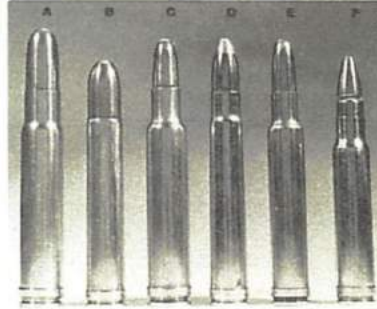


How to "HOW TO QUIT FLINCHING"

Quit Flinching



Murderers' row of classic kickers: (A) .460 Weatherby, (B) .458 Winchester, (C) .378 Weatherby, (D) .375 H&H, (E) .340 Weatherby, (F) .350 Norma.

and Learn to Love Your Rifle

Learning to live with recoil is something like training a tiger; you must be the one in control every second. And once you recoil-proof yourself, you'll find a new world of rifle power and pleasure.

By John Wootters

RECOIL IS NOT something for which every human being has some inborn, specific tolerance limits. It is something that every shooter must live with, and which can be dealt with and adjusted to by virtually anyone.

The way to accomplish this adjustment is *not* to simply pick up a hard-kicking rifle and start firing full-power ammunition, gutting it out on the assumption that one will get used to it. I can't think of a better formula for acquiring a semipermanent flinch.

Recoil is the essential limiting factor in sporting firearms today, especially rifles and pistols. The technology already exists which could double or treble ballistic potentials, at least, if the rifleman could tolerate the inevitable

able increases in recoil.

Sporting guns are, by definition, portable, and their appearance and handling qualities are at least as important as their ballistics. For this reason, we cannot accept a 15-, 20-, or 40-lb. sporter, nor one requiring any sort of fixed gun mount.

Yet these are about the only two conventional means known — sheer mass or mechanical mounting — for taming the recoil of rifle cartridges substantially more powerful than the biggest now in use.

Modern rifles are already capable of high enough velocity, flat enough trajectory, and accuracy enough to hit the smallest varmint at any range at which the human eye can reliably dis-

tinguish and define the target.

It has been a matter of ballistic orthodoxy for about a generation now that "the average shooter cannot handle more recoil than is produced by the .30-06 cartridge," which ranges from about 18 to maybe 25 ft./lbs. of recoil energy, depending upon gun weight. The implication is, too, that a lot of big-game hunters will have trouble even with the '06.

All this may well be true, provided the word "average" is taken to include *all* shooters, those whose shooting consists of a few rounds of .22 rimfire plinking each year as well as those who figure one box of .30-30s ought to last at least three or four seasons. But it is not, in my opinion, true of any seri-

Notes on the photographs

To record the movements of recoil, the author taped a flashlight bulb near the muzzle of each rifle, another to the scope tube (or to the receiver wall in the case of the scopeless lever action), and a third to the temple of his shooting glasses, this last to show the movement of a shooter's head during recoil.

To get these photos, the camera's shutter was opened (at night, obviously) and the strobe flashed to record the shooter's position just before firing, as a base reference for the light streaks which trace actual recoil movements. An instant after the strobe went off, the rifle was fired, after which the shutter was immediately closed.

The three major light traces in each photo record movement of the light bulbs themselves. Highlights created by these three bulbs on bright metal surfaces also register as secondary traces. Generally, the narrower the primary trace, the faster the movement.

The zigzag which appears in every trace was unexpected, and poses an interesting problem. Wootters theorizes that the jolt of recoil sets up an involuntary muscular reaction resisting the rearward thrust, and that the zigzag represents the end of peak recoil loads, where this reaction begins to overcome the backward movement of the gun.

If so, the portion of the trace below the zigzag represents the duration of application of recoil forces, the zigzag itself shows the body's unconscious reaction after the shot, and the remainder of the trace, above the zigzag, merely represents the tapering off of the gun's momentum, or followthrough.

Recoil energies mentioned in the photo captions are computed for the specific loadings illustrated, in these individual rifles, using actual chronographed muzzle velocities and gun weights. The shooter in these pictures is author Wootters.



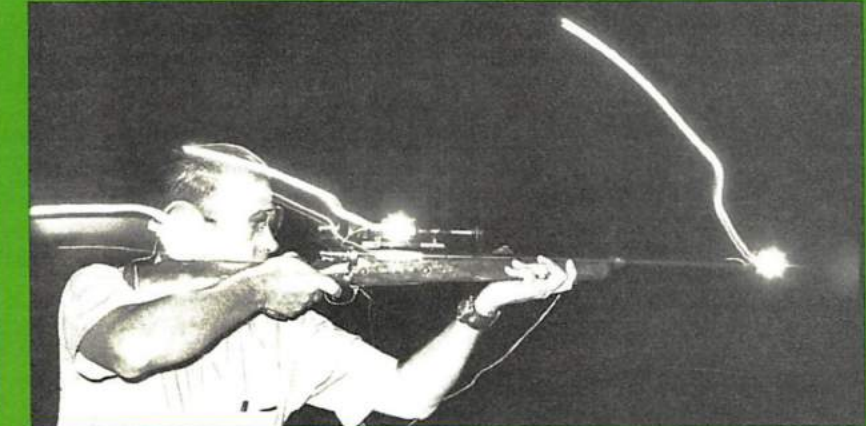
A 152-grain bullet, moving at 2825 fps at the muzzle, churning up only 13.5 ft./lbs. in recoil energy, set the eight-lb. Ruger M77 .308 back less than seven inches.



Ruger No. 1 .45-70 (8½ lbs.), heaving a 500-grain slug at 1775 fps, clobbers the shooter with 38.7 ft./lbs. recoil, much more than the .30-06 with 180-grain bullets.



New Marlin M1895 .45-70 (7¼ lbs.), boosting a 400-grain bullet at 1665 fps, delivers nearly as much free recoil energy as a normal .375: 38.8 ft./lbs. Wavy line traced by light on Wootters' glasses shows how his head rocked under impact.



Wootters soaks up less than 40 ft./lbs. recoil energy from the .375 H&H Magnum (9¼ lbs.), driving a 300-grain bullet at 2670 fps. Total rearward movement of the rifle here can be measured at 17 inches, while the vertical rise is 18 inches.



Stance to minimize recoil: spread feet further apart than for a light-kicking gun; more weight on forward foot, bend knee slightly. Grip extra firm, using as much backward pressure on pistol grip as can be applied.

the recoil forces which are about to be unleashed.

This diversion of concentration is the real reason that *nobody* (even if he doesn't flinch) can shoot a big rifle as well as he can a small one. This is also a fact of shooting life, and must be accepted.

Next, it's vital that every shooter understands that recoil tolerance has nothing to do with size, toughness, manliness, hairy-chestedness, or virility. In fact, according to the laws of

Holland & Holland Ltd. fits shooters precisely with a "try gun" because stock fit is so important to recoil tolerance.



Bolt handle is lengthened because of massive stock (upper arrow) on a 1000-yard benchrest rifle. Rifle bolted to lead block (lower arrow) weighs over 150 lbs.

ous shooter, of whatever size or physique, who is willing to work at it a little, and especially one who is a handloader.

I think the incessant preaching that the .30-06 represents maximum recoil tolerance for most hunters has done a considerable disservice to the nation's riflemen.

Recoil tolerance is a subjective thing, and must be developed subjectively. In brief, the process consists first of making up one's mind that he is going to get kicked when he shoots such-and-such a rifle, and second, of convincing one's subconscious protective mechanisms that the kick isn't really going to hurt him. Then, a portion of one's concentration must be diverted from such matters as sight picture and trigger control in order to deal with

physics, a big, heavy man gets kicked harder by a given rifle than a smaller, lightly built fellow, because the big man's body has more inertia to resist the rearward movement of the gun. The small man's (or woman's) body begins to move backward, to roll with the punch, so to speak, more quickly. He

may be pushed farther to the rear, but he doesn't receive as sudden a blow to the shoulder.

I've heard shooters claim to enjoy shooting a hard-kicking rifle, but I don't believe them. There is a certain sense of satisfaction in controlling and directing all that power, but to say that the recoil itself is enjoyable is dubious.

In order to arrive at that blissful state where a rifleman can "ignore" the recoil of something like a .375 H&H Magnum, however, requires a good deal more than merely deciding to do so. If you would learn to handle such a cannon, you will have to work at it. It requires patience and discipline, just as learning to shoot accurately does, and it calls for a carefully thought out plan. But first you must understand what recoil is, how it affects the shooter, and how the shooter's subconscious mind reacts to it.

Recoil is that "equal and opposite reaction," or it consists in varying proportions, depending upon the load, of the reactions to acceleration of the bullet, acceleration of the unburned powder and powder gases, and the jet effect as those still-expanding gases leave the muzzle.

In the same rifle, the heavier the bullet or the higher the velocity, the more recoil is generated. With the same loading, the heavier the rifle, the less subjective recoil sensation is delivered.

All sorts of gimmicks have been invented to circumvent these physical laws for the benefit of a rifleman's shoulder, including muzzle brakes of various types, rubber buttpads, gas-operated mechanisms, telescoping stocks, and sundry devices featuring



Smaller shooters rock further back, feel less recoil, despite some shooters' inability to adjust to recoil of hard kickers, such as a Wm. Evans .470 Nitro (above).

sliding counterweights, springs, and hydraulic cylinders.

All work to a greater or lesser extent, but none (except the plain rubber recoil pad) does so without some unfavorable side effect, such as increasing muzzle-blast effect on the shooter, or altering the balance and handling qualities of the rifle.

I'm not putting down such approaches to the recoil problem; by all means, try those you feel will help you. But it seems to me the easiest way

should be straighter than normal, with minimum drop at heel and comb. And it should have a pad; if somebody told you that rubber buttpads are for sissies, he's merely displaying his own ignorance.

Having acquired a heavy-recoiling rifle with an acceptable stock (we're assuming that its weight is within normal limits for the caliber), sit down and gaze reverently at this powerhouse and meditate upon the joys of commanding so awesome a set of ballistics.

recoil. If his scope is mounted too far back, he may be struck in the eyebrow, and that hurts. If it's too far forward, so that he has to crawl the stock for a full field, his own thumb may present him with a very fat lip, and that hurts, too.

If fear of this causes him to leave that thumb dangling where it doesn't belong, or resting against the rear of the cocking piece or safety, it may be "jammed," and that hurts like hell!

If the rifle has a straight-grip stock

RECOIL ENERGY, (ft./lbs.)

Cartridge	Bullet Weight (grains)	Rifle Weight, (lbs.)			Cartridge	Bullet Weight (grains)	Rifle Weight, (lbs.)			Cartridge	Bullet Weight (grains)	Rifle Weight, (lbs.)		
		seven	eight	nine			seven	eight	nine			seven	eight	nine
.22-250	55	5.9	5.1	4.6	7mm Rem. Mag.	175	27.3	23.9	21.2	.338 Win. Mag.	250	42.1	36.8	32.7
.243 WCF	100	11.0	9.6	8.5	.30 M1 Carbine	110	3.6	3.2	2.8	.35 Rem.	200	16.2	14.1	12.6
6mm Rem.	100	11.3	9.9	8.8	.30-30 WCF	170	12.4	10.8	9.6	.358 WCF	250	24.3	21.3	18.9
.257 Roberts	117	13.0	11.4	10.1	.30-06 Springfield	180	21.0	18.4	16.4	.350 Rem. Mag.	250	30.0	26.2	23.3
6.5mm Rem. Mag.	120	18.9	16.5	14.7	.300 H&H Mag.	180	31.3	27.3	24.3	.375 H&H Mag.	300	57.6	50.4	44.8
.264 Win. Mag.	140	23.3	20.4	18.1	.300 Win. Mag.	180	34.2	29.9	26.6	.444 Marlin	240	25.3	22.1	19.7
.270 WCF	130	20.4	17.8	15.8	.300 Savage	150	15.2	13.3	11.9	.458 Win. Mag.	510	74.8	65.5	58.2
.280 Rem.	165	22.6	19.8	17.6	.308 WCF	150	16.1	14.1	12.5					
.284 WCF	150	20.6	18.0	16.0	8mm Mauser	170	19.6	17.2	15.3					

NOTE: These recoil-energy figures were accurately computed on an IBM 360 computer and represent handloads which duplicate factory velocities. Because recoil levels vary with powder types and quantities, factory loads or handloads in which powders other than Du-

Pont's IMR series are used may have fractionally different recoil energies.

For these computations, it was assumed that factory loadings actually deliver published velocities in sporter barrels. Since this is rarely true, factory cartridges will usually generate

noticeably smaller amounts of recoil than indicated by these figures. Handloads, however, can be safely loaded to all velocities used in these computations, and the tables are accurate for such handloads.

out, and the most economical, is to learn to deal with recoil through shooting technique, and then forget it.

The one major exception is stock design. A correctly proportioned, well-fitting stock is an absolute "must" on a kicker. Most American factory rifles today have reasonably good stocks for handling recoil, although length of pull may have to be changed for the individual shooter.

A hard-kicking rifle's stock should be half an inch to a full inch longer than a rifleman might use on a .243.

The comb should be full, and sloping downward toward the front.

The pistol grip should be ample and a little tighter in the curve than normal, to give the trigger hand good purchase for snugging the rifle firmly back against the shoulder.

The forearm should be rounded, fully proportioned, and generously checkered to offer the off-hand a good grip. Few people realize how much recoil can be soaked up by a right-handed shooter's left paw out on the forearm. One of the main reasons a rifle seems to kick more when fired from a benchrest is the absence of that extra absorption and control of recoil motion by the left hand.

Finally, the stock on a hard-kicker

Its recoil must be respected and consciously managed from the very first shot you fire.

Resist the impulse to grab a box of factory ammo and rush out to the range.

Make up your mind that this rifle will never be allowed to hurt you. It's like training a tiger; you must be the one in control every second. The instant the beast gets out of control, everybody's in trouble!

The forces unleashed by a big rifle in recoil are delivered along exactly the same axis as those which move the bullet, except in the opposite direction. The chief resistance to this movement is the shooter's shoulder, and the center of that resistance is lower than the axis of the bore. This causes the rifle to rotate around a pivot point located approximately at the center of the buttplate.

At this point, the rifleman's cheekbone gets clobbered by the rising comb. Thus, the shoulder, face, and the two hands are the points at which recoil force is transferred to the body.

At all these points, it can be absorbed without pain.

If the shooter does something wrong, however, there are other ways and places his anatomy may catch some

(few hard kickers are made this way, nowadays), it's possible the second finger of his trigger hand may be bruised by the trigger guard, which is also painful.

Obviously, avoiding all these things is a matter of technique and a little forethought.

Now let's take a look at the shooter's mental reactions to getting walloped by the back end of a rifle. If that rifle ever hurts him, his body's subconscious protective reactions are likely to try to "protect" him from the rifle with every subsequent shot. No amount of willpower can circumvent them; they're as automatic and un-suppressable as the reaction that makes him leap for the curb at the sound of screeching tires when he's crossing the street. They are, in fact, precisely the same reaction.

He can tell his subconscious that it's really a nice rifle and wouldn't hurt a flea, but if he ever slips up and lets the gun inflict pain, the old subconscious will be jumping up and down and screaming "You lied! You lied! It did too hurt!" And his credibility with his own subconscious mind is hopelessly gapped.

(Continued on Page 64)
SHOOTING TIMES/SEPTEMBER 1973

How to Quit Flinching and Learn To Love Your Rifle

(Continued from Page 37)

Every time he prepares to fire that rifle — or any other rifle — his subconscious will busily defend his body from recoil. His final trigger pull is likely to be spasmodic, he'll close his eyes and hunch his shoulder forward to meet the blow, and every muscle in his body will tense.

The result is what we call a "flinch," and it does absolutely nothing for marksmanship. If allowed to become an established pattern, it can ruin his shooting, and may take years to overcome. This is why I emphasize never allowing the rifle to hurt, even from the first shot. If, after the first 50 or 100 rounds, the subconscious mind has decided there's nothing to it, the protective responses are lowered and a positive pattern has been established.

This can be accomplished by hand-loading light bullets at reduced velocities for early shooting with a new, hard-kicking gun. "Light" bullets, in some calibers, may weigh 200 or 300 grains, and these will produce some recoil even if rolled out the end of the barrel at softball velocities. However, with normal gun weight, they're mild enough for training.

If recoil is still uncomfortable on the benchrest, use a sandbag between the shoulder and butt, or cast a lead block to fit into the magazine well to add two or three extra pounds to the rifle. Most sporters have a hole in the butt, under the pad or plate, which will hold a couple of pounds of No. 9 shot.

You must do whatever is necessary and possible to make the gun comfortable to shoot during these early stages.

Later, handloads can be stiffened up maybe five grains of powder at a whack, but be sure to remain at each power level long enough to convince the old subconscious that "it doesn't hurt!"

As you near hunting-load levels, do less shooting from the bench or prone position and more offhand, sitting, and kneeling. You can probably use the practice, anyhow.

For targeting, a standing rest is ideal, which is simply a rifle rest arranged so that you can stand up behind the gun. *Always* wear ear protectors; and use the best available.

You'll learn that some attention must be paid to holding and controlling the rifle in recoil.

It's very important to hold the butt firmly against the shoulder without setting up a muscle tremor, and take

a good grip on that forearm with the off-hand.

Keep the thumb in its place.

Lean into the gun from a slightly wider stance than might be normal with a less-formidable firearm.

The thought given all these things will detract from your concentration on the target, and you won't shoot as well as you know you can, but what you're trying to do is form habits which will become so automatic that your conscious thought processes can be focused on shooting.

Once those habits are firmly established, you've arrived; you'll shoot the powerhouse cartridges without really thinking about the recoil. You will have stopped worrying and learned to love your rifle, even if it's a rompin', stompin' bear-basher, buffalo-buster, or whale-walloper!

And which calibers call for this routine? All of them, depending upon the experience of the shooter. Even the mild .308 WCF would lend itself to the process if a man were teaching his preteen son or his wife the arts of riflery.

Remember that muzzle blast is an inextricable part of recoil *sensation*. Some folks think they're getting kicked if their ears ring a little, as after shooting a .243. Ear protectors are especially important in recoil-proofing a shooter.

With a novice shooter, present large targets at fairly short range at all stages of the working-up process, and, if possible, targets that react when hit (*not* glass!). Get the beginner to concentrate on hitting, and he'll soon be having so much fun making targets jump, fall, or whatever that he'll have forgotten all about recoil. Don't push him faster than he seems to want to go, and never tease or berate him for being shy about the rifle's kick.

Is there a limit to recoil tolerance? Sure there is, and it varies with every individual. I don't know anyone who claims a .458 Magnum with full-bore loadings is fun to shoot at somewhere around 60 ft./lbs. of recoil energy.

Many gunners may draw the line at (or before) the .375 H&H Magnum, or the .338 Mag., whose combination of long, heavy bullets at very high velocities produces a particularly jolting kick. However, I believe that any grown man who is serious and willing to devote some time and effort to learning to manage large doses of recoil can do so.

The first step is tossing out the old shibboleth that the .30-06 Springfield cartridge represents some sort of arbitrary upper limit of recoil tolerance for the average human. Once you get yourself unpsyched about that, the sky's the limit.

Recoil-proof yourself, and you'll step into a whole new world of rifle power and pleasure.