



# PERFORMANCE CYCLING CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING CYCLISTS

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## Top 10 Irrational Fears Cyclists Have About Strength Training

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**I**'ve been lifting weights since my high school days, first for competitive weightlifting and for the past 25 years, for improved endurance performance. You might even say I'm a perfect example of an endurance athlete who experiences all the benefits and suffers absolutely no adverse effects from lifting properly:

- I don't "bulk up" (I weigh the same as in high school!)
- My workouts are less than an hour once or twice a week
- I retain a great deal of strength gained in years past
- Body composition and skeletal health are excellent
- Power production on the bike and elsewhere is there when I need it

See how many of these irrational fears keep you from getting stronger and more powerful in the weight room.

### Fear #1: I'll get too big if I lift weights (especially heavy weights)!

How is it cyclists think they can get so big from lifting weights? Bodybuilders, those whose entire reason for lifting weights is to gain muscular size, would kill for this "problem" Yet this is a very common reaction with ectomorphic endurance athletes.

There is no basis in the scientific literature for this conclusion.

If you suddenly pack on significant amount of added muscular weight during the various phases of your resistance training program, the reality must be either: 1) you're training the wrong way (too much volume) or 2) your eating more and cycling less.

Most cyclists I've talked with who say they "bulk up" quickly when lifting



Harvey Newton

weights readily admit that this happens in their off-season. Their volume of cycling is greatly reduced, usually because of shorter and colder days. In the United States, this also coincides with winter, i.e., the holiday season.

For nearly all of us, active or otherwise, this is a time when we eat more and are less active. The average person gains 0.5kg (11lb) at Thanksgiving and a similar amount at Christmas. This is not a lot, but add a kilogram of bodyweight while resistance training and you may form the impression that you are "bulking up."

The facts are it is highly unlikely (read, nearly impossible) that an endurance athlete will add an appreciable amount of lean body mass through the limited resistance training program that I advocate. True, those with a propensity for gaining muscular size might gain a significant amount of hypertrophy IF 1) they trained specifically for this outcome and 2) they modified their diet vs. activity schedule in such a way as to gain weight.

Increased muscular size IS NOT a goal of mine. I point out that I want you to do the least amount of resistance training possible with the most appropriate resistance available. The goal should be to prepare, then

strengthen your muscular system, then convert this new strength to power, the ingredient all cyclists want to improve.

Increased strength and power do not require noticeably larger muscles.

Endurance athletes, both male and female, need to get past the point that they think they will gain muscular weight ("bulk up") as a result of a sound strength training program.

Finally, consider that endurance athletes have traditionally been advised to gain a few pounds of muscular weight during the off-season, anyway. This extra muscle, if it appears, serves as fuel in your high mileage early season training. You'll be at fighting weight when the season starts (and a lot stronger!).

### Fear #2: I'll gain too much weight.

Many people unfamiliar with the science behind progressive resistance training think that lifting weights leads to an increase in bodyweight.

Often there's a mental image that lifting weights produces a hulky, muscular body type (see Myth #1). I've encountered many endurance athletes, members of the lay public, and concerned parents of young athletes convinced that lifting weights automatically leads to significant gains in bodyweight.

Science simply does not support this myth. Significant gains in bodyweight (regardless of weight training) occur only when you 1) increase your calories (calories in), 2) reduce your activity (calories out), or 3) a combination of these two variables.

So to gain weight you have to consume more calories than you burn. Who wants to gain weight? Many adolescent American males (nonyclists) go through a phase where they want to get big muscles. This muscular body image message has been

with us for a long time and shows no indication of fading.

What is unusual is that most young males do not come anywhere close to reaching their goals. True, they lift weights (often too frequently) and suck down expensive, oftentimes ineffective, and usually unnecessary “food supplements” trying to get bigger. But more often than not, significant changes in bodyweight simply fail to occur. This is almost always a failure to increase caloric intake enough to make a difference.

Adolescent males simply burn off more than they put in, thus their bodyweight remains about the same.

For many years I worked with USA Cycling’s national teams on their off-season strength and conditioning training. All too often I heard horror stories, from both male and female elite cyclists, about significant weight gains while lifting weights.

Over time I’ve learned to ask for empirical data (bodyweight, body composition, or anthropomorphic measurements) to back up these claims. I have never received any objective results. It has always been subjective comments like, “I look bigger,” “My clothes fit tighter,” etc. I believe such evaluations, but simply cannot accept that a small amount of resistance training alone has caused this result.

How is it that endurance athletes (typical ectomorphic body types) gain weight when they lift weights, yet bodybuilders, who want to “bulk up” have to engage in any number of compulsive behaviors to see the scale move upward? Could it be that endurance athletes have somehow hit on the secret that so many in pursuit of added muscular bodyweight have somehow missed?

I have always been caught me off guard by this type of thinking. I spent 17 years as a competitive weightlifter, moving back and forth across several bodyweight categories in pursuit of optimal strength and power gains and knew that lifting weights does not necessarily lead to gains in bodyweight.

After long discussions with one 1992 USA Olympian cyclist, I hit on a couple of key points that may indicate an answer.

1. Cyclists, particularly endurance cyclists, tend to engage in resistance training only in their off-season. This is traditionally September through December.
2. During this off-season, cyclists sharply reduce their hard efforts at cycling, with a focus largely on higher volume, lower intensity training.
3. Depending on where they live, in many cases cyclists have trouble maintaining enough cycling volume because of environmental conditions (shorter days, colder temperatures, etc.).
4. During the so-called “holiday months” of November and December, our otherwise nor-

mal eating habits tend to disappear. More and higher fat content foods tend to be available during Thanksgiving and Christmas. The average American (not racing cyclist) gains 1 kilogram (2.2lbs) each holiday season.

So, ride less, eat more, and lift weights. Yes, you may gain weight. But, while weight gain occurs, it does not mean that lifting weights and gaining weight are strongly correlated. Lower activity and higher caloric intake (regular or holiday) causes weight gain. It just so happens that the endurance cyclist who also only engages in resistance training at the same time concludes that it’s the lifting that leads to the bodyweight increase. Almost always the reaction is to quit lifting.

This is NOT the right answer!

### **Fear #3 I’ll be slower, especially on hills.**

Endurance athletes often believe the “old wives’ tales” associated with lifting weights. One of these is that lifting weights makes an athlete slower. This message was first perpetrated on the American public more than 50 years ago. It was long ago disproved as being a groundless rumor.

In reality, today’s informed coaches and athletes know that real strength training produces a faster athlete.

Let’s get one thing straight. Whether we’re talking climbing, sprinting, time trialing, or simply regular riding, I freely admit that nothing replaces quality training on the bike. No amount of resistance training can replace time spent climbing in order to improve hill performance.

But, depending on your ability to climb, you may find that a systematic off-bike resistance training program designed to increase strength (not muscular bulk) greatly assists your efforts on the hills.

This may be a matter of strengthening the upper body so you experience less shoulder or upper back fatigue while climbing either seated or out of the saddle.

It may be a matter of improving your lower body strength, allowing for more force to be applied to the cranks.

Or, it may mean strengthening your core (basically, your torso), that important part of the body that connects the upper body work on the handlebars with the lower body pressure on the pedals.

A good body of solid scientific research suggests gains in strength translate to improved muscular endurance. Realize that not all forms of resistance training produce increases in strength. This is especially true of high repetition work with light weights. This protocol generally trains muscular endurance, with a nearly negligible improvement in actual muscular strength.

Why don’t we just train for muscular endurance when we’re in the gym? After all, muscular endurance is the primary deter-

minant for success in endurance cycling.

Well, it’s always seemed to me that the most sport-specific form of muscular endurance training for cyclists is riding. Conversely, the most important muscular trait to gain in the weight room is increased muscular strength. This is something that does not occur in muscular endurance training, whether on the bike or in the weight room.

Since a stronger muscle is more enduring, by gaining strength you get both benefits. This is not the case if you train primarily for muscular endurance.

The bottom line is, train properly on the bike for improved hill climbing, especially during the preseason. You’ll reap huge benefits. But if you are not a strong hill climber, consider how you can improve weight room strength in a way that translates to better climbing, thus realizing a double benefit.

### **Fear #4 Strength training takes time away from riding.**

Most cyclists and triathletes seem to think resistance training takes a lot of time to perform and that this time is better spent on more endurance training. For sure, there are many programs put forth by endurance sport coaches that do take an inappropriately large amount of time to perform.

Over the years I’ve collected a number of “strength training” protocols put forth by well-intended endurance sports coaches with just enough knowledge of resistance training to paint themselves into a corner. After looking at the workout suggestions, the reps and sets, the rest intervals between sets, and the overall program volume, I calculated the math. The results are scary.

Let’s set aside the fact that many of these proposed programs include a number of exercises that serve little, if any, purpose for a cyclist. Setting up a hard-hitting, results-producing resistance training program for endurance cyclists is pretty simple. Rule #1, skip a lot of the bodybuilding-oriented exercises, particularly the single-joint moves. As is popularly stated by today’s “functional” training gurus, train movements, not muscles.

Once you set your repertoire of multiple-joint exercises that I’ve always categorized by their primary function, you only need three or four sets of each to adequately address all of the body’s primary muscles.

An effective resistance training program for an endurance athlete should take less than an hour to execute. And, that’s with adequate recovery time between sets, something most cyclists never do. It’s important that you don’t look at resistance training as another form of cardio-respiratory exercise. Get and keep your pulse elevated through proper endurance training elsewhere; keep your weight room focus on simply preparing, then strengthening your muscles. The final component is to convert newly acquired

strength to power.

Such a program produces excellent results when you train three times per week in the off-season. Make this two to three times a week in the preseason. Finally, you can easily keep the gains you're made with one or two abbreviated resistance training sessions in-season.

I advocate that you need no more than three hours a week during the off-season in the weight room. In-season you can easily get by with a total of 45-60 minutes in the gym.

How does this impact your endurance training?

Let's measure training volume by time and say you currently ride at an average speed of 16-20mph. If you get in about 200 miles per week, you're riding 10-12.5 hours weekly. If you ride 300 miles a week, it's taking about 15-19 hours weekly.

To engage in a sound weight room training of three hours (the maximum needed in off-season), means you need to reduce your accumulated distance by 48-60 miles.

One well designed scientific study found that cyclists improved their 1-hour time trial performance and suffered no negative endurance-related consequences by reducing their on-bike training volume by 37%!

I'm not asking you to reduce your bike training by more than 1/3. I believe quality time on the bike is more likely to improve cycling than excessive time in the gym. But excessive time on the bike can be especially wasteful, particularly if your races or events are not of a long duration.

By replacing some endurance training with sound resistance training you have a better chance of improving your overall strength and power, balancing your total muscular development, and protecting against injuries associated with excessive cycling.

Experiment with cutting back on your riding at the most 3 hours weekly and substitute that time with a sound periodized resistance training program designed to actually increase your strength and power. I'll bet the results will speak for themselves!

### **Fear #5 I must lift light weights in high reps to improve muscular endurance and avoid bulk.**

Hopefully we can all agree that the #1 reason to spend time in the weightroom is to get stronger. Increased strength and power are two of the most obvious and desirable physical benefits of progressive resistance training.

Resistance training offers users at least 5 major physical benefits:

- Added strength
- Improved power
- Enhanced muscular endurance
- Improved flexibility

### **• Injury prevention**

Cycling has almost no need for increased absolute strength since the bike and rider never really encounter a situation in which absolute strength is tested.

More power is something all cyclists could use. Strength and speed are the two ingredients that make up power. Although you can train speed, both on the bike and in the weightroom, we can't do anything to increase the number of fast twitch muscles fibers you have. So, added strength is the fast track for improved power. And, a stronger muscle is more enduring.

But improved strength comes only from high-intensity efforts, which means fewer reps with higher weight. So many endurance athletes, particularly females, fear that such training will cause them to "bulk up."

To avoid the nearly physiological impossibility of "bulking up," cyclists routinely lift light to moderate weights and keep the repetitions quite high, at least in terms of normal strength training protocols. Set of 15 or more reps employ very light weights compared to what one has the potential to use. These light weights simply do not evoke a strength response within the body. Training at 15 or more reps is considered muscular endurance training.

And it's very true the cycling depends on muscular endurance for success. But, this muscular endurance is much better suited for on-bike workouts, both in terms of sport specificity and time management. To spend excessive amounts of time duplicating muscular endurance efforts in the gym just does not make sense. It borders on being a complete waste of time: no added strength and no bike-specific skills to improve cycling.

So, look for added strength as your primary by-product of resistance training. No, that doesn't mean running off to the gym and launching yourself into a weightlifter or powerlifter's normal routine of heavy weight and 1-3 reps. Such training, especially without proper preparation greatly increases the chance of injury, particularly in a non-strength/ power athlete.

Get away from the usual low load, high rep muscular endurance type of workout so common to cyclists. Don't waste your time in the gym, do it right and easily gain what you want, namely improved performance on the bike.

### **Fear #6 Strength training is a waste of time for endurance athletes.**

If you don't like or don't want to lift weights for better cycling, you certainly can find studies or experts to support your case.

And you know what? If you don't like or want to engage in real strength training for improved cycling performance or if you are going to be a slave to the various

myths debunked in this article, then a well designed strength program just isn't the right thing for you, at least not right now.

You can certainly improve your cycling without going to the gym to lift. But if you have an open mind and can sort out many of the details related to scientific studies, I encourage you to look below the surface and find out more.

For every study that shows no gain in performance, there are two other studies that show marked improvement. Other endurance sports don't seem to have the same opposition to resistance training that cycling does.

The relative confusion in the scientific world surrounding resistance training and endurance sports is nothing unusual. Scientists encounter many challenges when designing a study and all conditions are seldom met that allow for definitive results across the boards.

The likely areas for flaws in research studies seeking to determine the outcome of progressive resistance training for cyclists. I readily admit that resistance training is not a "silver bullet" that guarantees success. There are too many variables in both cycling and resistance training, not to mention individual characteristics, to provide a "one size fits all" answer.

But part of the reason for this report on commonly-held fears about strength training for endurance sports is to get this out on the table and let you, the rider, make your own decision. What I don't want you to do is waste your time and/or not gain resistance training benefits because you fail to employ proper strength training protocols.

Even if proper weight training gave you no improvement on the bike at all, consider two things: **1)** engaging in such training has never been shown to create a detriment to endurance training and **2)** a proper, periodized resistance training program may be the ONLY way you can successfully protect yourself from injuries likely to come through cycling. This is particularly important in light of the recent alarms being sounded about bone mineral density loss in both male and female cyclists.

Feeling lucky? Want to chance not improving your on-bike performance or your long-term skeletal health because you think lifting won't do you any good? That choice is yours.

### **Fear #7 If I lift heavier weights, I'll get hurt.**

True, lifting heavy weights may result in your getting injured. But you could get hurt lifting lighter weights, especially if your technique is not good or if you've chosen an inappropriate exercise.

There is absolutely no reason for a cyclist to get injured in the weight room. But, if you want to get stronger (which is the only

legitimate reason for a cyclist to be lifting) you do need to lift heavier weight (higher intensity) than you are probably accustomed to lifting. But, I am NOT suggesting that you lift the heaviest weights normally associated with 1-3 repetitions.

It's a pretty simple physiological fact that you must move progressively heavier resistances in order to increase your strength. You know and accept this principle if we're talking about cycling. As the season progresses, you use larger gears (higher intensity). Depending on where you live, you seek out more hilly routes and occasionally grind your way to the top in a bigger gear (higher intensity) than you can spin, in an attempt to gain strength.

But you also know that you must start easy with putting in base mileage before taking on higher intensity big gear or hill work. Similarly, you know that sprints and interval (power training) are in integral part of your training, but you have to properly prepare your body for this higher intensity work.

But back in the weight room, endurance athletes tend to get hung up on their unfounded and illogical fear that lifting heavier weights (higher intensity) adds muscular size. As a result, endurance athletes end up training muscular endurance with light weights and high repetitions, thus wasting their weight room efforts on poor training methods.

Weight gain or increased size does not depend on the repetitions performed. This is especially true for ectomorphic endurance athletes. To repeat an earlier message, unless you are riding much less and/or eating much more, you just are not going to gain weight, regardless of the weight lifted!

But, whether or not you actually gain strength through your efforts in the weightroom does depend on intensity!

### **Fear #8 In the weightroom, I don't know what to do or how to do it right.**

This is a reasonable concern, but one easily overcome! The weight room is often considered an inhospitable, intimidating environment, especially for endurance athletes not used to "pumping iron." Armed with the right information any stranger to the gym should have no problem walking in and doing their training on their own.

In other words, you don't need someone to hold your hand in the gym. Of course, enlisting the help of a fitness professional for a brief introduction may be wise, although many of these folks often steer you in the wrong direction. Many so-called fitness "professionals" really don't know how to perform basic or advanced exercises properly. Often you end up paying for a personal trainer's looks and/or personality, not what they know. The answer is to educate yourself to the point where you know how to do what

will give you the most benefit.

You should have some variety injected into your program about every 4-6 weeks. Train the same muscular action, but with a different exercise.

There is no magic workout that is right for all cyclists. Cycling is simply too diverse a sport to be predictable as to what works and what does n't in the gym. The same is true of all of us as individuals, whether it's a matter of limb length differences, flexibility issues, chronic injury considerations, etc. So, you need to consider what will work best for you.

Don't feel intimidated in the gym. In today's health club or fitness center environment, there are plenty of "real" folks working out without the help or advice of the dedicated "plateheads." Educate yourself on the basics and then venture on in, there's nothing to fear in the weight room!

### **Fear #9 I just want to train my legs, anything else is a waste of time.**

Without a doubt, a cyclist's lower body is the primary means of propelling the bike forward. The pedal stroke is largely a combined hip and knee extension action. Training the lower body makes a lot of sense and it should remain the primary focus for riders, whether elite racing or recreational.

But most cyclists' legs and hips are already stronger than normal, so it can be argued that the main area to train should be your upper body. This is particularly true if you believe the old adage, "You are only as strong as your weakest link." In other words, train your weaknesses, not your strengths.

In reality, cyclists should aim to create a picture of total muscular fitness. In my extensive work with developing and elite riders I've found many fail at such basic criteria as the President's Council on Fitness and Sports fitness test (using the formerly challenging standards, not the dummed-down version we have today). This is particularly true when we look at upper body and torso strength.

How important is anything other than the lower body for a cyclist? Well, we know the upper body is involved any time you're pulling hard on the handlebars, as in sprinting or climbing. Most of us have experienced fatigue in the upper back, neck, triceps, or hands during early season distance rides. Lower back pain affects a reported 80% of the general American population and certainly cyclists are known for chronic back problems.

So, whether it's a matter of going faster on the bike or simply a matter of being more comfortable on the bike, total body strength is important.

Most cyclists, especially females, will gain their most noticeable cycling benefits from strengthening their upper bodies and torsos. Women, in particular, are not going to gain weight or size on such a simple, targeted

program.

You don't need to train more than one multiple-joint exercise for upper body pushing and pulling muscles. Add to that something for the abdominals and lower back, along with your featured lower body exercises. Don't worry that you're going to gain any significant size or weight.

You will get stronger, though.

### **Fear #10 Lifting weights is unnecessary. I get all the upper body strength I need AND train my cardio-respiratory fitness by cross-training (it's more fun!).**

No doubt cross-training is more fun for endurance athletes than sitting around the weight room lifting weights. Endurance athletes like to train as they compete. Offer up other cycling activities (cyclo-cross, mountain biking, etc), swimming, kayaking, in-line skating, cross country skiing, or maybe even running, and they take easily to it. Let's keep the heart rate up, right?

True enough, cross-country skiing and other cross-training activities are great for a break, and they do wonders for training your cardio respiratory fitness. Since we don't want you to lose any endurance training benefits when you hang up the bike in the off-season, cross training makes a lot of sense for a month or two.

But cross-training is not going to take the place of true strength training with weights. The largest difference relates to the theory of progressive resistance. This basic training principle requires that you add weight or intensity in your lifting pursuits as your body adapts. In other words, if you are still lifting the same weight after months and months of resistance training, you have adapted to the load and you are not getting any stronger.

This is very much the problem with many forms of cross-training. It can be argued that X-C skiing adequately trains a cyclist's upper body pushing and core muscles enough to take the place of resistance training. This is especially true when you combine double poling with a skating technique. But as you get better with more practice, you become more efficient, go faster, etc.

Unless you've somehow raised the intensity of effort, you are not getting any stronger. You need progressive resistance in order to gain strength.

The answer is to both cross-train and lift weights. These are not mutually exclusive practices, but it does take some experimentation to get it down so you can benefit from both.

So there you have the 10 most common irrational fears about strength training I've encountered when coaching endurance athletes. There may be more, but 10 are enough for this report!

I trust you enjoyed reading the report and have considered your current approach to resistance training for improved cycling performance. Some key points you need to remember:

- To be effective, resistance training MUST

be a year-round pursuit

- STFC training requires only two or three, 45-60 minute weekly workouts
- Done properly, you won't experience any negative performance results
- Effective strength training results in improved cycling and quality of life

#### **More Information Please!**

All of these topics are covered in much greater detail on the Strength Training for Cyclists System that includes a 42 minute DVD, and 165-page training manual. To order see the ad in this issue.