

TAKE A WALK into any gym and you'll find people wearing weight belts of all shapes, colors, sizes, and materials—leather belts, Velcro belts, single-prong belts, double-prong belts... Except for the occasional person who wears a belt just to look serious (you know, that guy who wears his belt while doing concentration curls), most people wear a belt to prevent back injury and/or enhance performance. Is this practice based on science, or is it one of those gym myths that'll never go away?

BELT PRIMER

Before we talk about belts, injury risk, and performance, we need to delve into how a belt is supposed to work. During heavy lifting, the transverse abdominus, a hooplike muscle that surrounds your waist and lies deep

your spine.

NO BELTS ALLOWED

Though I dug deep, I couldn't find any studies that directly examined if belts can decrease injury risk in athletes. However, that doesn't mean we can't put our brains to use and derive some logical conclusions. If a weight belt truly adds extra spinal support, then it makes sense that the erectors, the primary muscles involved in extending your back and keeping you upright, would be

relieved of some of their duty. Since a muscle's degree of work can be measured via electrical activity, it would also follow that such activity would decrease with the use of a belt, since the muscles wouldn't need to work as hard. However, in five out of six studies that looked at the electrical activity of the

erectors with belt use, there was no decrease in erector activity.^{1, 7, 8, 11-13} And the lone study that did show a decrease has been criticized for its statistical analysis.³ So the next deduction is that a belt doesn't add extra spinal support and that therefore the concept of injury prevention may be flawed.

Actually, if you dig deep enough, you would

A BRIEF ON BELTS

By James Krieger

A BELT MAY NOT BE AS "SUPPORTIVE" AS YOU THINK



in your abdomen, "squeezes" your torso. This increases the pressure in your stomach, which is known as intra-abdominal pressure (IAP). This action provides support to your trunk by essentially making your torso stiffer, adding strength and support to your spine, and can even prevent your spine from buckling with a heavy load on your back.¹⁰ Now, wearing a belt creates even more IAP,^{4, 7, 8, 11} which, theoretically, would provide even more support to

learn that a belt might actually *cause* problems, rather than prevent them. You see, your spine comprises 24 little joints that are constructed to allow for a certain range of motion. By wearing a belt, you might immobilize certain portions of your back when they're supposed to be moving, thereby increasing stress to other parts of the spine and making those parts more vulnerable.⁵ Wearing a

belt can also increase blood pressure and cardiovascular strain.⁶ Finally, although there's no decrease in surface abdominal muscle activity when a belt is used,^{11, 12} it's possible that a belt might decrease the activity of the deep abdominal muscles. This is because the belt may relieve some of the need of the deep abdominals to supply IAP. This, in turn, would reduce the training stimulus to these muscles. Eric Burkhardt, MA, CSCS, the strength and conditioning coach for the University of California, Irvine, agrees. "I have not worn a

subjects who wore a belt reported less discomfort while lifting. Their height decreased by an average of 2.87 mm, while for the subjects who didn't wear a belt height decreased by 3.59 mm. This indicates less "spinal shrinkage" in the subjects who wore a belt, implying that the spine experienced less compression. This might be important to injury prevention. Why? In your spine there are soft disks made out of cartilage, called intervertebral disks, which act as cushions. More compression on your spine means more

compression on these disks. Relieving some of the compression might be

beneficial, since these disks can be relatively easily injured.

While this looks like evidence in favor of the belt, you need to be cautious in interpreting the results. The difference in spinal shrinkage between the groups was not statistically significant, meaning it might have been due to random chance.

Also, the subjects were experienced weightlifters who may have been accustomed to wearing a belt. This might explain why they felt discomfort when they didn't wear one.

With all this talk of injury prevention, we still haven't addressed the effect of a belt on performance. Probably the one type of athlete that would derive the greatest performance boost from a belt is the powerlifter. Most powerlifters that we talked to agreed that they could add at least 30 pounds to their squat and deadlift by wearing a belt. Also, two studies found that the subjects could squat faster with a belt,^{7, 13} indicating that they're generating more power. This in and of itself could contribute to why powerlifters feel that they can lift more with a belt, though you can't dismiss

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DIFFERENT BELTS, DIFFERENT RESULTS?

You're all familiar with the different types of belts on the market. No, not the color—the thickness and the design. Here's what some of the researchers used:

- A light leather belt 7 mm thick and 100 mm wide. A heavy belt 11 mm thick and 100 mm wide was also used, but no differences in performance dependent on the type of belt were noted.⁸
- A leather powerlifting belt 11 mm thick and 100 mm wide.⁷
- A powerlifting belt 1 cm thick and 12 cm wide.¹
- A leather belt 10 cm wide.¹¹

A SOLID BELT AND A TIGHT FIT WILL ADD POUNDS TO THE BAR.



belt during any exercise for about 15 years of relatively heavy training," says Burkhardt. "In doing so, I feel that I have developed my abdominals' ability to create sufficient IAP, eliminating the need for a belt. I'm quite certain that had I used a belt on a regular basis, my trunk musculature wouldn't be as strong as it is today."

A BELT, PLEASE

The value of using a belt is clearly in question, at this point. But let's shift gears and take a look at a study that favors the belt.² Eight males performed six weight-training exercises for 3 sets of 10: a deadlift, high pull, squat, clean, bent-over row, and bicep curl. Four subjects wore a belt, while four didn't. After the training session, the

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the fact that feeling more secure with a belt also has a positive effect.⁷

SOMETIMES

So after yanking you back and forth, how can we make sense of the data? Here are some major pointers to bear in mind:

Constant reliance on a belt for every lift, even max attempts, probably isn't a good idea and could result in belt dependence. While there's no solid evidence for belt use, there's also no indication that occasional use is harmful. If you decide to use a belt, make sure you get a fair amount of beltless training also. Limit your belt use to some of your maxes and definitely consider using one in competition for some added power.

If you've been consistently wearing a belt in training, it's probably time to get your body accustomed to lifting without one. Start at around 60% of your max and slowly progress by 2 to 5% per week or as tolerated.

Proper lifting technique and appropriate progression are probably much more important to injury prevention than wearing a belt. "The athletes I train aren't using lifting belts and never have," says Burkhardt. "I haven't had any serious back injuries in my weight room and strongly feel that this is due to being a stickler about proper technique."

Maintaining neutral spine is an important part of proper technique. Neutral spine means keeping the natural curvature of your back when you lift. Don't round it, and don't hyperextend it either. This keeps the pressure on those intervertebral disks even on all sides, reducing the risk of injury.

Belt or no belt, a brief Valsalva maneuver (holding your breath) may help protect your back. This increases IAP and tends to reduce erector activity, suggesting a reduced spinal load.¹¹ However, avoid excessive breath holding because it can result in a dramatic increase in blood pressure

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and, if prolonged, could cause blackouts.⁹ The best way to avoid these problems is to start breathing out once you've passed the sticking region of a lift. ☺☺

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