

My First Half-Century in the Iron Game

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Even very hard physical work seldom produces much in the way of either great strength or large muscular size, regardless of just how much labor is performed. The probable cause of this is the fact that such work is usually performed in the easiest manner possible, and is seldom continued to a point of actual muscular failure.

Muscles respond, become larger and stronger, in response to demands that exceed the muscle's existing level of ability. You must ask the muscle to do something that is momentarily impossible. But this should not be done with a fresh muscle. If the resistance is selected properly, the first repetition of exercise should be fairly easy, the weight should feel relatively light; then, as the exercise is continued for several consecutive repetitions, following repetitions will feel harder, the weight will appear to be getting heavier. Which, of course, is not the case, the weight is the same during each repetition; will start to feel heavier during the later repetitions only because your fresh level of strength is being steadily reduced by fatigue. When you fail at the end of the exercise, cannot perform another repetition, the weight will feel very heavy indeed, but of course is still the same.

But, by trying to perform that "one more," momentarily impossible, repetition, you are asking the muscle for an impossible performance; a level of demand that is seldom placed upon a muscle during normal work. And the muscle will respond to this demand by becoming larger and stronger, if it can, if it has not already reached its maximum level of size or strength. But before it can respond to the demand, the muscle must be provided with a period of rest; first it must recover from the fatigue caused by the exercise, and then an additional amount of time is required for growth.

The ability to fully recover from the fatigue caused by hard exercise varies greatly from one person to another, some people return to a fresh level of strength within a matter of minutes following hard exercise, and some people do not fully recover for several days. Additional hard exercise that is performed before you have fully recovered from a previous workout will produce losses in size and strength rather than gains.

Having done no exercise for about two years, and being in terrible shape at the start, I started training again; in the first workout I selected 160 pounds as resistance for the bench press, and was able to perform ten repetitions with the weight; so, during the second workout I increased the resistance to 165, and again was able to get ten repetitions; then, during the third workout I increased the weight to 170 pounds, and again got ten repetitions; during the first fourteen workouts I increased the weight by five pounds each workout, and always got ten repetitions, never more and never less; during the fifteenth workout, having increased the weight to 230 pounds, I failed after nine repetitions. In the meantime I had added twenty pounds to my bodyweight, from 160 to 180, and had increased the size of my upper arms by two and a half inches, from 14 to 16.5 inches, which is an enormous increase.

The bench press never was one of my better exercises, the best I was ever able to do was nine repetitions in good form with 280 pounds; at a bodyweight of 205 with cold arms that were 17 1/8 inches in circumference. Which is approximately equal to a single maximum bench press of only about 336 pounds, which is not very good considering my bodyweight at the time.

The steady and rapid increases in size and strength mentioned above were made possible by the fact that I was rebuilding levels of size and strength that had resulted from earlier training, and because I had eventually learned to quit overtraining.

It was recently noted by somebody in the scientific community that growth occurs in very sudden spurts, a child may increase their height by as much as an inch overnight, literally in a few hours. I noticed the same thing in regard to gains in muscular size over thirty years ago; I have had my arms increased in size by a full inch from the time I went to bed at night until I got up the next morning, and while my increases in size had not always been that great, they have always been sudden, a matter of a few hours at most, and perhaps a matter of a few minutes, I was never able to determine just how much time was actually required for such spurts in size.

And an inch added to the circumference of a muscular arm, or even half an inch, is "a bunch."

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The largest muscular arm I ever measured was Sergio Oliva's after I trained him in 1971, it was 20 1/8 inches; if you will look at the following picture, taken by Inge Cook in DeLand, Florida, in 1971, you can see that the width of his arms exceeds the height of his head.

There have been, and continue to be, so many lies published about the size of arms that most people are utterly confused on the subject. A truly muscular arm in excess of 18 inches is rare, 19 inches is a freak, 20 or more is a giant.

While he was here in 1971, I showed Sergio a picture of John McWilliam's arm that was taken in 1939; Sergio looked at it, shook his head and said ... "That's too big."

I don't know the true size of that arm, but it was almost certainly the largest in the history of the world. McWilliams visited us a few years ago, then an old man, and Ellington Darden asked him what he did to produce such huge arms, and McWilliams said ... "praying and drinking large amounts of water." So now you know the "secret."

About twenty years ago, some guy wrote Iron Man and said he had discovered the reason for Samson's strength, a secret, he said, that he discovered in the Bible; Samson's strength resulted, he said, from eating about a half a gallon of honey for breakfast every morning. Peary Rader, the editor of Iron Man at the time, and a very religious man, published the letter, but added a comment to the effect that he believed that a quart of honey would be as good as half gallon. And was of course right, the result would be the same in either case, you would kill yourself if you managed to get it down and keep it down.

While not always so obviously crazy, a large part of the advice being published in this field today is equally stupid. Some times equally dangerous.

So, where can you go for meaningful advice? Lots of luck. I can perhaps help to point you in the right direction, and that is what I am trying to do. But I can actually teach you very little; anything that you learn will come almost entirely from your own trial and error experience. When you teach somebody to fly all you are actually doing is preventing them from killing themselves while they teach themselves to fly by trial and error based experience.

I can make you aware of many things, but may not always be able to make you believe them, and will seldom be able to make you actually understand them.

John Grimek is a friend of mine, and I have great respect for the man; for a period of more than twenty years he was considered to have the best physique that the world had ever seen, and it certainly was impressive. But some years ago he published a series of photographs showing the progress that he produced by seven years of steady training, and in my opinion his progress was pitiful; if I had grown that slowly I would have given up training in disgust.

When I did train, my rate of progress was always surprising to other people, but it always appeared much too slow to me. In 1947 I trained for a few weeks in a gym operated by Vic Tanny in Santa Monica, California, and then did not see or talk to Vic Tanny for nearly forty years; when we did meet again the first thing he said was that he had never seen anybody else gain as fast as I did, and that he had been telling people about it for years.



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The reason I left Santa Monica in 1947 was because I was not satisfied with my rate of progress, and had also reached the conclusion that nobody there was capable of teaching me anything of value.

Lots of opinions, but a very few facts.

Joe Gold was training there at the time, and when I started he was much bigger than I was, he called me “Midget” at the time, and I called him “Bullethead,” but a few weeks later he bought a new coat and I asked him to let me try it on, and he did, and I was unable to get my arm into the sleeve.

About ten years later, in the mid 1950s, he operated a gym for a while in New Orleans and I was then living in Slidell, about 35 miles away, but did not see Joe during that period; but I was then in the best shape of my life, he should have seen what

my arms looked like then. During the same period there was a man named Copeland living in the area, and he had by far the largest muscular arms that I had ever seen up to that time, easily in excess of 19 inches cold.

Red Lerille of Lafayette, Louisiana, (Mr. America of 1960) still remembers Copeland’s arms as well. But I don’t believe he ever competed, and I have never seen a picture of him.

I did not compete, seldom worked out in a commercial gym, did not associate with other people who were training, never wore short-sleeve shirts, and took very few pictures of myself; in those days, most people still believed that you were crazy if you lifted weights, so I went to great lengths to avoid any notice of my exercise. The picture above is one of the very few that were ever taken of me during a time that I was training, and I was a very long way from my peak at the time, then weighed only 172 pounds (having weighed 205 in muscular condition) and my arms measured only 15 5/8 (having been a full inch and a half larger when in my best shape); this picture was taken in Central Africa twenty-five years ago, and I have then been training for only a few weeks following a total layoff for a period of several years, I was already well into my forties.

Having built an exercise machine there, one of many that I had built all over the world during the preceding twenty years, the breakthrough that eventually lead to the development of Nautilus machines occurred; the solution to a problem that had been bothering me for many years suddenly came to me in the middle of the night. I suddenly realized that none of the exercises that in existence provided either direct or full-range resistance for the large muscles of the back, the latissimus muscles. All of the exercises for these muscles involved the hands and arms; proper exercise for these large muscles would required a source of resistance that was imposed against the elbows, with a movement that rotated around the axis of the shoulder joints, thus the first pullover machine was born, and that eventually lead to the development of many other machines.

Almost everything seems simple after the fact, but is not always so easy to understand in advance of a solution.

About fifteen years after the development of the first pullover machine, I designed the Nautilus Lower-Back machine, and at that time was sincerely convinced that it was by far the most important machine that I would ever design; but I was wrong, it is utterly worthless for its intended purpose, does absolutely nothing for the lower back. And the same thing applies to all of the later copies produced by other companies, they do not work as intended.

When that machine was first built I was clearly aware that it provided exercise for the muscles of the hips and thighs, the muscles that rotate the pelvis towards the rear around the axis of the hip joints, but I also believed that the machine provided productive exercise for the lower-back muscles. Years later, having designed and built a machine that totally isolates the muscles of the lower back, a machine that prevents any movement of the pelvis and thus removes the forces produced by hip and thigh muscles, and a machine that provided the first (and still the only) tool for meaningful testing

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of the strength of the lower back, we learned that even years of hard exercise on earlier machines would do nothing for the muscles of the lower back.

In October of 1987, at a medical meeting in New York where we were demonstrating the MedX Lumbar-extension machine, we tested the isolated strength of the lumbar muscles of a man named Gary Reinl, a man that I had known for many years. In spite of years of hard exercise, the strength of his lumbar muscles was very low; the same testing procedure also established the fact that he has a very high percentage of fast-twitch fibers in these muscles, and he produced a decidedly abnormal curve of full-range strength, which indicated some sort of lower-back pathology. A second test performed several hours later in order to determine his recover ability indicated a very slow rate of recovery; more than four hours after the first test he still showed great remaining fatigue from the earlier procedure, which is a clear indication that he has a very low tolerance for exercise.

I did not see him again for several years, and during that period he trained regularly with a Cybex lower-back machine, became very strong on the machine and was convinced that his lower-back strength was greatly increased; then he visited the School of Medicine of the University of Florida and his lower-back strength was tested again, and it turned out that his lower-back strength had been reduced by 22 percent below the level measured nearly four years earlier, and he still had the same abnormal strength curve.

Another year went by and he continued to train with the Cybex machine, and continued to get stronger on that machine, then he returned to Florida and was tested again; his strength was unchanged, neither up nor down, his test results were practically identical to those of a year earlier. His exercise with the Cybex so-called lower-back machine had greatly increased the strength of his buttocks muscles and his hamstring muscles, but did not even prevent a continued loss of lower-back strength.

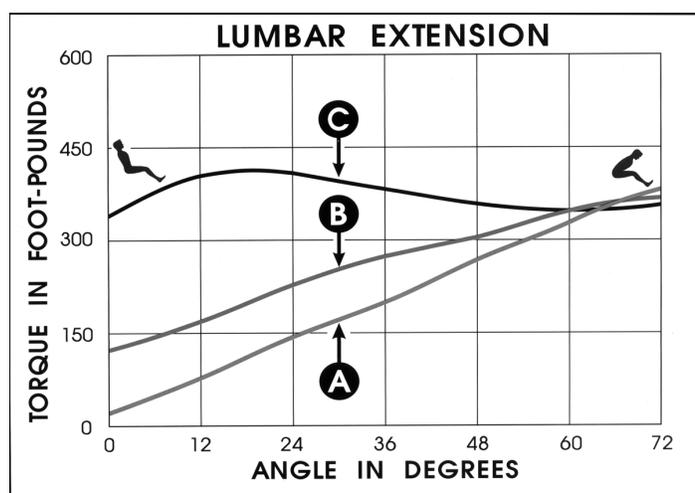
But research performed with several large groups of subjects had already proven that most of the exercises being used for the lower back are simply worthless for their intended purpose; one large group was tested for their lower-back strength at the start of the research and again after twelve weeks, and in the meantime they performed no exercise of any kind, this was the so-called "control" group; a second group was tested in the same way and then exercised with a Cybex lower-back machine for twelve weeks, and their lower-back strength remained unchanged; a third group exercised with a Nautilus lower-back machine for twelve weeks, and their lower-back strength also remained unchanged; a fourth group that exercised with a MedX Lumbar-extension machine produced enormous increases in lower-back strength.

We have tested the fresh level of lower-back strength and then immediately worked the subject to a point of failure on a Nautilus lower-back machine, and then immediately retested their strength following the exercise, and there is no change in fresh strength, no fatigue from the exercise in the lower-back muscles, all of the work was performed by hip and thigh muscles.

The only conventional exercise that seems to have any effect on the muscles of the lower back is the so-called "Hyper-extension," but increases in lower-back strength coming from this exercise are primarily limited to the more extended part of a full-range movement.

We have also found that people involved in water-ski activities are usually very strong in the extended part of a full range of movement, but have only an average level of lower-back strength throughout the rest of a full range, and "average" strength in these muscles is very low.

The chart on the next page shows the isolated strength of the lower-back muscles of three men who had never performed specific exercise for these muscles; on the right side of the chart, showing strength in the flexed position, their strength was almost exactly the same in all three cases, and was also identical to the "average" strength of a previously untrained man. But look at the difference in strength in the more extended part of a full-range movement. On the left side of the chart, in the fully-extended position, subject A could produce only 26 foot-pounds of torque; in the same position subject B produced nearly five times as much, 125 foot-pounds of torque; and subject C was much stronger than the other two men in the more extended part of the full-range movement; his unusually high strength in those positions was a result of the fact that he had been a water-skier for thirty-five years, and his spine had reached a high level of strength



in the worked position, but this did nothing for his strength in the flexed position.

Ten weeks later, following only five sessions of brief isolated exercise for these muscles, subject C had increased his strength by 60 percent in the flexed position, by 33 percent in the fully-extended position, and by 22 percent in a position twenty degrees forward from full extension, his initially strongest position; in the meantime his dynamic strength increased from an initial 15 repetitions with 175 pounds of resistance to 15 repetitions with 280 pounds, an increase of 60 percent in dynamic strength. From only five exercises.

Subject B increased his strength in the fully-extended position by 180 percent as a result of

only ten exercises performed at weekly intervals.

Subject A was tested during a brief visit to Florida from his home in Philadelphia and was not available for later exercise or testing; but his very low level of strength in the extended position gave him the potential for enormous increases in strength in that position; trained with specific exercise for a few weeks he would probably increase his strength in the extended position by at least 1,500 percent.

During the last part of 1985 and the first part of 1986, for a period of more than eight months, we held medical seminars on my farm in Ocala, Florida, on a daily basis, seven days a week, a total of more than 240 such seminars, with an attendance of several thousand medical professionals who were interested in rehabilitation. These people were flown in from all over the eastern half of the country in a fleet of private jets that I owned at the time, the planes landing on my private runway, which happens to be one of the largest runways in the world. It is not the longest runway in the world, being 1.43 miles in length, but it is the widest runway in the world, as much as 590 feet in places, so the square feet of its surface, the acres covered with pavement, may make it the largest runway in the world. The paving in the runway is equivalent to more than 80 miles of super highway, considering length, width and thickness. In 1984 we landed one of my big jets there with 63 elephants on board, following a nonstop flight from an island off the coast of west Africa.

Using my airplanes, my runway, and a huge building built for that purpose these daily seminars started early each morning and lasted until after dark, and then the jets took all of the people back to wherever they came from earlier that same day, each seminar lasting about ten hours.

None of our current line of testing or rehabilitative-exercise machines then existed, but we did have a number of earlier prototype machines and we performed tests on most of the people who attended these seminars; several thousand people having been tested during this period, almost all of which involved tests of knee function. It was at one of those seminars that we tested the power lifter, Fred Hatfield, and found that his quadriceps strength was very low (a point covered in an earlier article).

While all of the kinks in our then-existing knee-testing machine had not been solved, the machines that were available were far better than anything else at the time (not good enough to sell, but way ahead of any competition), and we discovered a number of important things during all of this large-scale testing. By comparing fresh level of strength to the remaining level of strength following a hard exercise we could determine fiber type of the involved muscles; largely fast-twitch subjects showed a very high level of fatigue from hard exercise, while largely slow-twitch subjects showed little or no fatigue after a hard exercise.

We also discovered that most people could be divided in to one of only two categories, Type S (for specific), or Type G (for general); in their quadriceps muscles most people show fatigue from the exercise only within the worked range of movement, and no fatigue in the unworked range. But some people show a Type G response, will produce fatigue throughout a full range of movement even when exercised with limited-range movement.

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The strength curve of the water skier shown above clearly demonstrates a Type S response to a limited-range exercise; he became very strong in the position where he worked, but this did not carry over to other positions.

Subject A was also a Type S subject, average strength in the flexed position, but much weaker than Subject B in the extended position.

All of which clearly establishes the need for full-range exercise; but, as it happens, most of the exercises being used today provide only limited-range resistance; a barbell curl, for example, provides no resistance at the start of a movement and no resistance during the last part of a full-range movement. Which means that part of the muscle being worked hard, and will become stronger, but also means that other parts of the same muscle are not being worked at all and will not become stronger.

People who have trained only with barbells, when first exposed to exercise that does provide full-range work for the muscles that bend your arm, will always be surprised to find that they are actually quite weak in the last part of a full-range movement; very strong up to a point in the movement, but weak beyond that point, and this is true regardless of the size of their arms. I used to enjoy demonstrating the fact that I could curl more weight with only one arm than men with far larger arms could curl with both arms working together; they were probably far stronger than I was in some positions, but I was much stronger near the fully-flexed position.

But I have always been much stronger than average in curling exercises, once performed nine repetitions with 165 pounds curling the weight in a very strict form without jerking or swinging the barbell.

In 1960, Bill Pearl played a part in a feature film that I produced in Slidell, Louisiana, and he stayed in my home while working in this film. At the time he weighed 222 pounds in lean condition and his largest arm was 18 5/8 inches cold, while his straight forearm measured 13.5 inches.

I was in terrible condition at the time, weighed 160 pounds with a 14 inch upper arm and a 12 inch forearm; was not, at the time, much of an advertisement for the benefits of exercise.

I had not been using them for about three years but I had an Olympic barbell, a heavy bench, a squat rack, a chinning bar and a set of parallel bars for dipping exercises; all of this equipment being in my house. Bill used this equipment to train with while staying with me, the closest gym being too far away to be practical.

Shortly after he arrived, I raised the subject of exercise with Bill, but he immediately got a very glassy-eyed look on his face, so I dropped the subject and kept my opinions to myself. But I could not control myself totally, simply could not resist demonstrating that I could wrist curl far more than he could. His upper arms, at the time, were an inch and a half (which is a lot) bigger than my arms have ever been, but his forearms, at 13.5 inches, were only 1/8 inch larger than mine have been.

My calves were almost as large as his, in spite of my low bodyweight at the time and no exercise for several years. I have never worked my calves very much, if I do they get too big; yet many people seem to have a hard time increasing the size of their calves, and when this is the case it is usually a genetic factor that cannot be corrected. People with long calf muscles and short tendons find it easy to build big calves; but if you have short calf muscles and long tendons then you will never be able to build big calves. Bigger, perhaps, but not truly "big."

The relative length of your muscles compared to your tendons determines your potential for muscular size; longer than usual muscles can become much larger than shorter than usual muscles. In a later article I will return to this point with pictures showing how to determine the relative lengths of your muscles and your tendons; which information will tell you what results you can reasonably hope to produce as a result of exercise. Sergio Oliva's almost unbelievable physique was a result of the fact that every muscle in his body is unusually long. Most Blacks have relatively small calf muscles, because they usually have short calf muscles and long tendons, but even Sergio's calf muscles are long; his forearm muscles run clear down to his hands, with very short tendons, which is why his forearms are so huge.

Remember, since some can and some cannot; most can meaningfully improve, but not everybody can improve to the same degree.