discourage you. I know of one rider who
1184 only started riding about 2 or 3 years ago. He learned how to ride so quickly and so well that he's now an expert
1185 Staff Instructor at RawHyde Adventures. He's taught me a few things and corrected some bad habits I'd developed.
1186 (I still have a long list that need correcting.)
1187

1188 **Standing On The Pegs**

1189 Have you noticed that most of the photos/videos of off road riders show them standing on the pegs? They don't do
1190 that because it looks cool, they do it because standing on the pegs is the only way to effectively handle a bike when
1191 you leave the pavement.
1192

1193 If you're uncomfortable standing on the pegs then that's a fear you'll have to conquer. Proper set-up of your bike
1194 will make standing more comfortable for you. An understanding of WHY you need to stand will give you the proper
1195 motivation to learn how to stand. Bottom line – you're going to have to do it, so get used to it. If you can't (or won't)
1196 learn the standing technique, then OR riding probably isn't your career choice.
1197

1198 Why do you really NEED to stand on the pegs when riding OR? Why is it NECESSARY when you're riding on dirt,
1199 on gravel, or uneven surfaces? Some will probably disagree my explanation, but for those of us with simple minds
1200 it makes sense.
1201

- 1202 1. You stand up on the pegs because it allows the bike to move beneath you laterally, forward, and backward.
1203 This movement is necessary so that you can to initiate turns and maintain balance.
1204
- 1205 2. Pavement riding relies on handlebar counter-steering as well as friction between the roadway and the tire to
1206 turn, brake, or accelerate. There are also several other factors in there such as the change in circumference
1207 of the tire when it's turning, but let's keep this simple. A pavement rider can accomplish everything he
1208 needs to do while he's still sitting on the saddle. A pavement rider's suspension easily absorbs whatever
1209 bumps and dips the highway engineers didn't see fit to smooth over.
1210
- 1211 3. OR riding takes you places where traction is tenuous, at best. Because of this the OR rider has to rely on
1212 Body English to turn, brake, or accelerate. OR roads and trails are filled with bumps, ruts, and other
1213 obstacles that the bike's suspension just can't handle by itself. You stand up because your legs will act as
1214 secondary suspension modules, absorbing the ups-and-downs along the way.
1215
- 1216 4. Because you're going to be using a lot of Body English, you'll want to maximize the potential of those
1217 movements. You simply can't do it when your butt is glued to the saddle. When you're seated, you're just
1218 another dead-weight component bolted to the motorcycle. When you're sitting on the seat, your body is
1219 effectively "attached" to the motorcycle and the center-of-gravity (CG) of both bike and rider are combined.
1220
- 1221 5. When you're standing, you become a dynamic and separate entity aboard the motorcycle. When you
1222 stand up, you separate yourself from the motorcycle's Center of Gravity (CG). The bike now has its own
1223 CG, which is down lower, and you've got your own CG, which is a couple feet higher. When standing you
1224 can use your body in ways that will result in maximum leverage to get the bike to go exactly where you want
1225 it to go, and to have it do exactly what you want it to do. Even though your goal is to create maximum
1226 leverage, you'll be using that leverage in subtle but gentle ways and with great effect.
1227
- 1228 6. Think of yourself as a tightrope walker who's riding a bicycle across Niagara Falls. If you keep your hands
1229 in your pockets as you peddle across, then your chances of making it across to the other side are pretty
1230 slim. However if you're suddenly holding one of those long balancing bars then your chances of success
1231 dramatically improve. You'd use the weights at the ends of that bar to compensate for gusts of wind, for
1232 body movement, etc. When you stand up on your motorcycle, your body becomes that long balancing bar.
1233
1234

1235 **Safety Note:** When you're standing on the pegs, adjust your left rear view mirror so you can see what's going on
1236 behind you. If you don't you run the risk of being rear-ended, or of moving into the path of a vehicle that's trying to
1237 pass you. I have a close friend was standing on the pegs and didn't remember to adjust his mirror. Things nearly
1238 ended badly when an 18-wheeler overtook him from behind and caught him unaware.
1239
1240

1241 Five Off Road Riding Positions

1242 I've learned there are five basic body positions when it comes to OR'ing. Some think #1 doesn't belong in there;
1243 others might want to add more positions. But for this Article I'll go with five.
1244
1245

- 1246 1. Sitting. I only use this position when things are smooth, straight, level, and I'm not expecting any surprises.
1247 This position makes it difficult to steer or otherwise control the bike when riding OR, so I use it as little as
1248 possible. I consider sitting to be a temporary resting position. As soon as I've rested I stand up again.
1249
- 1250 2. Scout. I'm standing on the pegs, my body is comfortable, my arms are relaxed, my legs are slightly bent,
1251 knees not locked, my knees gently pressing against the tank and holding me steady. I can hold this
1252 position for a long time, perhaps a couple hours depending on my physical condition. If I sit down for a few
1253 minutes I regain my strength, then I go back to the Scout position.
1254
- 1255 3. Accelerating. I need to accelerate, so I shift my upper body further forward than Scout. This keeps the
1256 front end on the ground and prevents the front from lifting. This position is similar to the one used when
1257 climbing a steep hill. If I'm too generous with the throttle the rear wheel may spin. I can control that with
1258 clutch, throttle, or by simply shifting backwards a bit until the rear wheel regains traction.
1259
- 1260 4. Attack. An obstacle is coming up and I'm about to challenge the terrain. I'm standing on the pegs. I shift
1261 my weight forward, anticipating the obstacle. My head is in front of the handlebars and I can almost look
1262 down over the headlight. Arms are flexed and I'm ready to make any handlebar adjustments. My knees
1263 are firmly gripping the tank and are acting as my main connection to the motorcycle. I'm not tense, but I am
1264 alert. I can only maintain this position for a few minutes, and then I need to relax to Scout or Sitting.
1265
- 1266 5. Braking. I need to brake, so I straighten my arms, move my butt back over the rear wheel, and apply
1267 brakes as needed. This position is very similar to the one used when riding down a steep hill. If necessary
1268 I'll adjust my body to one side or another, to keep the bike upright.
1269

1270 As I ride along a road or trail I'm constantly moving from one position to another. Depending on the terrain and my
1271 speed, I can get quite a workout as I move about on the bike. I could always slow down if necessary, catch my
1272 breath, and then pick up my speed again. If I find that I'm getting too tired, if I'm getting cramps, or if my neck gets
1273 tense, I stop. I'll have a drink of water, nibble on a snack, and then I'll get going again. It's supposed to be fun and
1274 it is. I usually find that I'm drenched with sweat, but I have a big smile on my face.
1275
1276

1277 Turning the Bike When Riding Off Road

1278 Pavement techniques call for "counter-steering". Push the bars forward on the right to turn right, push the bars
1279 forward on the left to turn left. It works great, but keep that technique where it belongs - on the pavement.
1280
1281

1282 OR techniques are somewhat different because of the traction issues involved in the dirt. If you use a road riding
1283 technique that relies on counter-steering, you may experience some interesting events, none of which are pleasant.
1284 OR riding relies on different handlebar techniques, knee movements, weight transfer, and other "body English"
1285 techniques to control the direction of the motorcycle.
1286

1287 When you're standing on the pegs you'll use your knees, your toes, the handlebars, and basically your entire body
1288 to control the direction of the motorcycle.
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1. To turn right, press your left knee into the tank and at the same time press down on the right footpeg with your right toes. Push the handlebars bars to the right, in a lateral movement.
 2. To turn left, press your right knee into the tank and at the same press down on the left footpeg with your left toes. Push the handlebars bars to the left, in a lateral movement.
 3. I don't intentionally TURN the handlebars right or left, instead I take the entire handlebar assembly and move it sideways in the direction of the turn, slightly pressing DOWN on the side of the bars closest to the inside of the turn.
 4. The more you accentuate the above movements, the sharper the turn will be.
 5. These techniques can be used at any speed when you're riding OR.
 6. When practicing this technique in a slow figure-8 course, the rider will be making dramatic shifts of his body, from left to right and vice versa. He always stays "on top of the bike", keeping the bike between him and the ground.
 7. Positioning your body "on top of the bike" keeps your center of balance over the contact patches of the wheels, which improves your traction.
 8. Unlike a street rider who aggressively hangs off his bike on the INSIDE of the turn, the OR rider pushes the bike laterally toward the inside of the turn, as he positions his body ON TOP of the bike.
 9. The key point to remember is that you want to be "pushing" the bike downward toward the axis of the turn, and as you move your body further away from the axis of the turn (or away from the pivot point), and toward the outside of the bike.

1319 As described in the section on how to use your rear brake, you can also control your direction by skidding the rear
1320 wheel. Practice that technique at slow speeds, and gradually work up to about 10 mph. Above that speed things
1321 happen pretty quickly if you get your timing messed up.
1322

1323 Learn slowly, Grasshopper, wax on, wax off like the Karate Kid. Practice the little things and master them
1324 thoroughly, before you progress to the more complex tasks.
1325
1326

1327 **Throttle control**

1328 Throttle control is even more important in dirt than it is on pavement. A bit too much throttle and you'll get unwanted
1329 wheel spin. Too little and you'll stall. Either extreme will set you up for a series of events that can cause a tumble,
1330 or at the very least it'll cause the Pucker Factor to spike.
1331
1332

1333 It's a rare situation where you need to apply a full roll-on throttle like you do on the street. 99% of the time you'll be
1334 using subtle, gentle, and minute adjustments. Use the throttle sparingly. It can be your friend, but it can also bite
1335 the hand that feeds it.
1336

1337 Rule of Thumb when it comes to the throttle – EASY DOES IT.
1338
1339

1340 **Gripping the Bars – Applies to Both Hands**

1341 New OR riders tend to clasp the handlebars in a white-knuckled death grip, as if that act will get them thru the dirt
1342 safely. A white-knuckled grip serves no purpose; instead it causes fatigue, it causes you to tense up, and it will
1343 literally cause you to fall.
1344

1345
1346 Instead of gripping the bars tightly, grip loosely and comfortably. You're going to be holding those bars for several
1347 hours, so hold them in a fashion that won't wear you out in the next 15 minutes.

1348
1349 Look for a Vee. Place your hands in front of you, flat on the table. Relax. See the Vee between your thumb and
1350 your index finger? You want to see that same Vee when they're holding the handlebars. You should see an open
1351 space between the webs of your thumbs and the bars. If you don't, you're gripping the bars too tightly. Relax. Grip
1352 the bars firmly but Relax. Now RAISE your elbows. See how the web of between thumb and index finger moves
1353 away from the bars? You want a little space in there; it indicates that you're not over-gripping the bars.

1354
1355 As you're riding (on the street or in the dirt) if you begin to feel fatigue in your hands, arms or back, lift your elbows.
1356 That motion will cause your hands to relax and the tension you're feeling in your arms will begin to diminish.

1357
1358 Whenever I'm riding thru some tough terrain, I make mental and visual checks of my hands. If I'm gripping the bars
1359 too tightly, I get tense and tired. When I raise my elbows and I look for the Vee, I automatically relax.

1360
1361

1362 **Gripping the Bars – Right Hand – Brake Lever**

1363
1364 Street riding protocols (MSF courses) call for riders to hold the right grip with all 4 fingers until you need to you
1365 apply the brake, at which time all 4 fingers move to the brake lever. For OR riding MOST of the time you'll be
1366 gripping the throttle with just your thumb and your ring and little finger. Your index and middle finger will be resting
1367 on the front brake lever.

1368
1369 This multi-function grip (both brake and throttle) can be a bit confusing for the Beginner. After time you'll learn that
1370 you can roll the throttle on or off with the right side of your hand, while you control the brake with the left side of your
1371 hand.

1372
1373 Sit aboard the bike and practice this grip technique. It's a skill you MUST master if you're going to be comfortable
1374 when riding OR.

1375
1376 One reason you only want to have 2 fingers on the front brake lever is that it prevents you from using too much front
1377 brake. Yes, it's possible to over-brake even with only 2 fingers, but the chances are lessened. Some riders use
1378 only 1 finger on the brake, but I like using 2.

1379
1380 If your bike has an adjustable brake lever, move the lever in or out to accommodate your hand size. My hands are
1381 small so I usually need the lever in the closest position.

1382
1383 When making adjustments, make sure the lever doesn't touch the hand guard when it's in the forward position. If it
1384 does it can activate your brake light and/or cause premature brake wear (similar to riding the brakes all the time).

1385
1386 As mentioned in the section on setting up your bike, it's important that the lever be adjusted so you can easily
1387 operate the lever while standing on the pegs. If you have to bend your wrist in an unnatural position, then you need
1388 to adjust the lever. When you're standing on the pegs you should arms should be fairly straight, your wrist should
1389 not be bent, and your index/middle finger should be along the same axis as your arm. There should be no
1390 noticeable cocking of the wrist or any unnatural bending of the fingers.

1391
1392

1393 **Gripping the Bars – Left Hand – Clutch Lever**

1394
1395 As with the right hand, the left hand should be holding the bars loosely. Look for the Vee. Ring and little finger wrap
1396 around the bars, the index and middle finger should be resting on top of the clutch lever.

1397

1398 With some bikes, once you get going you don't usually need to use the clutch anymore, so why leave 2 fingers on
1399 top of the clutch lever?

- 1400
- 1401 1. It keeps your hand in the Vee position
- 1402
- 1403 2. It keeps you loose and comfortable
- 1404
- 1405 3. You're ready to use the clutch quickly
- 1406
- 1407 4. The clutch is used to control speed almost as much as the throttle, in certain situations
- 1408

1409 If your bike has an adjustable clutch lever, move the lever in or out to accommodate your hand size. My hands are
1410 small so I usually need to move the lever to the closest position.

1411
1412 When making adjustments, make sure the lever doesn't touch the hand guard when released.

1413
1414 As mentioned in the section on setting up your bike, it's important that the lever be adjusted or rotated on the bars
1415 so you can easily operate the lever while standing on the pegs. If you have to bend your wrist in an unnatural
1416 position then adjust the lever. As a rule of thumb when you're standing on the pegs you should arms should be
1417 fairly straight, your wrist should not be bent, and your index/middle finger should be on the same axis as your arm.

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1420 **Braking Techniques - Front brake**

1421

1422 What you learned about using your front brake on the pavement is also true about using the front brake in the dirt...
1423 EXCEPT that the amount of pressure needed to lock up the front brake in the dirt is much, much, much less. Did I
1424 say "much less" strongly enough to make the point? Will you remember in an emergency? Probably not. That's
1425 why you limit your braking grip to 1 or 2 fingers on the lever. If you grab a handful of front brake in the dirt (with 4
1426 fingers), the wheel will lock and you'll kiss the ground before you can say OOPS. Been there, done that.

1427

1428 Pretend there's an egg between the brake lever and the grip. Squeeze the brake gently but firmly, but don't break
1429 the egg.

1430

1431 You're saying to yourself, "If using the front brake runs the risk of locking the wheel, why not avoid using the front
1432 brake altogether?" Just as with pavement riding, most of your effective braking comes from the front brake. If you
1433 eliminate the front brake altogether, you've eliminated 80% of your braking ability. You've simply got to learn to use
1434 the front brake when riding OR, you just need to learn how to use it gently, firmly, and with discretion.

1435

1436 Advanced riders can actually lock the front brake and skid the tire without losing control, but that technique is
1437 beyond the scope of this Article. I will describe a front brake, front tire skidding drill in the field drills section.

1438

1439 As you apply front brake and the bike begins to slow, you'll want to gradually feather (ease) the brake as you come
1440 to a stop. If you don't the front wheel will suddenly lock and at 2 MPH you'll fall down. This is very embarrassing
1441 when it happens in front of a group of fellow riders. Or so I'm told....

1442

1443

1444 **Braking Techniques - Rear brake**

1445

1446 Rear braking techniques are quite a bit different than front brake techniques.

1447

1448 Consider the rear brake to be a boat anchor. You can throw it overboard and drag it along until it catches
1449 something firm and keeps the ship off the rocks. OK, that's a bit of a simplification, but you get my point.

1450

1451 Only 20% of the bike's braking comes from the rear wheel. That's bad, but the good news is that the rear wheel
1452 can be used to steer the bike almost as effectively as the handlebars.

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Here's how it works:

1. As you apply rear brake the bike will gradually slow. Used by itself, the rear brake will eventually slow the bike, but you usually need some help from the front brake to get the job done effectively, in the shortest distance.
2. As you apply more pressure to the rear brake pedal, the weight of the bike will shift forward. The rear suspension will unload, and the rear of the bike will tend to rise. The rear wheel may actually lock up and the wheel will stop spinning. NO PROBLEM. Don't panic. Yet.
3. If you're braking in a straight line, on level ground, you can easily skid to a complete stop with the rear wheel locked.
4. If the bike starts to veer slightly one way or another, turn the bars gently into the turn and correct as needed.
5. As you brake shift your weight to the rear, intentionally placing your butt as far back over the rear wheel as you can. This greatly improves your bikes braking ability.
6. If the bike starts to veer in a direction you don't want it to go, and your steering corrections aren't working, GENTLY release the brake lever until the bike goes in the intended direction, then gently reapply the brake
7. If you suddenly release the brake lever all the way, the bike will regain traction in an instant, then it will make a sudden upright movement and you'll "high-side", or....
8. The bike will take off in the direction it was pointed when you released the rear brake.
9. This sudden change of direction can work to your advantage (if you're ready for it). I call this "skid steering"
10. If you apply throttle at the moment you release the rear brake, the bike head off in a new direction and you won't have to turn the bike using the handlebars.
11. This technique works best (for me) when I'm making a left turn, because I tend to want to dab the ground with my left foot at the point of transition. Some call this dab a sign of timidity – I call it prudence.
12. For right hand turns it's harder to do because my right foot is on the brake pedal. I can't dab my foot because I'd have to remove my foot from the brake pedal.

Braking Techniques – Bike Position, Body Position

When riding on the pavement you easily can apply brakes even if the bike is leaned into a turn.

Try that in the dirt and the bike will usually kiss the ground. Experts can get away with it – but you shouldn't try it if you're a novice. If you really need to brake when the bike is leaned over, you should do it very gently.

When riding OR it's important that the bike be in a relatively upright position whenever you apply the brakes. This prevents the tires from "washing out" of suddenly losing traction because you over-braked.

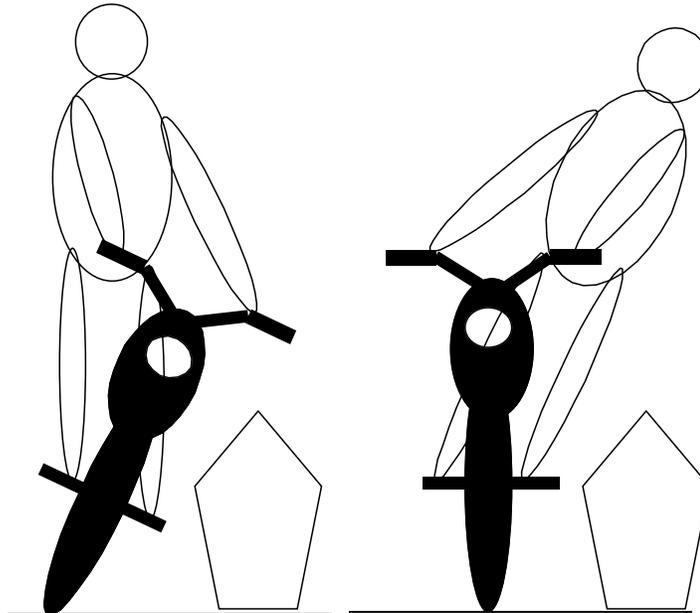
Shift your weight to the rear whenever you brake – extend your arms and move your butt over the rear wheel to maintain traction and to counteract the front end dive that comes with braking.

1507 Use 2 fingers on front brake, apply rear brake with right foot, get ready to pull in the clutch, shift down as needed,
1508 and come to a stop. You should be in 1st gear when you stop. In a panic situation you might forget to shift down,
1509 but that downshifting technique will develop over time.

1510
1511 What do you do if you can't get the bike upright and braking is necessary? I try to push the bike into an upright
1512 position as much as I can, and at the same time I move my body to compensate for the bike's position. Here's how
1513 it works (left hand turn – right turn is the same, reversed):
1514

- 1515 1. I'm in a left turn on dirt or gravel and I see an obstacle in my path.
- 1516 2. I CAN'T straighten the bike or choose an alternative path, before I hit the obstacle.
- 1517 3. I push the bike to the right so it assumes as much of an upright position as possible.
- 1518 4. To compensate for this movement, I move my body to the left (between the bike and the ground.)
- 1519 5. This results in the bike moving into a more upright position, perpendicular to the ground
- 1520 6. I apply as much braking as possible, without running the risk of locking the wheels.
- 1521 7. As the bike slows, I can move my body back to the centerline.
- 1522 8. This balancing technique isn't done just by moving the handlebars, instead it's done by moving my body off
1523 the centerline of the bike, into the turn.
1524
- 1525 9. This technique is **NOT** to be confused with the normal braking techniques that are used in the dirt.

1534 This is what it looks like: If the guy on the left applied his brakes with the bike at an angle, he might lose traction
1535 and fall down, but he still has to miss the obstacle. So.... He moves his body inward toward the obstacle, and
1536 PUSHES the bike upright. Now he can apply his brakes with less chance of locking the wheels. Of course he still
1537 has to miss the obstacle with his body.
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1543 **Using the Clutch**

1544

1545 As mentioned earlier, once you get the bike rolling the clutch may not be needed, especially if you have a wet-clutch
1546 system - no clutch is needed for shifting. If you have a dry-clutch system like the BMW R12GS, you'll need to use
1547 the clutch every time you shift (yes you can shift without the clutch if you're careful to match wheel speed and
1548 engine speed, but it's harder).

1549

1550 Regardless of whether you need the clutch to shift, you'll need to learn to use it effectively if you're riding OR. The
1551 clutch is used to control your speed, it's used to control traction, and it's used to help you get moving whether you're
1552 starting out on the level or starting out on steep a grade. You need to learn the "sweet spot" on your clutch, and you
1553 need to learn to play it like it was piano or a guitar.

1554

1555 Adjust your clutch lever (and clutch cable) so you can grip the handlebar with your thumb and little and ring finger,
1556 while holding the clutch at the slip-point / release-point with your index and middle finger. If your clutch doesn't
1557 engage with your hand in that position, you need to make the necessary adjustments. If your clutch doesn't engage
1558 until you fully release the lever, you need to make adjustments.

1559

1560 You need to be able to firmly hold the bars with the outside of your left hand, while you feather the clutch with the
1561 inside of your left hand. The clutch lever should touch the inside of your fingers at the first joint, or closer. If you
1562 can't get the clutch lever inward far enough to get it past that first finger joint, make adjustments. You have no
1563 strength at the tips of your fingers, but you do have strength once the lever is behind the first joint or knuckle.

1564

1565 When the clutch is fully engaged (no power to the rear wheel), you shouldn't have to open your hand, or move your
1566 ring or little finger, or remove them from the handgrip in order to get the clutch to engage. When engaged, the
1567 backside of the clutch lever can be touching the tops of your little and ring finger, which are on the handgrip.

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1570 **Shifting Gears**

1571

1572 Shifting gears should be done smoothly, without popping the clutch or jerking the bike and rider. Yeah, popping the
1573 clutch and lifting the wheel looks cool, but for most riders it's an invitation for a loss of control.

1574

1575 Anticipate the trail ahead. Do you need to shift down to go thru that puddle? Is the trail ahead smooth and safe,
1576 which invites a higher gear and faster speeds? You'll need to decide. The act of riding a motorcycle requires
1577 constant analysis of the conditions, decisions on how to handle the situations, and immediate actions to carry out
1578 those decisions.

1579

1580 Many riders wonder which gear they should use in a given situation. 1st? 2nd? 3rd? The variables are too large to
1581 provide you with any hard and fast rule. You'll need to consider the power of the bike, the grade of the slope, etc.

1582

1583 Up-shifting quickly is seldom needed, but down-shifting quickly is a pretty common occurrence. Even a BMW with a
1584 dry clutch will allow you to roll off the throttle and drop down a gear without the clutch. Dropping the gear allows
1585 you to bring up your RPM and delivers more power to the ground. This is often needed when climbing hills – you
1586 started up in 2nd gear, but the bike begins to bog down so you stab into 1st gear and complete the ascent. If you
1587 have time to use your clutch, great. If you don't have time there's going to be a bit of gear grinding as you drop
1588 down a gear, but at least you'll make it to the top of the hill.

1589

1590

1591 **What To Do When You Fall**

1592

1593 It's inevitable - you're going to fall down if you ride OR. When that happens not all is lost. Don't give up. It's not the
1594 end of the world. This next photo shows me in one of my Senior Moments. I dropped my bike and Steve's coming
1595 over to help. I can hear him laughing in his helmet.

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Use proper techniques to lift the bike. Don't use your upper body – you'll only hurt yourself. Visit these sites to see how you can lift a heavy bike by yourself. You can Google "how to lift a fallen motorcycle) to get other techniques

<http://www.pinkribbonrides.com/dropped.html>

<http://team-oregon.org/resources/lifting/>

When the bike's gone down, here's the things you need to do **BEFORE** you try to get the bike back up:

1. Assess the situation - don't panic. Slow, deep breaths. As an Aussie friend says about falling down, "She'll be right, mate. Take a spoon of concrete, and settle down." He meant I should toughen up.
2. Protect yourself from further injury. Get off the trail or road. Don't worry about the bike – worry about YOU.
3. Perform 1st aid as needed. That means you'll need to get to your 1st aid kit quickly. Don't pack it in the bottom of your saddlebag where you can't get to it.
4. Don't try to get the bike upright (immediately). It'll be fine where it is. Instead, take a few moments to plan your next move, taking into account all the circumstances.
5. Turn off the ignition. Or at least hit the kill button if the engine is running.
6. If the bike is leaking gas, try to spin it around so that the fuel leakage stops. If it has fuel petcocks, turn them off if you can reach them
7. Rest for a few minutes, eat a snack, drink some water, consider your situation, and then make a plan.

This rider's had a bit of a tumble. He's OK. He's doing the right thing by taking a few minutes to rest, regroup, and rehydrate before taking the next step – recovery of the motorcycle.



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I've been in situations where I waited 30 minutes before I tried to get the bike upright. I took photos, had a bite to eat, and drank some water. I also waited for my buddy to come along so he could help. When he didn't, I had to lift the bike by myself. It's not EASY, but it's certainly possible for me to do by myself, and you can do it too. Here's how:

1. Remove extra gear from the bike to lighten the load. You might even consider removing saddlebags if they have quick release mounts.
2. Lifting on pavement is easier than in the dirt, but the principles remain the same. Use your legs, not your upper body. Most riders hurt themselves if they try to lift the bike using upper body strength. This lifting technique uses very little upper body strength – instead it relies on the muscles in your legs and buttocks.
3. If you're on a grade, spin the bike around so the wheels are lower than the gas tank and saddle. This minimizes the distance you'll need to lift the bike. Lifting the bike when the wheels are higher than the gas tank is possible, but it's harder work.
4. If possible, turn the bars so the front wheel is pointed down to the ground. This puts the grip in a position where you can use it as a lifting point.
5. If the bike is down on the RIGHT side, extend the sidestand. If the bike is down on the LEFT side don't worry about the sidestand.
6. Use a strap or zipties or some tape to temporarily clamp the front brake, so the front wheel is locked. This makes it easier to get the bike back up because the front end won't try to roll away from you as you lift.
7. On the ground clear away any loose gravel, slippery leaves, etc. In the field this isn't always possible, but do the best you can.
8. Put your backside up against the seat. Face away from the bike.
9. Plant both feet solidly on firm ground, about 24" away from the bike.

- 1662
1663 10. Squat down, bending at the knees, and put your butt on the edge of the seat
1664
1665 11. Keep your back straight, with a slight arch in it. Keep your head up and look at the horizon. This keeps
1666 your posture in the right position and keeps you from hurting your back.
1667
1668 12. Grab the handlebars with one hand, and the underside of the seat or a convenient frame rail with the other
1669 hand.
1670
1671 13. Take up “slack” between your body and the bike. Push your butt firmly into the saddle.
1672
1673 14. Begin walking backwards, taking small steps about 2-3” at a time.
1674
1675 15. As you begin to walk backwards, your goal is to lift the bike with the power of your legs, NOT your arms or
1676 upper body. This technique is the equivalent of a hip/leg squat; this is NOT an upper body bench press.
1677
1678 16. As you walk backwards the bike will rise upright slowly but surely.
1679
1680 17. As you approach the point where the bike is nearly upright, slow down your backwards walk. You don’t
1681 want to push the bike too far, or it’ll fall over the other side. Been there, done that.
1682
1683 18. If the bike was on the right side, and you deployed the sidestand, the chances that the bike will fall over on
1684 the other side are minimal.
1685
1686 19. If the bike was down on the left side, you have to stop lifting before the bike is fully upright. Get the bike to
1687 a balance point, and then slowly turn forward and put both hands are on the grips. As you make the turn,
1688 carry the weight of the bike against your hips.

1689 Practice lifting techniques when the bike is unloaded. Then do it fully loaded. You’ll be surprised how easy it is
1690 when you do it the CORRECT way. You’ll be surprised how difficult it is if you do it the WRONG way.
1691

1692 Once the bike is upright, check for damage. Do a complete walk-around, assessing all the components
1693 including lights, signals, switches, levers, etc. Make repairs as needed.
1694

1695 Don’t let a tumble or a fall discourage you. Consider it as part of the experience. Laugh about it, even if you
1696 have to do it thru clenched teeth. Like I said before, it’s not the end of the world.
1697

1698 When you’re satisfied that it’s safe for you to continue, mount the bike, turn ON the gas, turn ON the kill switch,
1699 turn ON the ignition, RETRACT the sidestand. Forget any of those items and the bike won’t start. I’ve forgotten
1700 all of those details, at one time or another, and spent several minutes identifying the problem before I could get
1701 the bike to start. The Fall-Down was bad enough; the Idiot Factor that came with forgetting a few simple things
1702 that prevented the bike from starting made the incident even more memorable.
1703

1704 1705 **Climbing a Hill**

1706 The world’s not flat. If you ride OR you’re going to need to climb up something or go down something. Neither
1707 method’s really that hard; they just require that you have an understanding of the techniques. You’ll need some
1708 positive encouragement and some practice to become proficient.
1709

1710 When climbing a hill you need to consider the length of the ascent, the grade, the road or trail conditions, and
1711 whether your bike has the power to make the climb. You’ll also need to ask yourself if you really want to climb that
1712 hill in the first place. If the answer is YES, then set your mind to it and make it happen. Don’t be tentative about
1713 your delivery – throw all your chips on the table and “go all in”. He who hesitates on a hill is lost.
1714
1715
1716

1717 When you're first learning to climb a hill you shouldn't start out on the Widow Maker. Begin with small gentle hills
1718 that keep your risk levels low. You need to practice the basics and you need to be encouraged by having success.
1719 Climbing a hill isn't all about speed or momentum, although those factors certainly play into the equation. Instead
1720 it's all about traction. You don't need a bunch of wheel spin to climb up a hill. The most effective ascent is done
1721 with zero wheel spin. No spin means you selected the proper gear and you used your clutch and throttle effectively.
1722

1723 As you select your path up a hill consider any obstacles along the way. Avoid loose patches, large rocks, or things
1724 that will upset your balance. Smooth bare soil might be best, wet grass or pine needles might be worst.
1725

1726 Keep your weight to the front – assume the Attack position and keep your head over the bars. This prevents the
1727 front from lofting. Move your body forward and backwards slightly to control traction and wheel spin.
1728

1729 Slip your clutch as needed to maintain sufficient RPM, but don't over-rev or create a huge rooster-tail off the rear
1730 tire. A spinning rear wheel indicates that your bike's horsepower isn't being used effectively.
1731

1732 If the hill is so steep and so long that you decide to start up in 2nd gear so you can carry some momentum, be ready
1733 for a quick stab to the shift lever so you can drop into 1st. At the point where you make the shift there's going to be
1734 a moment when power's not being transmitted to the ground, so the bike will hesitate. Don't let that slight hesitation
1735 throw you off balance, forward over the bars.
1736

1737 Stay on the pegs, stay in the Attack position. If your feet leave the pegs or your butt hits the seat and you start dog-
1738 paddling up the hill, you've probably lost the battle. Time to regroup. See the next section about what to do when
1739 you get stuck on a hill.
1740

1741 As you approach the summit of the hill, roll off the throttle. If you don't, the bike may go airborne and/or you may go
1742 over backwards. Let your momentum carry you over the summit with just enough speed that you can come to a
1743 gentle stop if desired. Remember, you're on a large dual-purpose bike. Now's not the time for X-Games antics.
1744
1745

1746 **Getting Stuck On a Hill**

1747
1748 If you're climbing the hill and you hit an obstacle that throws you off balance, or you realize you've bitten off more
1749 than you can chew, the best bet is to shut things down right then and there. End it quickly. Don't try to ride out the
1750 event or stay on the bull at the rodeo. Once you've lost control, attempts at recovery usually result in a tumble.
1751

1752 To terminate an ascent, pull in the clutch, apply brakes if needed, keep the bike pointed uphill, put down your left
1753 foot, then lean the bike over toward the left side. (or the right side depending on the situation). If the slope's not so
1754 steep that the bike starts to roll backwards even with both brakes applied, then you can probably keep the bike
1755 upright. If the slope's really steep, just lay the bike over on the left side and step off. Gather your composure. Take
1756 a breather. Enjoy the view. Pretend that you wanted to stop on the hill so you could take pictures.
1757

1758 When you're ready to descend, wiggle the bars so the front end rolls around to the right and moves downhill. You
1759 can release the brakes slightly so the front end moves easily. You're going to be making a big clockwise rotation
1760 with the entire bike, keeping the rear wheel in one spot, and allowing the front wheel to roll around in a downhill arc.
1761 Think of this as pivoting the bike on the left footpeg and/or your left foot. Once the front end has rotated 90 degrees
1762 the bike should be perpendicular to the slope of the hill. Climb on, push off with your left foot, and ride down the hill.
1763



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The hill in this next photo is quite a bit steeper. Instead of allowing the front end to roll around in a big arc, I wiggled the bars back and forth. That caused the front end to scuttle downwards, to a comfortable position where I could remount and ride away.



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If you've laid the bike up against the hill to rest, when you're ready remount the bike. Start the engine if it's stalled, turn the bars to the downhill side, and smoothly ride down the hill to your starting point.

I know this sounds easy on paper, but it can be surprisingly difficult in the real world. Take comfort in knowing that this method works, regardless of the slope. It takes some practice, so find a gentle hill and practice a few failed ascents. You'll be glad you did.

Going Down A Steep Hill

A steep downhill brings fear to the heart of many, many riders. Steep downhills conjure up visions of a fiery death waiting at some point during the descent, and certainly at the bottom. When you're at the top looking down you'll probably say to yourself, "Couldn't I just stay on level surfaces? Why do I need to go down the hill anyhow? Why can't everything be flat and smooth? I feel a headache coming on..."



1787
1788

1789 The good thing about a downhill slope is that once started, it always results in one thing: your bike will somehow get
1790 to the bottom of the hill. The condition of the bike (and of you) at the bottom is what you're going to learn to control.

1791

1792 Select a downhill track that avoids rocks, loose obstacles, slippery grass or other obvious hazards. Select a course
1793 that has a good "run-out" path, meaning that there's a nice runaway ramp waiting for you at the bottom of the hill.

1794 At the bottom you don't necessarily need to come to a complete stop – you can still be carrying some speed, within
1795 reason of course.

1796

1797 As you start the descent your engine is running, and you're in 1st gear, unless you anticipate that your run-out path
1798 will be at a speed higher than 1st gear will handle.

1799

1800 Descent speed is controlled with your brakes. Most of the braking effectiveness comes from the front brake. Use 2
1801 fingers on the lever.

1802

1803 Descent speed is also controlled by the clutch. Use it to control rear wheel rotation, which uses engine
1804 compression to assist with braking. Slipping the clutch causes the rear wheel to be slowed, almost as effectively as
1805 using the rear brake pedal.

1806

1807 Proper downhill riding position is the same that you use when Braking – your arms are straight (not locked) and
1808 your butt is as far back as you can manage. Your feet are on the pegs, and your butt is off the saddle. That means
1809 you're not actually sitting down. Your butt might be touching the rear luggage rack but you're NOT sitting on it.

1810

1811 In these next photos if my arms were longer, my butt would be even further back. And if my legs were longer
1812 there'd be more space between butt and rack. Because they're not, I've learned to work with what I've got. If
1813 you're given lemons, you need to learn how to make lemonade.

1814



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Because your weight is going to be kept over the rear wheel there's more braking power available to the rear wheel than in most other situations.

On every descent keep your engine running, even if the clutch is pulled in. Don't let the engine stall.

Start your descent slowly, feeling out the terrain with your tires. If you sense trouble, turn to the left, apply heavy rear brake and lay the bike down its the side. Regroup, plan, and then execute your next step.

1826
1827 I've been down some really atrocious slopes – ones that were a challenge to walk down on foot, much less descend
1828 on 2 wheels. Nevertheless I rode down them by using proper brake control and I didn't allow the wheels to lock up.
1829 You MUST allow the wheels to rotate. If they stop rotating then you'll begin skidding and you'll lose your ability to
1830 control your direction or retard your descent.

1831
1832 If you find your front wheel or rear is locking up, release that brake slightly until the wheel rotates. Then gently
1833 reapply brakes. It only takes a fraction of a second for the wheel to begin rotating again.

1834
1835 During that short time when you regained rotation the bike will have picked up a bit of downhill speed. No worries,
1836 don't panic. Gently brake again until you regain control and your speed is checked.

1837
1838 What about the horribly steep downhill that takes ahold of both rider and bike and draws them faster and faster, to
1839 their eventual doom? I've actually ridden down that very same hill, safely. It wasn't fun at the time but I still made it
1840 to the bottom. Looking back I see that I made a couple mistakes, including the one where I let the rear wheel lock
1841 up. As soon as I regained rotation I was able to reestablish control. Yes, my hands were shaking and my stomach
1842 had butterflies but I lived to tell the tale.

1843
1844 OK, how about a worst case scenario, like you're trying to descend the north face of Everest and the bike seems to
1845 be going faster and faster in spite of your best efforts:

- 1846
1847 1. Lock up the rear wheel, step off the bike to the left side, let the bike come to a rest
1848
1849 2. If you can't step off, roll off either side or off the back, but somehow get off the bike.
1850
1851 3. The idea is to let the bike slide downhill on one side, not roll down on its wheels or tumble end over end
1852
1853 4. If the slope is too steep for a safe descent, use the Motorcycle Recovery System to get the bike down
1854 <http://www.bestrestproducts.com/c-168-recovery-gear-mrs.aspx>
1855
1856 5. Have your buddies stand on the downhill slope, acting as safety catchers – they won't be able to stop a bike
1857 that's built up a head of steam, but they can help you in the first few seconds of an emergency descent.
1858

1859 Descending hills requires practice. Find a gentle slope and ride halfway down. Come to a controlled stop on the
1860 hill. You want to practice going down the hill as slowly as possible. Once stopped, creep ahead few inches before
1861 you stop again. Put your left foot down to keep the bike upright, but keep your right foot on the brake. Identify the
1862 braking point for front and rear tire, allowing them to rotate slightly. Get comfortable doing it.
1863
1864

1865 **Look Where You Want The Bike To Go**

1866

1867 Look where you want the bike to go – don't look at the obstacle ahead, or at the drop-off, or at the rut, or at the
1868 patch of gravel, or at the puddle. If you focus on the obstacle, you're going to hit it, or ride over it, or ride off it.
1869 Keep your eyes on your objective. Keep your eyes on the ball. Focus on your path, ignore everything else.
1870

1871 I ride some pretty challenging trails down by Mount St. Helens on my KTM 450. They're single-track trails that
1872 narrow to about 6" wide in places. On the uphill side of the trail the slope is so steep that my handlebar is swishing
1873 against the hill. On the downhill side... well let's just say it's bloody steep and the descent would be unpleasant. At
1874 least I'd have time to think about my family on my way down. How do I ride those trails? I'm consciously looking
1875 where I intend to go. Because I focus only on where I want to go, that's where the bike goes.
1876

1877 Remember Forest Gump and the ping-pong ball? He kept his eyes on that little white ball, no matter what. Your
1878 goal is to keep your eyes on the ball too – only your ball is the trail ahead.
1879

1880 You need to keep your eyes on your objective, not on the obstacles you're facing. Example: You come around a
1881 corner and there's a large rock in the road. First you identify the hazard, then you instantly identify a safe path

1882 around that hazard. Keep looking at your intended path and you'll avoid that rock. But if you focus on the rock
1883 you're going to punch it, I guarantee it.
1884
1885

1886 **Anti-Lock Breaking Systems (ABS)**

1887
1888 ABS was developed for pavement riding. A computer senses wheel rotation. If you over-brake and the wheel stops
1889 spinning the system releases the brake for a few milliseconds so the wheel can resume rotation. It's a good system
1890 for the pavement but not so good for dirt riding.
1891

1892 Although it's possible to ride OR with your ABS engaged, it's not generally a good idea. Some may argue that ABS
1893 is still a viable tool when riding in the dirt, but from my experience it's a HUGE handicap. I strongly recommend that
1894 you disengage your ABS system whenever you leave the pavement. Each manufacturer has a different protocol for
1895 doing that – check your owner's manual.
1896

1897 On those rare occasions that I forgot to disengage my bike's ABS, it went something like this:
1898

- 1899 1. Corner coming up, or steep downhill in progress
- 1900 2. Sharp braking was needed, so I hit the rear brake hard, and used 2 fingers on the front lever
- 1901 3. Bike isn't slowing much – what's going on?
- 1902 4. I felt the rear brake lever start to pulsate rapidly
- 1903 5. The rear wheel started to skid, then grip, skid, then grip
- 1904 6. Pucker factor went off the chart and at the same time the "I'm An Idiot" light flashed in my head
- 1905 7. Each time it's happened I've barely managed to avoid a tumble
- 1906 8. I came to a stop, cursed my stupidity, and disengage the bloody ABS system
- 1907 9. I vowed never to let it happen again. But occasionally I still forget.

1908
1909 To convince you that ABS is a bad idea, take your bike out on a dirt surface. Come up to about 10 MPH and stab
1910 the rear brake as hard as you can. You'll experience a lack of braking and a pulsing feeling that will make you a
1911 believer. It's very unsettling. ABS isn't needed or wanted when riding Off Road.
1912
1913
1914

1915 **Off Camber Surfaces**

1916
1917 Off camber refers to surfaces that are neither uphill nor downhill, because you're crossing the slope at an angle. To
1918 do this properly and safely, push the bike toward the ground on the "uphill side". Move your body away from the
1919 slope and place the motorcycle "beneath" you, closer to the slope. This method seems counter-intuitive, but it
1920 works. It also improves traction because your weight is forcing the tread downward into the ground.
1921

1922 You don't want to put your body on the inward side, between the ground and the bike. If you put yourself there,
1923 you'll lose traction. The bike will want to fall away from you, heading down the slope, and you'll be powerless to
1924 stop it.
1925

1926 I wish I had a better set of photos to show this technique. The few photos I have I don't do a very good job of
1927 showing you the proper technique. Until I take some better photos let's work with what we have. In these photos
1928 I'm making an off-camber left hand uphill turn.
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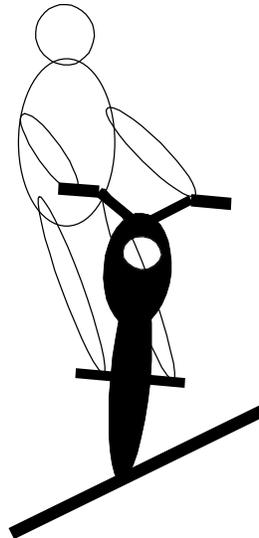
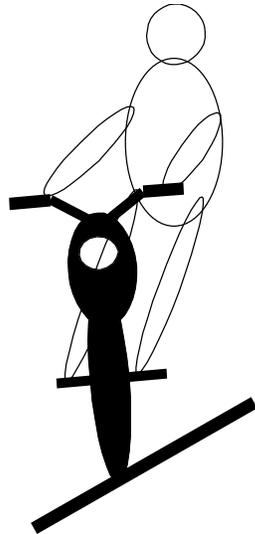
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The photo on the LEFT shows you the **WRONG** technique. I've got my body in the **WRONG** position – I'm on the inside of the turn, between the bike and the side of the hill. In the photo at right I've corrected my error, and moved my hips to the outside where they belong. My body position at right still isn't very good, but at least I'm starting to correct the error.



1942
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1946

These stick figures show how to cross an off camber surface. The guy on the left is doing it **WRONG**. His hips are between the bike and the uphill slope. The guy on the right is doing it **RIGHT**. He's putting the bike between his hips and the slope of the hill.



1947
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1950

(I've ridden with both these guys at one time or another. Neither one is very bright and they don't talk much.)

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Terrain Identification

Nobody can be 100% certain about the terrain ahead and the traction it provides, just by looking at it. Sometimes you'll have to walk or ride across a surface, gingerly testing it to see how it "feels". Here's a few general rules of thumb when it comes to visually identifying road and trail surfaces, and the traction they provide. Some of these descriptions seem pretty obvious, but remember that this Article is written for riders who don't have any OR experience, so they might not be aware of traction issues with these surfaces.

1. Wet clay is slick. It also tends to pack into your wheel wells, bringing tire rotation to a dead stop.
2. Wet leaves are slick because the leaves slip across each other as though they're lubricated. Even dry leaves can act this way.
3. Cow pies are slippery, even the ones that appear to look dry. Don't ask.....
4. Pine needles are slippery regardless of whether they're fresh and bright green or dried out and brown.
5. Grass is slippery; wet grass even more slippery. At least grass is relatively soft when you fall on it.
6. Loose gravel can shift beneath the wheel. If the gravel is crushed rock it has better traction than gravel made up from round river rock. River rock acts like marbles when your tire rolls over it.
7. Bare packed dirt usually has pretty good traction unless it's really wet, then it can act like clay.
8. Loose dirt can have good traction, especially after a heavy morning dew or a very light rain shower.
9. Bare dry rock usually has good traction. When it's wet all bets are off.
10. Wet rock is always slippery, especially when covered with moss or lichen.
11. Mud puddles can be deeper than expected. Don't trust them. I've seen a rider cruise into an innocent looking puddle that was just a few feet across, only to discover find that it was 2 feet deep.
12. The edge of a mud puddle can be just as slippery as the center of the puddle itself
13. Stream crossings are always slippery and moss covered rocks are downright dangerous
14. Logs and branches are usually slippery. The bark breaks free from the core and your tire slips sideways.

Crossing Water Obstacles

Everyone's seen photos of bikes crossing streams or rivers. The really cool photos show a beautiful V-shaped spray of water coming off the bike. Here's the real truth about water crossings – somewhere under the surface there's a big round rock with your name on it. Your front wheel will hit it and deflect unexpectedly, causing you to crash. Your bike will suck water into the air cleaner, filling your cylinders. You're in for a heck of a time cleaning it out.

Cross water obstacles with great care, don't try to be a hero. If you can't see the bottom of the water, walk across first and use a stick as a probe to test the depth and the riverbed makeup. Remove any obstacles if necessary. Detour if you're not comfortable with the crossing. I've ridden 20 miles out of my way to avoid a bad water crossing. I might have made it across safely, but the risks were just too great and the benefits were marginal.

Photo at left shows Steve carefully approaching a water crossing. The water was clear and he could see that the bottom was hard gravel. Photo at right shows a water crossing that looked suspicious – the water was murky. A

2006 reconnoiter on foot and probing with a stick determined that the bottom was soft, and the depth was almost 3 feet.
2007 We detoured around that creek.
2008



2009
2010
2011 If the water's not too deep and the base of the trail is in good condition, you can stand on the pegs as you ride through the water. Be prepared to dab one foot if the bike slips on some rock.
2012
2013



2014
2015
2016 Check out the depth of the water before you commit. Get off the bike and walk. Walk right into the water or use a stick as a probe. Pick a line through the water that offers the best chance of success.
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2018
2019 If the water's more than about 18" deep, or if there's stones that might cause you to fall, then standing on the pegs might not be the best method. You might be forced to "dog paddle" through the water, with your butt in the saddle and both feet on the ground. Use your feet as outriggers to keep upright. Using clutch and throttle, keep the rear wheel spinning as you walk the bike forward. Don't stall the engine!
2020
2021
2022
2023
2024 If you fall in the water, quickly turn off the ignition. Get the bike upright, assess whether the bike sucked water into the cylinders. If it did, then you'll have to push the bike to the bank. Remove the spark plugs. Push the starter button (or use the kick starter) until all the water is purged from the cylinders. Reinstall the plugs and start the bike.
2025
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2027



2028
2029

2030 If the bike didn't suck in water, then you may be able to restart the engine mid-stream in the water. Then stand
2031 alongside the bike and push it forward as you slip the clutch and spin the rear wheel.

2032
2033

2034 **Riding In Gravel**

2035

2036 A lot of OR'ing takes place on gravel surfaces. The gravel might be compacted to the point where it's almost like
2037 riding on pavement, or it might be loose and unpacked which makes the bike feel unstable, almost like you're riding
2038 on marbles. You are, actually.

2039

2040 The type of gravel on the road surface has an impact on how it feels as you ride across it. If the gravel is crushed
2041 and has sharp edges, that's good. It will grip your tires and it will grip other pieces of gravel as your tire rolls across
2042 the surface. If the gravel is smooth like round river rock, then that's bad. The gravel won't grip your tire and the
2043 stones won't get along well with the other bits of gravel. You truly are riding on a road made of marbles.

2044

2045 Regardless of the size or consistency of the gravel, the riding technique you'll use is the same. You want to keep
2046 your weight to the rear. This allows the front wheel to hunt-and-peck back and forth as it travels over the surface. A
2047 light front end keeps the front wheel from plowing or digging into the gravel. A heavy front end causes the bike to
2048 dig in and wallow uncontrollably.

2049

2050 If you're riding across a patch of deep gravel, you'll want to keep on the throttle, accelerating gently. Don't chop the
2051 throttle or the front end will dive and the bike will become unstable and you'll have a hard time controlling things.

2052

2053 If you're riding thru long stretches of gravel there's a limit to how much you can continue to "gently accelerate".
2054 You'll have to set a comfortable maximum speed. Mine's about 50 mph; above that speed I start to get nervous,
2055 and nervousness makes for fatigue. Once you reach a certain velocity the bike will tend settle down and things will
2056 stabilize, assuming you're keeping your weight to the rear. Finding that maximum velocity is the trick, and you only
2057 find it with practice. Each road surface is different.

2058

2059 As you ride on gravel the bars will feel wobbly and unsettled, almost as though they're mounted on rubber. Most
2060 riders try to hold the bars in a firm grip, but that's NOT what they should do. Instead they should relax their grip and
2061 allow the bars to wander a bit, moving slightly within their hands. Keep your elbows loose. Don't get tense.

2062

2063 You won't be making sharp turns in gravel. Directional control won't come from physically turning the bars left or
2064 right - instead it comes from subtle movements of your knees against the tank, your toes on the footpegs, and your
2065 body positioning on the bike. Instead of "turning" the bike, you'll be "heading" in a certain direction.

2066

2067 To head to the right, push down with your right toe on the footpeg and press in on the left side of the gas tank with
2068 your left knee. To head to the left, push down with your left toe on the footpeg, press in on the right side of the tank
2069 with your right knee. Try to resist the temptation of moving the handlebars left or right. Move them laterally.

2070

2071 Think of this as an equestrian technique. The cowboy doesn't "turn" the horse with the reins. Instead he puts more
2072 weight in one stirrup, presses against the horse's neck with his knee, and the horse heads in the desired direction.
2073

2074 One accessory that really helps when riding in gravel is a steering damper (stabilizer). I've got one on each of my
2075 bikes and it makes a huge difference. The stabilizer acts like another set of arms on the bars, reducing my fatigue,
2076 and taking that unsettling feeling out of the front end. Get one if your budget permits.
2077

2078 The techniques you'll use for riding in gravel also translate to riding on other surfaces. Read on to learn why.
2079
2080

2081 **Riding in Sand**

2082 Few things bring on an anxiety attack like a long stretch of deep sand. It's the bane of many riders and they don't
2083 mind confessing publicly that they've never mastered that challenge. I'm one of them. I've ridden in sand but it's
2084 not something I look forward to doing, especially aboard a heavily loaded motorcycle.
2085
2086

2087 This next photo was taken in New Mexico, just north of Interstate 10. Steve dropped his 1150GS at a fairly low
2088 speed. No harm done. We had another 2800 miles to go on the CDR. Steve's fall wouldn't be the last one of the
2089 journey. We both had opportunities to practice our bike-lifting techniques.
2090



- 2091
2092
- 2093 1. When riding in sand the first thing to do is to drop tire pressure. Go as low as you can, depending on the
2094 conditions ahead. If you've only got 100 yards of sand, followed by miles of sharp rocks, then you can't
2095 drop the tire pressure very much, because as soon as you get to the rocks you run the risk of rim damage
2096 or puncture. However if your course follows a sandy streambed for the next 5 miles, I'd drop tire pressures
2097 to the bare minimum and re-inflate the tires when I finally reach the rocky bits.
2098
 - 2099 2. If you're stuck in the sand, remove as much baggage and other gear as possible. The lighter you can make
2100 the bike, the easier it'll be to escape the sand. You should also consider removing panniers. Carry the
2101 gear a short distance to firmer ground along your intended course. Once you clear the sand you can reload
2102 your gear. In this next photo Steve and I reload the bikes after portaging our gear across a bad stretch of
2103 mud and sand.
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3. If you're stuck in the sand, dig away any berms that have build up in front of the tires. Create a smooth ramp leading up and out of your rut.
4. To get moving again in sand you'll need to become a Master of clutch and throttle. Too much throttle and the rear wheel will dig a hole. Too little throttle and the engine will stall.
5. If you're throwing up a huge rooster tail, that's a sign that you're using too much power or you're using it ineffectively. Use your clutch to moderate the power going to the rear wheel. You'll be slipping it heavily. There will be some roost from the rear wheel, but not something worthy of the cover of a magazine.
6. If you're riding a BMW with a dry clutch you'll experience a pungent smell of burning clutch. Don't worry, the clutch can take it for quite a while. If you're on a bike with a wet clutch system you can slip the clutch all day long without any worries.
7. If you're REALLY stuck in the sand, stand alongside the bike and use maximum pushing effort with your legs, both hands on the bars, engine running, clutch slipping. Power out of your hole. You can usually only do this for a few feet before you're physically worn out. Hopefully you've gained some ground.
8. If you're only moderately stuck in the sand, sit astride the bike. As you rev the engine and begin to engage the clutch, lean forward and push off with both legs. You're encouraging the bike to begin moving.
9. Once you begin forward motion you can dogpaddle a step or two, but as quickly as possible stand on the pegs and shift your weight back. Get your butt as far back over the rear wheel as you can. Stretch your arms straight, almost as though you're pushing the bars away from you. Don't lock your elbows.
10. Hold the bars lightly – don't over-steer, over-correct, or try to manhandle the front end. It's going to feel light and wobbly – that's normal when riding in sand. You'll just have to get used to it.
11. Keep your RPM up – don't let the engine bog down. Gradually accelerate and you'll begin to "plane" over the top of the sand. Like a speedboat that comes up on top of the water surface, your bike will start to glide and the bike takes on a new persona.

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12. Keep moving – he who hesitates is lost. Once you slow down or come to a stop, you'll dig in. Then you'll have to start all over again.
13. To make a turn, use the same techniques as you would when riding in the dirt. Keep your RPM up because if you bog down you'll sink again. If you're making a sharp turn you could try planting a foot on the inside of the turn and use lots of throttle to spin the bike sideways. That's an advanced technique, probably above the pay level of most of those reading this Article.
14. Many riders think that they have to be continually accelerating whenever they're riding in sand. They imagine a scenario where they started out at 5 MPH and the sand trap was a long one, so now they're doing 80, with no end in sight. The idea of constant acceleration in sand is a bit of a misnomer. Yes, you accelerate, but you only build up enough speed so the bike stabilizes itself, while you limit your speed to a safe and reasonable limit. My personal limit when riding in sand is about 35 MPH. Some riders might be able to do 50, but that's above my limits.
15. If the sand/mud trap is extremely deep or extremely long, you may find that standing on the pegs (your butt pushed back over the rear wheel) is simply not working for you. There's an exception to every riding technique. It may be necessary to drop your butt in the saddle and use your legs as stabilizers, keeping the bike upright. Even the most accomplished rider has to do that from time to time, if things get really tough.
16. In this next photo Steve's riding across a wash filled with mud and sand. I made it across to take the photo, but for Steve it was a different matter. There was no choice but for him use his legs as a pair of outriggers so he could keep the bike upright. On a lighter bike the crossing would've been much easier.



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Riding in Snow

I've never intentionally ridden in the snow but I have been caught in the snow and had to ride down out of the hills. Of course a few inches of snow will make traction very difficult to find. If the snow's not too deep and the temperature's not too cold, the tires will push thru the snow and hook up with the underlying soil. If that's the case then traction isn't too bad. Ride slowly, head to lower elevations. You can ride on the pegs, but slowly, gingerly.

2174 Be prepared for quick foot dabs to regain your balance. Keep your weight to the rear. Use brakes with extreme
2175 caution, relying mostly on the rear for stopping power. Use the throttle very carefully.
2176

2177 These next photos were taken on the Magruder Corridor between Idaho and Montana. Late September. Not a soul
2178 around for 50 miles in any direction. I was on my own.
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2182 If the snow is deep, or the ground is frozen, then traction is minimal and you've got a challenge ahead. You'll
2183 probably drop the bike somewhere along the course. It only takes a millisecond – one moment you're upright and
2184 the next moment the bike is down. In these conditions I recommend you don't stand on the pegs – there just isn't
2185 time to make a correction if your legs are 12" off the ground on the pegs. Instead keep your butt on the saddle and
2186 use your legs like outriggers.
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2189 Riding in Mud

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2191 As with snow, mud presents similar challenges. Mud, has one added weapon – it doesn't warn you about how deep
2192 it is, or what lies beneath. From the top view, a mud puddle or a muddy stretch of trail may look harmless but it can
2193 be hiding secrets beneath the surface. Who knows how deep it is, or what ruts are lurking below? I treat mud with
2194 the utmost respect. Usually I keep low (off the pegs) and use my legs as outriggers. After a short distance, if the
2195 mud seems manageable I'll stand on the pegs, keeping weight to the rear. I reduce speed, and I'm always ready to
2196 dab a foot to keep my balance. Use care with the front brake.
2197

2198 Mud is the one thing that can bring a planned ride to a screeching halt. On a Continental Divide Ride I detoured
2199 around a few sections because the roads ahead were impassable. Even if I could've kept the bike upright, the mud
2200 was of a consistency that would've packed the wheel wells solid until it jammed the wheel against the fenders.
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Ahead lay 100 miles of dirt roads, and there was a fast moving storm coming my way. What would you do? I did the prudent thing and went back the way I came. As I rode out of the area a local rancher flagged me down. We visited for a few minutes and he told me that the roads ahead got so bad when they were wet, that it was impassable to 4x4's and ATV's. He said he couldn't imagine riding out there on a motorcycle.



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If the sun's going to come out in a couple hours, then perhaps you can wait for things to dry out. If the forecast is for several days of bad weather, then you probably want to switch to Plan B. You do have a Plan B, don't you?

I consider this next photo to be solid evidence of what it means to have "a really bad day" riding in the mud. Photo courtesy of Glen Heggstad, the Striking Viking.



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Riding A Forest Road

When you're riding a forest road you'll want to be riding in one of the two "wheel tracks" that make up the roadway. The shoulders are probably grassy, as is the center strip between the two wheel tracks. The wheel tracks are usually packed gravel and usually offer the best traction. Be willing to switch from one track to the other, if the other

2225 track looks more favorable. Use care as you cross the center strip, especially if there's high grass that would hide a
2226 rock or stick or other obstacle. Gently accelerate as you cross the center strip and keep your weight to the rear.
2227



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2230 Forest road etiquette usually demands that you keep to the right side of the roadway, even if it's a single lane road.
2231 Legally you're probably entitled to the entire width of the roadway, just as if you were riding in a 4-wheeled vehicle.
2232 However if you meet another vehicle coming your direction, you'll need to share the road in some fashion. This
2233 means that both vehicles slow down and one of them makes way for the other. Often one vehicle will wait at a wide
2234 spot in the road, while the other vehicle eases past. Since you're on 2 wheels you can usually sneak by on the
2235 shoulder.
2236

2237 Regardless of the rules of the road or forest etiquette, if you meet another vehicle on a blind corner you'll lose the
2238 battle. Use caution when approaching blind corners, and always be ready to move to the shoulder.
2239

2240 I once met a logging truck on a blind corner. He was swinging wide to make the curve, and his bumper was in my
2241 track. Fortunately I was anticipating just such an event, so I was quickly able to swerve wide and let him pass. In
2242 the photos above I should be to the far right, in case another vehicle comes my way.
2243

2244 Vehicles coming downhill have the right of way simply because they have difficulty stopping on a grade, so be
2245 prepared to move over and yield as needed.
2246

2247 On a really narrow road it may be dangerous to move all the way to the right to yield right of way. This would be
2248 true if there was a sharp drop off or other hazard. Where should you go? Off the cliff? No, your only solution is to
2249 quickly move to the left side of the road, hugging the shoulder in the opposing lane. This moves you away from the
2250 shoulder and the dangerous drop-off, allows you to put your foot down and stabilize the bike, but it still allows the
2251 oncoming vehicle some room to pass you on your right. I've used this technique a number of times.
2252

2253 Riders in the UK and Australia and other parts of the world will need reverse the scenarios above. Like I need to tell
2254 them. Duh.
2255

2256 2257 **Riding a Single-Track Trail** 2258

2259 Even a fully loaded big bore motorcycle can travel a single-track trail that's in good condition. Don't let the fact that
2260 it's a "trail" keep you from enjoying the ride. It all depends on your skill level and your willingness to encounter
2261 some unexpected adventures.
2262

2263 Most riders avoid trails because they don't know what lies around the next turn. Will the trail suddenly transform
2264 from wide and smooth, to a narrow steep nightmare? Maybe. It's always good to do some research and find out
2265 what's ahead on the trail before you venture too far.
2266

2267 Know your limitations. If you see the trail is getting worse or if you feel uncomfortable, it's time to stop. Don't wait
2268 until you're in a really tight spot before you decide to turn back. It's a real hassle to try to get turned around on a
2269 single-track trail, especially if the trail is heavily wooded or on a steep slope. When that happens you'll probably
2270 need to use the Motorcycle Recovery System.
2271

2272 As you ride single-track, be aware of the width of your engine case, crash bars, and saddlebags. Watch for rocks
2273 sticking out of the hillside that would snag something, tear a hole, or throw you off course. Also watch for low
2274 hanging branches that can snag your helmet. I once had a branch snag my helmet visor and nearly lift me off the
2275 bike. I was standing on the pegs and misjudged just how "tall" I really was in that riding position. I guess being tall
2276 isn't all it's cracked up to be...
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2279 **Riding In Ruts**

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2281 It would be nice if the road or trail was always smooth and level, with no ruts. It would also be nice if there was
2282 world peace and we could all get along with each other. Don't hold your breath.
2283

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2285 Ruts are caused by erosion or by a 4 wheel vehicle that drove on the roadway when things were muddy. Whatever
2286 the cause, ruts should be handled the same way – avoid them whenever possible. That doesn't mean you can't
2287 ride down a road that has deep ruts, you just need to know how to handle them.

2288

2289 When you encounter ruts you should ride on the high portion of the road, either in the center between the ruts, or on
2290 the shoulders outside of the ruts. It's usually good idea to avoid riding in the bottom of the rut. Ruts can be filled
2291 with rocks, mud, rocks and other dangers. Ruts seldom run in a nice straight line – instead they wander back and
2292 forth. If you're in the bottom of the rut and it takes a sharp turn, your front wheel will automatically follow the rut.
2293 The rest of the bike (and you) won't.

2294

2295 It's difficult to appreciate the depth of the ruts and the difficulty of the terrain shown in these next photos. These ruts
2296 were caused by 4x4s when the road was muddy. They created a series of ruts, soft spots, mud holes, and bumps
2297 that could easily catch a rider off guard. The only safe path was to ride far to one side, next to the trees.

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As my buddy rode thru one of those puddles, a large stick popped up from below the water's surface and snagged his skid plate. It caused him to lose balance and he went down in the deepest part of the largest puddle. Once I saw he was OK and unhurt, I started laughing. I laughed so long and hard that I forgot to take photos of his mishap. One of the joys of sharing the OR experience is being able to find humor in the midst of any situation, especially when your riding buddy's the one in trouble.



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Here's another section of road, showing a series of ruts. The road's not quite as narrow, but its every bit as tricky. The soft soil and poor lighting contrast made it hard to see where the ruts started or stopped. The best path was at the far right on top of a small berm, then make a transition to the far left toward the top of the photo.



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2314 Several years ago I was riding a trail bike at a brisk pace thru a Montana cow pasture. The sagebrush was pretty
2315 high but the cows had trampled down a nice single-track trail thru it all. The dirt trail was about 3" lower than the
2316 rest of the prairie. The trail went on for several miles and I had no problem following it as it gently wound over hill
2317 and dale. Suddenly the trail took a sharp left, catching me off guard. Before I could slow down enough to climb out
2318 of the rut, the front wheel deflected along with the rut, while the rest of us (the bike and I) kept going straight. I
2319 woke up a couple minutes later to the sounds of bluebirds singing. Lesson learned – ruts quickly take that front
2320 wheel wherever they want to go, and they'll do it without mercy or warning. If you ride in the bottom of a rut, or in a
2321 scalloped trail, be ready for anything.
2322

2323 If you can't ride on the high portion of the road and you find yourself down in the rut, slow down and look for an
2324 opportunity to climb back out. If you can't climb out you may have to come to a complete stop and shovel out a
2325 small ramp so you can regain the high shoulder or center strip.
2326

2327 When riding the Continental Divide Route, there were many sections with bad ruts. Some I could avoid, some I
2328 couldn't. I'd ride down into the bottom of a rut for a few feet, then as soon as I could I'd climb back up the other side
2329 and regain "high ground". It became a bit of a game and provided some fun along the journey.
2330

2331 You CAN ride up and out of a rut; you just need to know how to do it. Motorcycle tires DON'T like climbing up a
2332 sharp shoulder when they meet that shoulder at a slight angle. In street riding class you learned to you avoid
2333 crossing a railroad track at a slight angle – instead you were taught to cross at a perpendicular angle or as close to
2334 that 90-degree angle as possible. With ruts you seldom get a chance to cross at a right angle, instead you're
2335 crossing them at very small angles. You have to pick a spot on the edge of the rut that the wheel is able to roll up
2336 and out of the rut. If you expect the wheels to climb up a 6" rut without some kind of help, you're in for a surprise.
2337

2338 This photo shows ruts filled with water and mud. The high edges were soft sand. The safest way to cross the creek
2339 was to put the tires in the ruts at the beginning, because they were eventually going to end up in there anyway. You
2340 can see my tire tracks in the right rut.
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Rules of thumb for ruts:

1. Treat them with respect. If you don't, they'll bite you.
2. Slow down when riding in the bottom of a rut or along the edge of a rut.
3. Cross them at a right angle (perpendicular) whenever possible.
4. Climbing out of a rut requires the proper spot (a small ramp of earth, natural or manmade).
5. If your front wheel's in a rut and the rut takes a sudden turn, your front wheel will probably follow the rut.
6. If your rear wheel's in a rut and you try to climb out of it, the wheel will slew sideways for a few feet, before the wheel climbs out of the rut. In extreme cases the bike will fall down.

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Jumps and Whoops

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There are few things that evoke the idea of two-wheeled adventure than an action photo of a big bore dual sport motorcycle, momentarily suspended three feet off the ground. Jumps look cool. Leave them to the experts.

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When your bike is loaded with gear, the last thing you want to do is to grab some air. It's not the air that hurts - it's the landing. Coming off a 3 foot jump puts a lot of strain on the suspension and the rider. It's not impossible for you (or me) to do, but it should probably be avoided. Leave the showboating for another time.

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There are times when the terrain demands a certain amount of speed and momentum to achieve your goal, and that speed may mean that your bike becomes airborne for a second or two. In that case here's a few tips on how to handle it.

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1. As the bike approaches the "launch point" pull back on the bars and twist the throttle. You're trying to lift the front end. With a heavy big bore motorcycle the chances of going over backwards are pretty minimal (unlike a lightweight trail bike or motocross bike which can go over pretty easily).
2. At the same time you pull back on the bars and roll on the throttle, shift your weight backwards, putting your butt over the rear wheel. Straighten your arms (don't lock your elbows).
3. When timed properly the front of the bike will be slightly higher than the rear as you leave the ramp, which means your rear wheel will touch the ground before the front wheel. You DON'T want to land on your front wheel because it will probably dig in, twist to the side, and plant you firmly in the ground. Been there, done that, not much fun.
4. As you land, allow your legs to absorb the shock. Keep the throttle rolled on, don't chop it as soon as you touch down. If you do then your weight will transfer forward and you'll have control issues.

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Another situation where "jumping" is useful is if you're coming down a hill and there's a drop off. You've got to loft the front end as you leave the ledge; otherwise you'll be going off the edge nose-down. Roll on the throttle as you approach the edge of the ledge. Even if you can't loft the front end you can at least lighten it somewhat, and that makes all the difference when you make your landing.

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"Whoops" are large undulations of the road or trail surface. They got their name because of the verbal expressions made by riders who got sideways or upside down as they tried to ride across them. "Whoops" is perhaps a better conversational expression than "OH SH *T".

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Depending on the height of the crests and the distance between crests, the rider may need to use different techniques. A firm roll-on of the throttle might best handle small whoops. The bike will dance across the tops of the bumps and the suspension really gets a workout. This method is for advanced riders only.

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The best way to handle larger whoops is to reduce your speed and allow the bike to ride down into the valleys and up over the crests, wheels never leaving the ground. Up-down-up-down; ride up to the crest then down in the trough. Develop a gentle rhythm as you ride over these surfaces. Think of it as riding a horse in a carousel.

2399 As you go down in the valleys, move your weight to the rear as though you're braking or going downhill. As you
2400 climb the crests, move your weight to the front and put your helmet over the handlebars. You'll get a workout doing
2401 this but it's the best way to maintain control.

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2404 **Crossing Logs and Other Obstacles**

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2406 Just because there's a log across the road, doesn't mean you have to turn back. Perhaps you can cut the log with
2407 your saw or move the log out of the way with your Motorcycle Recovery Kit.

2408

2409 If the log is small enough you may be able to ride over it. The practical limit is about a 12" log, although I've gone
2410 over 24" logs on my KTM. To minimize the height of the log, you can build a small ramp leading up to the log by
2411 using sticks, rocks, and some dirt from the trail. In 5 minutes you transform that 18" log down to a 4" parking lot
2412 curb.

2413

2414 Approach the log slowly in 1st gear at about 3-4 MPH. Keep your weight to the rear. As your front wheel touches
2415 the log allow just a fraction of a second for the front suspension to compress against the log. At the same moment
2416 that happens QUICKLY pull back on the bars (which will also bring your body forward into an Attack position). At
2417 that same moment also pop the clutch and apply throttle.

2418

2419 These simultaneous actions will cause the front end to jump upward high enough so the front wheel will clear the
2420 log. Your forward momentum will carry your bike onto and hopefully across the log. Your skid plate may (or may
2421 not) slide across the log, and your rear wheel will claw up and over the log. If you don't use enough throttle you'll
2422 find your bike sitting astride the log, front wheel on one side, rear wheel on the other. You'll have to push the bike
2423 forward with your legs to get the rear wheel over the other side.

2424

2425 Tree bark can be slippery, so if you're crossing the log at anything other than a right angle, be prepared for the bike
2426 to slew sideways as soon as the wheels touch the bark.

2427

2428 Jumping logs requires a lot of practice in order to get the timing just right. I learned how to do it on a small dirt bike.
2429 I can do it over a small log on my BMW R12GS, but it's not very easy. Because log obstacles might not come
2430 around more than once a year, most riders don't practice for them. Too bad.

2431

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2433 **Riding With Other Motorcycles**

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2435 Riding solo has certain benefits, but riding with others makes the adventure even more enjoyable. There's nothing
2436 like being able to share your experiences with close friends or family.

2437

2438 When you ride with others you need to allow plenty of space between each motorcycle. The tendency is to bunch
2439 up or to follow one another too closely. I know of many cases where friends crashed into friends because they were
2440 riding too close together. I've nearly done it myself.

2441

2442 When riding OR, you're going to be kicking up dust. Stagger your bikes far enough apart that the dust settles
2443 before the next bike arrives. This is the preferred group riding method and it's the safest technique to follow.

2444

2445 If you're willing to take chances you can ride closer together so that the dust from the first motorcycle doesn't get a
2446 chance to kick up in the air before the next bike arrives. There's danger in this practice. Be forewarned.

2447

2448 If you're riding closely together, the tendency is for the next bike in line to watch the rider ahead. You tend to follow
2449 them as they pick their path down the road or trail, and you tend to mimic their technique and adopt their braking or
2450 acceleration points. That can have mentoring benefits, but it can also be a handicap. When you watch the rider
2451 ahead, you stop making your own decisions. You get lazy or complacent, and when a situation comes up you're
2452 often unprepared to handle it because you can't see far enough ahead to analyze the upcoming obstacle.

2453

2454 If you're piloting the bike that's running at the head of the pack, you may feel like the rider following behind is
2455 "pushing" you. You ride faster, taking chances that you wouldn't otherwise take. You get sloppy. You make
2456 mistakes. And you fall. Been there, done that.

2457
2458 If you're going to ride with others, make the ride your own, keeping a safe distance. A 5-second interval between
2459 riders is good idea, because it gives enough space for both riders to do their own thing, and neither rider feels
2460 pressured into to do something foolish.

2461 2462 **Towing A Disabled Bike**

2463 They day may come that you or one of your buddies needs to be towed out of the hills. It's not really that hard to do
2464 if you go about it properly. You'll need a tow strap at least 15 feet long. Longer is better. It should be at least 1"
2465 wide, or should be a rope that has a high tensile strength. The Motorcycle Recovery System (MRS) contains a rope
2466 that's perfect for this purpose. <http://www.bestrestproducts.com/c-168-recovery-gear-mrs.aspx>

2467
2468 There's several methods for attach a towrope between the TowER and the TowEE. Whichever method you choose
2470 make sure that the Tow-EE has the ability to disengage at any time. Only the TowEE will know when things go bad,
2471 so he needs to control the towing operation.

- 2472
2473
- 2474 1. An OK method. Tie the strap to the rear of the towing unit. Run the strap back to the center of the
2475 handlebar on the TowEE. Wrap it around the handlebar twice, and let the TowEE hold the end of the rope
2476 in his clutch hand, hands on the bars. Begin towing. If things go bad the TowEE can let go of the rope and
2477 it will unwind itself from the handlebar. A disadvantage of this system is that the rope tends to pull the
2478 handlebars right and left, making it difficult for the TowEE to maintain control.
 - 2479 2. A better method. Wrap the rope twice around the TowER's right footpeg. Have the TowER step on the
2480 rope, which keeps it secure. Stretch the rope back to the towed motorcycle and wrap the rope twice around
2481 the TowEE's left footpeg. Have the TowEE step on the rope, which keeps it secure. Begin towing. The
2482 advantage of this system is that the strap doesn't pull on the handlebars, making it much easier to maintain
2483 control. Disengagement from the strap can be accomplished by either rider; all they have to do is lift their
2484 foot for a moment.
 - 2485 3. A third method. The disabled TowEE bike is in front, with the powered TowER bike in the rear. The
2486 TowER places his foot on the back of the TowEE's pannier or exhaust, and pushes the TowEE forward.
2487 The bikes are rolling nearly side-by-side. The advantage of this system is that no tow rope is needed; the
2488 disadvantage is that this is fatiguing to the TowER and can only be done on fairly straight and level roads.

2489
2490 Towing can be dangerous. The strap can get caught in the wheel, causing both bikes to crash. Keep your speeds
2491 low, use caution. If you're the TowEE and your buddy dragged you back home you'll owe him dinner and a few
2492 beers for his efforts.

2493 2494 **Jump Starting**

2495
2496 Most big bore bikes use electric starters and don't even have a kick-starter for emergencies. You need to know
2497 how to get your bike started by other means when it won't do it by itself.

- 2498
2499
- 2500 1. You'll need jumper cables of some sort. These can be full sized cables like you use in your car, or they can
2501 be miniature cables designed for motorcycle applications (as long as they have alligator clips on both ends).
2502 You can even make jumper cables from sections of wire that you carry for emergencies, or wire that you
2503 find along the trail. The larger the gauge of the wire, the better. Keep the wire length as short as possible.
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2. Motorcycle electrical systems are fairly fragile, meaning that they won't tolerate large spikes in voltage or current. If you jump-start your bike you risk causing damage to your electrical system. Read your owner's manual, talk to your mechanic, and weigh the risks.
 3. Unlike the techniques used for jump-starting a car (leaving the engine running on the donor vehicle), I prefer to have the donor vehicle engine OFF when jump starting a motorcycle. This reduces the chances of a voltage or amperage spike. Motorcycles start fairly easily so having the donor engine running isn't necessary.
 4. Attach the cables so positive terminals are connected between both vehicles (your bike and the donor vehicle). Attach a negative lead to one vehicle's battery.
 5. Make the final connection to a negative grounding source away from the battery (frame). That last connection will result in a spark so you don't want that connection anywhere near the battery (hydrogen gas) or the gas tank.
 6. Once connected wait a few moments, then hit your starter button. You'll know right away if the battery is hopelessly drained, or if it just needs a quick boost to turn over the motor. Don't run the starter for more than a few seconds or your jumper cables will overheat.
 7. If your bike has an accessory port that you use to draw power for an accessory, that port is NOT a suitable place to connect your jump-starter wires. The wire gauge of that port probably won't handle the current, and it's likely the port is connected into your bike's electrical system in some fashion. You want to avoid the bike's wiring system and get the electrons directly to the battery itself.

2534 **Bump Starting**

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2536 You'll need some muscle or a downhill slope to help you pick up speed. You can also have your buddy tow you up
2537 to speed using his bike. See the section on towing.

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1. Ignition turned on and kill switch disengaged. Duh. I tell you this because more than once I tried to bump-start a bike, only to find that I didn't have the ignition turned on.
 2. If you're on flat ground you'll need to push the bike and build up some speed. Clutch pulled in, tranny in 2nd gear. Sometimes it works best in 3rd gear depending on your ratios. Push as fast as you can, run along side the bike.
 3. When you've reached terminal velocity (you're going as fast as you can), quickly jump onto the saddle and put both feet on the pegs. Some riders jump on the bike sidesaddle. This position works, but it's a recipe for a tumble because it's easy to lose your balance, so I avoid it.
 4. Keep your weight to the rear as though you're braking, then smoothly release the clutch. The rear wheel will begin to turn the engine over, hopefully getting it started. Don't pop the clutch or the rear wheel will lock. If it locks, pull in the clutch slightly.
 5. Some riders find that jump-starting works more effectively if they suddenly drop their weight onto the saddle as they release the clutch. That body motion forces the rear wheel down into the ground, prevents the wheel from skidding, and forces the engine to turn over. Maybe this is where the term bump-starting originated?
 6. Repeat the above as needed. Pushing the bike up to speed takes quite a bit of energy, so rest in between pushing episodes.
 7. If you're on a hill you can dispense with running alongside and/or pushing the bike up to speed. Select 2nd or 3rd gear.

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8. Start downhill and let the momentum of the bike build up until you're going about 10 mph, then slowly release the clutch. As the engine comes up to speed it should start running again.
9. The reason 1st gear is never selected when bump starting is that the ratio is too low. If you release the clutch the engine won't turn over; all that will happen is that the rear wheel skids.

Exceptions to These Techniques

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Most of the techniques I've described work most of the time. There's always an exception to any technique. For instance the technique I described for off camber riding has an exception when you encounter an obstacle. You may need to push the bike away from the hill, putting your body on the uphill side, and allowing the bike to move around the obstacle. Do what's necessary to keep the bike rolling, even if it breaks the rules. Just don't get in the habit of using poor techniques all the time.

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Some riders may take exception to my techniques. Great! Write your ideas and we'll discuss them. I may even add your ideas to the Article. Let's not argue – let's have a reasoned discussion.

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If you're wondering whether a certain technique would be appropriate for your particular riding situation, consider purchasing the BestRest Common Sense Kit. You'd be surprised what problems you can solve when you own one of these. <http://www.bestrestproducts.com/p-342-common-sense-kit.aspx>

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Due to popular demand we now offer online Common Sense Certificates. Download one here: <http://www.bestrestproducts.com/images/document/Certificate%20of%20Common%20Sense.pdf>

Field Exercises – Practice Them

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Books and videos and personal instruction are great – they raise your cognitive understanding of Off Road Riding. But the rubber meets the road (or the knobbie meets the dirt) when you take the time to practice on your own what you've learned from others.

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I've listed some simple field exercises that you can practice anywhere, without the need to set up cones or layout a formal course.

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Practice these drills with the bike UNLOADED. Only after you're comfortable with the way the bike handles and feels should you perform the drills with the bike fully loaded. A loaded bike handles much more slowly.

Five Riding Positions

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Purpose: This drill shows you how to move around on the bike, adjusting your body position to match the riding terrain. It emphasizes forward-backward movements.

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Put the bike on centerstand if it has one. Climb aboard.

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Move thru the 5 riding positions: Sitting, Scout, Attack, Braking, and Acceleration. Move from standing to sitting position and back again. As you do this, verbally describe to yourself what each position is intended to handle, and why it works. Say it out loud. People will think you're crazy - maybe you are. Consider this drill as your warm up exercise.

2617 If your tankbag or duffel or other gear gets in the way of your movements you'll need to make adjustments. That
2618 means reorganizing your gear, or perhaps you need to get different gear. Don't compromise if your gear keeps you
2619 from being able to handle the bike.
2620
2621

2622 **Braking – Rear Brake Only**

2623 Purpose: This drill shows you how to brake using only the rear wheel, and how to skid the rear wheel on loose
2624 surfaces.
2625

2626 Turn off ABS if your bike is equipped.
2627
2628

- 2629 1. Select a flat open area, free from obstructions. Smooth gravel is OK. An open field is OK but remember
2630 that grass is slippery. I like to practice this exercise on a quiet stretch of forest road.
2631
- 2632 2. Sitting on seat, accelerate slowly to about 5 mph, then apply the rear brake until the wheel locks up. The
2633 bike will slide to a stop. As the bike slides make steering corrections. Turn into the direction of the skid.
2634
- 2635 3. As you brake, move your butt back over the rear wheel, straighten your arms (elbows not locked).
2636
- 2637 4. Keep your feet on the pegs until you're nearly stopped, then put your left foot down to keep your balance as
2638 you come to a complete stop.
2639
- 2640 5. As you begin to feel comfortable with that skidding feeling, increase speed in small intervals, until you reach
2641 about 20 MPH.
2642
- 2643 6. If the bike doesn't skid straight and begins to slew sideways, and you release the rear brake, the bike will
2644 want to suddenly change direction and go the way it was headed at the moment you released the brake.
2645 (that means it'll shoot off in that direction) If you're not ready for that change you could lose control, so be
2646 careful. The good news about this sudden change is that this is the first step towards a more advanced
2647 technique, which involves skid-steering. See below.
2648
- 2649 7. If your beginning speed means you were in 2nd or 3rd gear before you began skidding, remember to shift
2650 down so you're in first gear by the time you come to a stop.
2651
- 2652 8. This technique isn't meant to imply that you should always lock up the rear when you apply the rear brake.
2653 Maximum braking is achieved while the wheel is still turning. Once the wheel is locked you sacrifice some
2654 measure of control, but at least you've thrown out the anchor and the bike will slow down.
2655
2656

2657 **Skid Steering**

2658 Purpose: This drill shows you how to use the skidding rear wheel as a tool for changing the direction of the bike.
2659
2660

2661 Turn off ABS if bike is equipped.
2662

- 2663 1. Refer to Para 6 in the section just above on Braking – Rear Brake Only
2664
- 2665 2. Begin your rear brake skid, and allow the bike to slew sideways (left or right) with the rear wheel locked.
2666
- 2667 3. Just before your rear brake is released, apply throttle and accelerate hard.
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- 2669 4. Be ready to dab the foot that's on the inside of the turn, if the bike begins to fall.
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5. At the moment the rear brake is released the bike will head in the general direction that the rear wheel was pointed. If the rear was skewed sideways at a 30 degree angle from your original line of travel, the bike will head off at about 1/2 that angle. This assumes you get your throttle timing just right – if you don't you might slide sideways and kiss the ground, or you might high-side.
 6. Skid steering is easier to do making left hand turns because your right foot is busy with the brake pedal.
 7. Skid steering looks really cool when you do it properly, but really stupid when you muff the technique because you fall down. Hopefully someone's got a camera rolling.
 8. This technique is best left for advanced riders, and for smaller bikes that are lightly loaded.
 9. At higher speeds if you let off the rear brake suddenly, the rear wheel may grab traction and you won't be ready for it. If that happens you'll do a spectacular and picturesque "high side". Use caution when practicing this technique.

Braking – Front and Rear

2688
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2690 Purpose: This drill teaches you how to apply both brakes on loose surfaces.

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2692 Turn off ABS if bike is equipped.

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1. After you're comfortable with the feeling of the rear brake locking up, start using your front brake at the same time.
 2. Two fingers (only) on the brake lever, so you don't over-do it and lock up the front wheel. If you do lock it up, your chances of dropping the bike are very high.
 3. Gradually build up speeds. You'll find that proper application of both brakes results in a dramatically shorter braking distance. Just like on the street.
 4. Remember to move your butt rearward as you brake.
 5. The front of the bike will dive as you brake (suspension compresses). Butt moved back to compensate.
 6. If the front wheel hits an obstacle when the front brake is applied, the braking force will suddenly spike, which may cause the front wheel to lock up. If you see your front wheel is about to hit a rock or a rut, ease up slightly just before the obstacle, then reapply front brake.
 7. Just before you come to a complete stop, put your left foot down. You can alternate, and put the right foot down, but it's a bit harder to do.

Clutch and Front brake

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2716
2717 Purpose: This drill teaches you where your clutch "slip point" is, and also teaches you how much front brake you can apply before the front wheel locks up. It also teaches you that you can keep the bike upright even when the front wheel is locked, as long as you keep the bike upright.

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1. Sitting astride the bike, front brake applied.
 2. Apply throttle and slip clutch so the bike begins to move forward.

- 2725 3. Increase front brake until wheel locks.
2726
2727 4. Increase throttle and release clutch enough so that forward motion continues.
2728
2729 5. The front wheel will “plow” a furrow in the gravel.
2730
2731 6. Use body language and turn the handlebars to maintain a straight line.
2732

2733 I don't think you need to practice this technique every day, but you should do it occasionally so you get the feeling
2734 of the front wheel being locked up, and so you have confidence that you can still control the bike even when the
2735 wheel stops turning.
2736

2737 **Starting Out On A Hill**

2738
2739 Purpose: This drill teaches you how to start out when you're going up a slope. Traction control is emphasized.

2740 Select a slope that's manageable, ride partway up and stop.
2741

- 2742
2743 1. 1st gear, front and rear brake applied, left foot on the ground.
2744
2745 2. Apply throttle and slowly release the clutch. As you release, the engine will begin to bog down – more
2746 throttle if needed to maintain rpm. You don't want to stall the engine.
2747
2748 3. As you begin to move uphill, push off with your left foot, and release the brakes.
2749
2750 4. The rear wheel should barely spin, and the bike should begin moving up the hill.
2751
2752 5. The rear wheel should not break loose, or spin madly, or throw up a rooster tail of dirt. If that happens you'll
2753 probably dig a trench and go nowhere.
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2758 **Turning Around On A Hill**

2759
2760 Purpose: This drill teaches you how to stop as you're going up a hill, and how to turn around and go back down.
2761

2762 Select a slope that's manageable. Not too steep, not too gentle, just steep enough to provide a challenge.
2763

- 2764 1. Ride partway up the hill.
2765
2766 2. Just as you come to a stop midway up the hill, turn the bars to the right.
2767
2768 3. Apply both front and rear brake to hold the bike in place.
2769
2770 4. Put left foot down so you can hold the bike steady. (you can also practice putting right foot down, but it's
2771 more difficult because your foot must leave the rear brake)
2772
2773 5. You can remain in this position indefinitely, resting as needed. You can also lay the bike down on the left
2774 side and get off if needed. When you're ready you can remount.
2775
2776 6. Turn handlebars to so the front wheel is pointing uphill.
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2778 7. Release front brake and allow the front wheel to roll around (downward) in a large arc, so that the front of
2779 the bike is pointed slightly downhill. Keep rear brake locked and pivot on your left foot.

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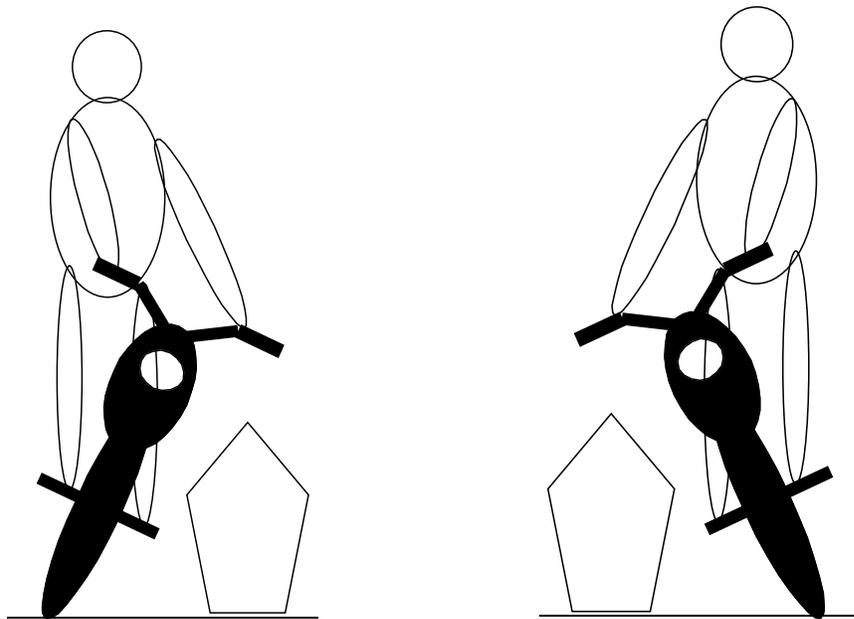
8. With engine running, push away with your left foot and point the bike downhill, as you use your clutch to apply power, and ride down the hill. Easy peasy. Well, it will be after you've practiced a bit.
9. If the hill is really steep, you may not want to roll the front wheel around in an arc. Instead, wiggle the bars back and forth. This motion will cause the front end to slide slowly downward. When the front wheel reaches a point where it's comfortable and you have control, push away with your left foot and apply power, release the rear brake, and ride down the hill.
10. Reverse these techniques. Instead of turning to the right slightly just before you come to a stop on the hill, and instead of putting your left foot down, reverse these procedures. Turn slightly to the left, and put your right foot down to steady the bike as you come to a stop. It's a harder technique because you can't keep your foot on the brake pedal, but in the real world you need to "switch hit" when conditions require.

Figure 8's and Slalom Course

Purpose: These drills teach you how to quickly transition from a left hand turn to a right hand turn, how to make increasingly tight turns, and how to avoid obstacles along your path.

Running a Figure 8 or Slalom Course is an excellent method to improve turning skills and to practice body positioning. You can get fancy and set up some cones, but I generally use things like clumps of bushes, sticks, or cow pies.

Remember that you're concentrating on PROPER TECHNIQUE, not on speed. You'll be moving the bike back-and-forth, pushing the bars down toward the cones.



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Figure 8's.

Set up the "cones" about 3 bike lengths apart. Stand on the pegs. Slowly ride around the cones and between them in a figure 8 pattern.

1. Your speed should be above an idle, somewhere around a fast walking speed. Use your throttle and clutch to control your speed. Also use the rear brake if needed. You can ride the brake to keep your speed down.

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2. As you make a turn around the cone, press down on the toe closest to the cone.
 3. On the other leg, turn your knee inward toward the gas tank and push the tank toward the cone.
 4. Take the handlebars and laterally push them sideways as though you're going to touch the cone with the end of the handlebar.
 5. Move your body to the outside of the bike, placing yourself further away from the cone.
 6. The bike will make a turn around the cone, then you'll bring the bike upright and reverse these steps so you can make an opposite turn around the 2nd cone.
 7. Repeat the cone drill until you feel comfortable.
 8. Move the cones closer and closer together, until there's barely enough room for you to make the turns.
 9. The closer together they are, the slower you'll need to go. Eventually you can do this full lock to full lock.
 10. If you stall the engine during this drill, the bike will fall inward toward the cone. No worries, you were going slowly and the distance to the ground was only a few inches. Pick the bike up, correct the error that led to the fall, and keep practicing.

Slalom Course

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The slalom course should have about 6 or 8 cones or cow pies. There should be some height to the cone so that you learn how to judge vertical clearance of an obstacle. If you're using cow pies you'll need to stack them pretty high, or you could use the old "cow-pie-on-a-stick" technique. The cones don't need to be staggered evenly; in fact they should be uneven so you're forced to make adjustments. Don't make things too easy.

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1. As you approach the cones, swing just wide enough to clear the cone with your wheels, feet, and panniers. You're learning how much room you'll need to clear the cone. If you knock one over then you're cutting the corner too close. When you're on the trail that cone will come in the shape of a big rock or a tree stump.
 2. Control your speed using throttle, clutch, and brakes.
 3. As you weave between the cones your body will be moving from side-to-side. You'll be turning your knee into the tank, moving your handlebars laterally, and using body English to control the bike as it clears each cone.
 4. Your speed should start out slow, and gradually increase as you develop proficiency.
 5. You're looking for proper technique and smooth application of clutch and throttle. Don't try to go thru the slalom as fast as you can, unless you're trying to impress someone other than yourself.

Static Balance Drills

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Purpose: This drill will teach you how a small movement by your body will have a big impact on the balance of the motorcycle. It will also show you that if you're tensed up as you ride, your body will transmit that "energy" down into the motorcycle, and that will affect your balance.

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Off Road riding is all about balance and body movement. If you move your leg a certain way, the bike responds. If you lift your arm slightly, the bike responds. Even if you hold your breath instead of breathing normally, the bike responds. These drills reinforce the importance of body balance, and give the rider confidence when it comes to

2872 balancing or holding up the bike. They're best practiced when there's no wind blowing, and when nobody's around
2873 to watch you (that's because you look kinda silly as you're doing them).

2874
2875 Drill 1. Body Balance

- 2876
2877 1. Find a smooth dirt surface. Sit astride the bike. Look straight ahead. Breath slowly and normally. Turn the
2878 handlebars full lock left and right several times, so the front wheel digs down into the dirt an inch or two and
2879 builds up a small berm. Then turn the handlebars full to the left or right, and leave them there with your
2880 hands on the grips.
2881
2882 2. Apply full rear brake and leave your foot on the right footpeg.
2883
2884 3. Balance the bike using only your left foot. Slowly, gently, gradually find the balance point of bike and rider,
2885 and try to lift your left foot and place it on the footpeg. Yes, I'm telling you to lift the only foot that you've
2886 been using for support!
2887
2888 4. At first this drill seems impossible, but if you really concentrate on your balance point, your breathing, and
2889 relaxing your body, in about 15 minutes you'll have that left foot up on the peg, even if only for a few
2890 seconds.
2891
2892 5. Once you have both feet up on the pegs, you'll notice that it only takes a tiny movement of an arm or a leg,
2893 or a heavy breath, or tension in your shoulders, and you'll have to put a foot down to catch your balance.
2894 What you're discovering from this drill is just how little movement it takes on your part to make the bike
2895 unstable. When the bike's unstable, it changes directions. You want to be able to do that according to your
2896 own terms.
2897



- 2898
2899 6. If you practice this drill long enough, you'll eventually be able to stand on the pegs. And if you really
2900 practice a lot, you'll be able to stand on the pegs and lift your arms like I'm doing in the right photo.
2901
2902 7. As stupid as this might look, it's a drill that really improved my OR riding abilities. Because I'm not a big
2903 guy, I have to rely on technique and subtle balance. This drill helped me develop those skills.
2904
2905
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2907 Drill 2. Keep the Bike Balanced Using One Finger

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2909 1. It's a good idea to have a friend help you with this drill. They should stand on the opposite side of the bike,
2910 acting as a "safety" in case the bike falls away from you.
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2. Stand beside the bike. Hold the bike with 1 hand. Gradually relax your hand, so that you're not holding the bike with a firm grip. Ease your hand back so that the only thing touching the bike is a single index finger.
3. You'll find that you can keep your 600-pound motorcycle remain upright, using only 1 finger! How cool is that?
4. Now start slowly moving around the bike, using first one index finger, then the next, keeping the bike upright. Your goal is to do a complete circumnavigation of the motorcycle, keeping it balanced using only 1 finger at a time.

Off Camber

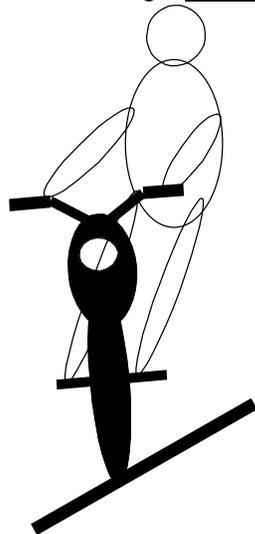
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Purpose: This drill will prepare you for crossing slopes at an angle (not just going straight up or down).

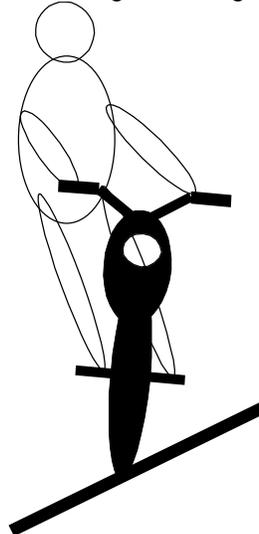
Select a road or trail that traverses a slope. That means it doesn't go up or down, but goes sideways across the slope. The surface of the road or trail should not be level.

1. Ride slowly across the road or trail, standing on the pegs in a Scout position.
2. Take the handlebars and push them laterally in toward the hill. Imagine that you're going to scrape the hill with the end of your handbar. Place your body on the outside of the bike, as though you were climbing on top of a bike that's lying flat on the ground. These exaggerated descriptions help you remember the proper positioning of both bike and rider.
3. As you ride across that off-camber surface, the bike will be "driven" into the earth by your body weight. The sides of the tires will be touching the ground, not the center of the tread.
4. If you lose control, such as losing traction, or lose your balance or stall the engine the bike will come to rest on the ground. You'll be on top of the bike, instead of under it.
5. If you do this drill in error, and put your body between the hill and the bike, and you lose traction, one of two things will happen: 1.) The bike will fall onto you, pinning you to the ground, or 2.) The bike will fall away from you, heading downhill, and you'll be helpless to correct or recover the error.

The guy on the Left is doing it **WRONG**.



The guy on the Right is doing it **RIGHT**.



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2951 **Sand and Mud**

2952

2953 Purpose: This drill will prepare you for crossing soft sections of terrain. It will test your ability to keep your weight
2954 back on the bike, allowing the front end to be lighter, preventing the front end from plowing.

2955

2956 Most riders aren't very keen on the idea of searching out a stretch of sand or mud, just so they can practice their
2957 sand/mud techniques. I'm among their ranks. But the truth of the matter is that if you never practice a technique,
2958 you'll never have a chance to develop the skills you'll need when you encounter them in the field. It's not a lot of
2959 fun, but you've got to do it anyway.

2960

2961 Find a short stretch of sand and/or mud that has good approach and exit points, both made from firmer ground.
2962 The sand/mud stretch should be long enough that you'll be able to get the feel of the bike when it's traveling over
2963 those surfaces, but not so long that you'll get out of control or lose your self-confidence.

2964

2965 Approach the sand/mud trap at about 5 mph. Before you enter the trap, stand up and move your butt over the rear
2966 wheel, straighten your arms, but don't lock your elbows. The front of the bike will be fairly light due to your weight
2967 transfer, which allows the front wheel to skim over the sand/mud surface to some extent.

2968

2969 As you enter the sand/mud accelerate slightly. This will further lighten the front end, and it will also serve to drive
2970 the bike thru the trap.

2971

2972 As you exit the trap your speed should be equal to or slightly higher than it was when you entered the trap. If you
2973 slow down in the middle of trap your front wheel will begin to "plow". There's a good chance you'll fall, especially if
2974 you suddenly chop the throttle closed.

2975

2976 As you build confidence going thru the sand/mud trap, increase your speed slowly. Run the gauntlet several times
2977 and find your own comfort zone, determining your limits and finding the speed that works best for you.

2978

2979 In the next photo you can see that Steve's crossed the obstacle and he's on solid ground. During his crossing he
2980 left a few dark patches, which show where he hit a soft spot and dabbed a foot to keep his balance. In order to
2981 consider this a "practice drill", Steve will have to turn around and repeat the creek crossing several times, practicing
2982 the techniques.



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Swing-A-Leg Drill

Purpose: This drill teaches you that you can move around the bike quite a bit, and still keep your balance. It also shows you that the bike responds to body movement.

On a clear stretch of forest road, at a reasonably low speed, stand on the pegs. Lean slightly forward.

Take your left foot and lift it off the peg. See how the bike responds, and compensate so you maintain a straight course.

Do the same drill using your right foot. Compensate your steering.

Once you feel comfortable with only 1 foot on the pegs, lift that raised foot, bend your leg at the knee, then put your knee on the seat. Compensate your steering.

After that drill feels comfortable, swing that leg entirely across the back of the saddle so that both legs are on one side of the motorcycle. Your master foot remains on the peg. The angle of bike angle (to the ground) will be as much as 30 degrees off center.

Switch legs, moving back and forth. Get used to moving your legs around the bike, learning how the bike handles, and learning how to compensate for your movements.

Once comfortable with that drill, try sitting down side-saddle, with both feet on one side of the bike. This drill is a bit dangerous because the tendency is to fall over toward the side where there's no legs.

These drills don't apply directly to any specific OR situation that you would typically encounter in the field. It's unlikely that you'll need to ride side-saddle up a long hill, but you might impress your buddies if you rode into camp that way.

They do give you an understanding of body balance, compensation techniques, and they also give you something to do when you're bored out of your mind on a long stretch of gravel or pavement. I wouldn't recommend them in sand, mud, or other conditions.

Conclusion

I hope this Article accomplished my goal – to educate and inform. If just one rider gains something from reading all 70 + pages, I'll consider my efforts successful and the time spent worthwhile.

Remember – this is not an Article for expert OR riders. It's for beginners, for guys and gals that want learn more about OR'ing, who are new to the sport, or who know a little bit but want to expand their knowledge. If you want to get your Off Road Riding Diploma, get some professional training. You won't get your degree from reading this Article.

I'll be adding to the Article as time permits. I wrote it rather quickly (it only took me a couple weekends) and there's still a lot of work to do, such as improving descriptions of the techniques, fixing grammatical errors, adding photos, etc. Check the website for updates. <http://www.bestrestproducts.com/>

You can also call to discuss this Article, although my time may be limited due to the demands of work. The best way to contact me is via email. info@bestrestproducts.com

If you write or call, remember to mention the date of the Article, as well as the line number and the topic of discussion.

3039
3040 See you on the trail. May God keep you safe along your journey.
3041
3042 David Petersen
3043 Mr. BestRest
3044



3045
3046
3047 Note: See the sidestand poking out from beneath the left pannier? It's deployed so that when I lift the bike, I won't
3048 push it over too far.
3049
3050 If you find me on some lonely road maybe you can help me get my bike back up on 2 wheels, where it belongs. Or
3051 maybe you'll just watch me to make sure I use the proper lifting techniques. 8^)
3052