

# Ironman Articles

## 1970-1974

## One Less Bump...

Inventions usually come about in one of two ways ... One, you have an idea – you try it – and it either works or it doesn't – and if it works, then you develop the theory required to justify it. Or, two, you try something (perhaps, probably, by accident) – and if it works, then you develop the theory. But in either case one part of the process remains unchanged in the practical world; the theory comes after the fact in almost all such situations.

And the theory can be good or bad, valid or wrong, of great value or of no value – in either case the theory almost always follows the fact. In an attempt to explain good results – or in an attempt to justify bad results. So in practice you can find theory designed to “prove” almost anything you can name – but sincere belief on the part of people supporting an invalid theory will not change error into practical knowledge.

And when it comes to cases where the theory comes FIRST – then the result is almost always of no slightest value. Because, in such cases, the people trying to prove such a theory are usually not really looking for facts – they are, instead, trying to find something, almost anything that might tend to support their pre-formed beliefs. And believe me, there are almost no lengths to which some people won't go in efforts to “prove” their points – brushing aside and pretending not to notice all evidence that runs against their theory, and desperately scrambling for just anything that might be twisted into supporting it.

Which strongly reminds me of the joke about the first major “improvement” in the shape of the wheel. Starting with a SQUARE wheel – the first “improvement” took the form of a change to a triangular shaped wheel – ONE LESS BUMP. At the moment, in the field of exercise equipment, people are busily redesigning square wheels into triangular shaped wheels – and trying to justify the resulting LOSS in result-producing ability as an improvement, on the basis (apparently) that REMOVING what may well be the most important factor of exercise will somehow improve it.

And just what is the “most important factor in exercise?” NEGATIVE RESISTANCE. Or so it appears at the moment. Or, at the very least, this is apparently true if you are interested in producing increases in muscular size and strength.

Negative resistance exercises will do little or nothing for cardiovascular ability – will not help your heart or lungs, your “condition.” But negative resistance exercise certainly WILL build maximum-possible degrees of size and strength into human muscular structures.

And now I will clearly outline the theory that explains exactly why this is true – theory based on factual observations – theory that FOLLOWED the facts – theory that is obvious and undeniable after-the-fact, but that was not even suspected before-the-fact.

We have known for years that “intensity of exercise” was a positive factor, a desirable factor, a productive factor. Secondly, we have also known for years that the “amount of exercise” was primarily an undesirable factor, one to be avoided. Logically, then, it obviously followed that the “ideal” exercise would be one that was infinitely hard, and infinitely brief. As hard as possible, as fast as possible.

In practice, however, there were reasons why it was impossible to put this knowledge to use in a worthwhile manner to the degree that we suspected was actually required. In short, we knew what was required – but we didn't quite know how to go about producing the needed factors. Not, at least, to an ultimate degree.

And we still haven't quite reached a truly “ultimate” degree of practical application – but we are a lot closer than we were even as recently as a few months ago. A LOT CLOSER. And, in the meantime, others are racing off in exactly the wrong direction – while trying to justify their gross error by invalid theory.

Which is certainly not meant to imply that I am never wrong. On the contrary, until quite recently I utterly failed to realize the actual great importance of negative resistance. While I have known for years that negative resistance was of at least some value – and while I have also known that positive-only resistance exercises were of little or no value – I still failed to realize that negative resistance is possibly almost the whole ball game.

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The facts were all there, in plain sight – yet I (along with everybody else) failed to see them. I became aware of the real facts only after they were forced upon me by practical demonstration – in short, the facts came first and the theory followed.

REMEMBER – “intensity of exercise” is desirable, and negative-only resistance gives you the highest possible intensity, higher than you could even begin to attain with either positive-only or normal positive and negative exercises.

AND – “amount of exercise” is undesirable, to be avoided as much as possible, and negative-only resistance exercises reduce the AMOUNT of exercise by seventy-five per cent EVEN IF YOU USE TWICE AS MUCH WEIGHT AS NORMAL. So, obviously, negative-only exercises involve far LESS in the way of the amount of exercise. Which is GOOD.

And if you use only one and one-fourth times your normal amount of weight, 1.25 times as much weight as you usually use – then the amount of exercise is reduced by more than eighty-four per cent (84 per cent). In such a case, you are in fact performing only fifteen and three-tenths (15.3 per cent) as much work as you would in a regular workout with even less weight.

So, obviously – you have almost the ultimate amount of “intensity,” the desirable factor – and very little of the “amount of work,” the factor to be avoided. Which is plain enough, undeniable – after the fact.

If an man somehow failed to understand the real function of an automobile – which function, of course, is “transportation” – and if he thus built a car without an engine; he might then point to the lack of an engine as an “advantage” – perhaps trying to prove this on the grounds that such a car would create no pollution. Which situation – ridiculous as it sounds – is almost exactly what is actually happening in the field of exercise at this very moment

Having machines that have absolutely NO negative resistance, the makers of such machines point with pride to the fact that their machines “cause little or no muscular soreness” – which claim is perfectly true; but the people making such machines don’t bother to add (even if they are aware of the real facts) that their machines don’t produce much if anything in the way of worthwhile results, either. In fact, they “claim” the opposite; but then, just what would you expect them to say?

Under the circumstances, I really don’t know if they are dumb as their statements make them appear – or, if instead, they are aware of the real facts and choose to deny them in an effort to promote their own commercial interests.

And what about my commercial interests? Well, as it happens – I do NOT make negative-only resistance machines either. Instead, I make negative and positive both machines – and the positive part of the work provided by such machines is of value, but not actually required for building strength or muscular size. Instead, the positive part of the work provided by my machines provides benefits primarily in the way of cardiovascular improvements in “condition.”

But, since my machines also provide negative work – they build muscular strength and size at the same time. So, from the above, it should now be obvious that it is of no particular advantage to me to point out the value of negative resistance – I have done so only and simply in an effort to make the truth as widely known as possible. Whether it turns out to be to my advantage or not.

While it is yet premature to even try to guess just what the final conclusions will prove to be in the obviously forthcoming “negative resistance vs. positive resistance controversy” – it is at least safe to say that the result-producing ability of negative-only resistance is FAR SUPERIOR to that of positive-only resistance.

How superior? We don’t know, yet – but it now appears that negative-only resistance is so productive that positive resistance may well prove of no value at all, or may even be counterproductive. Let me put that very plainly; I now feel that – given a choice of any or all or the three types of resistance, negative only, positive only, or negative and positive both – it might well be best to restrict your training to negative only.

AND – that adding any positive resistance, or performing normal negative and positive exercises, might actually reduce the production of results.

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BUT REMEMBER – by “results,” I mean results in the way of increases in muscular size and strength. And I repeat – normal negative-positive exercise will still be important for cardiovascular purposes.

Up to this point in time we have tried to restrict our experiments to exercises using as much weight as possible while still maintaining “control” – but, quite frankly, we still don’t know just what the actual amount of weight should be.

Perhaps we would produce even better results with less weight – but if so, then just how much less? We simply don’t know the answer to that question yet – nor do we know the answers to many other important questions. But in due course we will know – and when we do know, the information will be published as soon as possible.

We are seeking a “balance” that will produce maximum-possible results – a balance between intensity of work and amount of work.

If we increase the intensity by using more weight – then we are unavoidably increasing the amount of work at the same time; and since it is desirable to get maximum intensity with minimum amount of work we are in a somewhat paradoxical position.

For example ... If you curl a dumbbell “up” with your right hand, and if we arbitrarily call that 100 “units of work” – then you have performed 100 units of positive work. If you then curl the dumbbell “down” with the same hand, you will add another 14 units of work to the total of work involved in that repetition. So you have performed a total of 114 units of work in one repetition of a normal curl.

But if, instead you used a dumbbell that was exactly twice as heavy, and if you curled it “down” only – then your total of work would be far less, would be only 28 units of work. Less than twenty five per cent as much work as you performed in the normal up and down curl – EVEN THOUGH YOU USED TWICE AS MUCH WEIGHT in the negative-only curl.

But, from all present appearances, twice as much weight would be far too much in many (perhaps all) exercises. So if, instead, you reduced the weight to only one and half times your normal weight – then you would be performing only 21 units of work in the negative-only curl, approximately 18 per cent as much work as you performed in the normal curl with far less weight. Or if, instead, you used only twenty five per cent more than your normal weight – then you would be doing only 17.5 units of work, a bit over fifteen per cent of the work involved in the normal curl with less weight.

From the above few sentences it should now be obvious that reducing the amount of weight used, and thus the “intensity,” also reduced the “amount of work.” And common sense should thus make it obvious that we are reducing a “good” factor in order to reduce a “bad” factor – and that somewhere along the line there exists a balance between these two factors, a balance at which point maximum results will be produced.

Not knowing just where that point of balance is to be found, we started on the high end of the scale – where both intensity and amount of work were at or near their highest points. And while that may well prove later not to be the ideal balance point – it obviously is a major improvement over normal exercise; because, by comparison to normal exercises, the intensity is much higher and the amount of work is much lower.

Even using twice normal weight as a starting point, it is obvious that the intensity is at a level that is utterly impossible to reach during normal exercise – and that the amount of exercise has been reduced by more than 75 per cent. When the actually involved factors of exercise are understood – it is then undeniable and obvious that an enormous degree of improvement has resulted by totally avoiding the positive part of the exercises.

But if you still have any lingering doubts about just what the actually important factors in exercise really are, then try the following very simple experiment for yourself – after which, you will have no more doubts. On Monday of a particular week, walk a distance of ten miles on level ground – at a normal pace. At the end of your walk you will not be breathing hard, you won’t be very tired, and you could have continued for quite a great distance with little or no discomfort. The next day, on Tuesday of the same week, you will be fully rested and you could easily repeat the walk. And you won’t get sore as a result – and you won’t grow as a result.

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And you can repeat that walk every day for a week, for ten weeks, for a hundred weeks – and you still won't get sore, or grow.

Having thus convinced yourself that such a large "amount" of work is of little or no value insofar as building muscle is concerned, then try the following experiment ...

Instead of walking at a normal pace for ten miles, run full tilt for only one-tenth of a mile – with every step being a maximum-possible effort. Don't "pace" yourself – instead, run like a mad grizzly was after you. If you are still on your feet after such a run – which I doubt – you will then be in for a surprise. You will get sore, and you will grow as a result.

Why? Because, even though the run was far less insofar as "amount" was concerned – the "intensity" was far greater. The amount was reduced by exactly 99 per cent – you performed only one per cent as much work in the run as you did in the walk, but you worked HARDER, at a higher intensity.

And, as should be equally obvious – when you increase the intensity you literally MUST reduce the amount of work. If you think otherwise, then try running full tilt for ten miles.

But even though negative-only resistance is capable of giving you an intensity that is utterly impossible to produce in normal exercises, it does so without causing a racing pulse, and without making you gasp for air, and without even causing you to sweat very much.

Why? Because your breathing increases from exercise in proportion to the amount of exercise – and your circulation does precisely the same thing – and since the amount of work also determines the heat-rise involved, and thus the requirement for cooling by sweating – it thus logically follows that negative-only exercises do not make much in the way of a demand for increased circulation, or breathing, or sweating. It is, I think, about as close as you can get to a "no work" workout.

It also seems to be true that negative-only exercises make very little in the way of demands upon the overall "recovery ability" of the system as a whole – and thus you recover very rapidly from such work, and more reserve is available for quicker growth.

Now, all that apparently remains to be done is to determine just what balance is best for producing the greatest degree of results in the shortest period of time. At the moment we are using three weekly workouts of approximately twelve minutes each – thirty-six minutes of training weekly. But I suspect that this may actually prove to be too much.

Since speed is a factor of power, and since it is at least impractical if perhaps not quite impossible to measure the speed of movement involved in negative-only exercises with a degree of accuracy required for meaningful power calculations – we have not (not YET, anyway) totally eliminated positive exercises from our experiments.

Thus, at this point in our experiments, we are still using positive-resistance exercises as a means of measuring progress. But a word of warning ...

In such tests it is very easy to let the testing procedure itself affect the results. You must test to determine progress – but you must be very careful not to test too often or too much then it might be that the actual test exercises were producing the results themselves.

Many years ago, a famous strongman who found it convenient to deny that he was a weightlifter was called into court over his denials; and he told the judge that he was NOT a weightlifter, and never had been – his strength, he said, resulted from his "secret" training methods, which were for sale to anybody and were advertised in hundreds of magazines.

So the judge asked him if he ever used weights for any purpose ... even, perhaps, though he didn't call such use of weights "weightlifting."

He replied, "... well, I test my strength with weights."

The judge then asked him how often and how long he "tested his strength."

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And he said, “Oh, three or four times a week – for about two hours during each testing session.”

But he didn't call that weightlifting.

But being clearly aware of the fact that test procedures frequently do affect the results you are trying to measure – we are being careful to avoid such an outcome and the resultant error that would be introduced into our figures.

So, at the moment, we are using positive-negative (normal) exercises only once every three weeks – and are then performing only one set of each of a very few exercises. And, in general, these test exercises are movements that we are NOT doing in a negative-only form during the training sessions.

For example, we use the barbell full squat as a test exercise – we use a weight that we estimate will permit about ten repetitions, but then do as many as possible until failure. With no warm up of any kind, in perfect form, and all the way down. Then we use the resulting number of repetitions to judge progress since the last such test three weeks earlier. And, during the actual negative-only training, we do NOT do squats – nor anything anywhere like a squat.

We feel that one set of squats every three weeks will not do much in the way of building strength – so, if the trainee gets stronger between tests, it is then reasonable to assume that the strength increase resulted from the exercises we are testing rather than from the tests. But if we tested every week, for example, then the tests themselves might be building strength.

But, on the other hand, you must not space the test periods too far apart, either – if so, if you test only once each six months for example, then the trainee may simply “forget how” to do the movement and perform poorly as a result even though his actual strength might be greater. Or the trainee may lose confidence in his ability and perform poorly because he fails to really try. So tests must not be too often – nor too widely spaced.

Some time in the future we will try a program of two weekly workouts using negative-only resistance and one weekly workout using normal negative-positive exercises.

Since the normal workout would make far greater demands upon the overall system recovery ability, I would suggest that such a program should be outlined as follows ...

Perform negative-only workouts on Monday and Wednesday – then, on Friday, use the normal exercises. With that schedule, you will then have three days (72 hours) following the normal workout for system recovery.

And, your weekly performances during the normal workout would give you a regular check on your progress – although, since you would be using both types of exercise, it would be impossible to determine accurately just what the progress was due to. Or what to blame a lack of progress on.

Obviously, there are thousands of possible combinations – and we will never be able to test them all; so we must try to restrict our testing to the combinations that appear most promising.

For people who are interested in trying this system of training for themselves, I would suggest the following routine as a starting point ...

Pick ten or twelve basic exercises, using either Nautilus equipment or conventional equipment, or both. Perform only one set of each exercise, during each of three weekly workouts. Determine the starting weights by adding 25 per cent to the amount of weight that you can use for approximately ten normal repetitions in good form. For example, if you can perform nine or ten barbell curls with 100 pounds, then use 125 pounds for your negative-only workouts. Get two training partners to raise the weight into the top position of the curl – then perform only the “down” part of the movement, permitting the weight to slowly pull your arms down into the straight, low position.

Do not “stop” the movement, and do not try to reverse the movement – but control and slow the movement. A proper repetition should take about four or five seconds.

After a few repetitions you will find it impossible to stop the movement even if you try; and from that point until the end of the set, try to stop the movement and “hold” the weight motionless.

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BUT – do not “hold” too soon in the set; if you can hold, then you are trying to do so too early in the set.

When about ten repetitions have been performed, if the weight is right, you will find it impossible to properly control the weight – and that is your signal to stop, to end the set.

DO NOT CONTINUE TO A POINT WHERE THE WEIGHT IS YANKING YOUR ARMS STRAIGHT.

If you can “hold” then don’t do so – but try to hold after it becomes impossible to do so. And NEVER reverse the movement so that you are actually performing a “positive” (up) movement of the weight.

We may later change the above suggested form of training – but that is basically the way we are doing it at the present.

One problem with the above suggested manner of training rests in the fact that your helpers are doing positive work – so if three people work together on such a system, helping each other, then everybody is doing positive work while helping his training partners. Which problems can be avoided by having two people – two people who do not perform a negative-only style of training – give assistance to a third trainee who does not help them. But it isn’t easy to get people to help under such conditions.

And what effect does this discovery have on our equipment, or on conventional equipment? Not any, not the slightest. This style of training – regardless of how productive it proves to be – does NOT change the fact that other styles of training are also productive. The airplane did not invalidate the automobile.

And how does it relate to the differences between Nautilus equipment and conventional equipment? Not at all – because, regardless of the style of training, Nautilus equipment is still by far the best. You still need – and only with Nautilus equipment do you have – full range movements, direct movements, and automatically variable resistance. So Nautilus equipment retains its advantages over other equipment regardless of the style of training – while adding the great value of far greater safety, since you can’t go too slow, or drop the weight, or lose your balance and fall, etc.

So, just for the record – in an honest attempt to set the record straight and bring the full truth clearly into the open, regardless of what that truth proves to be – I will now offer the following suggestions as a means of determining the truth.

For a side bet of \$50,000 in cash, winner take all, I am prepared to test negative-only exercises against ANY other style or form of training under perfectly fair conditions, as follow... using the physiology department of a major university as judges, together with any reasonable number of other qualified judges that my competitors might wish to choose, we will conduct a 28-day test using a large number of test subjects, as many as possible but not less than fifty in each group.

If, for example, there are three competitors taking part, then we would use a total of 150 subjects, 50 in each group. The groups will be made up at random by drawing lots – and then I will give my competitors first choice of the group that they want to use, and I will use the group that they reject.

Each competitor will put up \$50,000 in cash, PLUS another \$10,000 which is to be equally divided among the trainees included in the winning group. Which should ensure enthusiastic cooperation on the part of all trainees – since a man in the winning group would stand to gain \$600 if his group produces the best results.

I will personally train my group three times weekly during each workout – ten minutes elapsed time, into the gym and back out again in less than ten minutes during each workout. A total of twelve workouts during a period of four weeks.

My competitors can train their people in any fashion they like – for the same period of time, and for an equal number of workouts.

Then after four weeks, we will judge the results – and publish them immediately, for all the world to see and judge. Complete with before and after measurements, strength tests, photographs, etc.

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I make only one demand – my competitors must be forbidden to use negative-only exercises. But they will be free to use positive-only workouts or normal negative and positive workouts, at their option. Which should be acceptable to my competitors, since they are the people who are claiming that negative resistance is “bad” – they should not object to avoiding something bad.

I will use Nautilus equipment only with my group – but my competitors can use any equipment they choose, including Nautilus equipment if they so desire.

And for those who think that I have set the stakes high in an effort to keep out people with little or no money, I will add that I will be willing for any poor would-be competitor to be involved with no stakes required. But since a lack of money is no one of the problems concerning the present promoters of positive-only exercise equipment – they should be anxious to prove the merit of their claims while picking up some of my money at the same time. IF THEY CAN.

And, after all, just think what an enormously valuable advertising claim they would have if they could prove me wrong and prove their own claims to be true. And, in fact, if their claims are true, then I would be glad to pay a mere \$60,000 to gain such knowledge – so I will actually gain whether I win or lose. Because, frankly, I don't really care just what the final truth turns out to be. And if I lose, I will be the first to loudly say so in person and in print.

And, if my competitors choose to decline, for whatever reason? Well, in that case, the tests will be conducted anyway – and the results will be published regardless of what they prove to be. But, then, if they are not personally involved, my competitors will afterwards claim that the tests were biased in my favor if I win. So I would prefer to have them involved just so they can't later claim “foul.”

If there is a reply to the above suggestion, I will request that Peary Rader publish it immediately in Ironman – and if there is no reply within a reasonable period of time, then readers can judge for themselves while awaiting the results of tests not involving my competitors but using the training methods they advocate.