

My First Half-Century in the Iron Game

Testing Strength: Part Two

Almost all of the supposed scientific theories on the subject of muscular functions that have been proposed during this century, many of which theories have been so well publicized that they are now accepted as established fact by almost everybody with an interest in this field, were initially formulated upon quoted test results that were nothing short of insanity, or worse, worse when they were based upon outright lies, as they were in the case of a published report of a research program that in fact was never conducted, the paper co-authored by Pipes and Wilmore. That utterly phony report supposedly “proved” the “superiority” of an isokinetic form of exercise, and has been widely accepted as fact by most people in spite of the fact that it was eventually exposed as an outright fraud.

As Hitler (or somebody else?) once said . . . “If a lie is told often enough it eventually becomes accepted as the truth.”

The outright myth of isokinetics has now been so widely touted by Cybex Corporation, and by many people who were stupid enough to believe their lies, that it is now almost impossible to meaningfully communicate with many of the thousands of people who have become “true believers” of the isokinetics myth; trying to tell such people the truth is about as easy as it is to convert a firm believer in any religion. Having believed the lies put out by Cybex so long, such people apparently cannot bring themselves to admit that they have been so stupid.

One very unfortunate result of this situation is the fact that many of the currently-held theories on the subjects of exercise and muscular functions are based upon supposedly scientific, but in fact utterly stupid, research that was performed with Cybex machines. The only thing that Cybex tests are capable of proving is the fact that anybody using such machines is ignorant at best or stupid at worst.

The accuracy of a scale can be established, or refuted, in a very simple manner: by placing a known weight upon the scale and then taking note of the test results shown by the scale. And the accuracy of a Cybex machine can be evaluated in an identical fashion. Cybex machines are supposed to measure the output of torque produced by the force of muscular contraction and, secondly, are supposed to show the positions of the involved joint in which the output of torque was measured, this second consideration being important since changes in joint position produce changes in strength.

But that is what Cybex machines are “supposed to do,” and what their makers claim they do. But, as it happens, there are claims that can be proven or refuted in a very simple manner: impose a known level of torque on a Cybex machine and permit it to move through a known range of movement, so that you have a known “input,” and then compare that to the “output” indicated by the machine’s test results. The following three illustrations were produced by conducting such a test with a Cybex machine. Having carefully studied these three illustrations, if you still believe in Cybex testing, or any theories based upon it, then don’t bother to read the rest of this chapter because you are simply too stupid to understand literally anything. Or, better yet, convert all your assets to cash, bring it to Florida and give it to me, and in exchange I will give you a deed to a bridge in Brooklyn.

In addition to misleading test results, any dynamic mode of testing unavoidably exposes the subject to high levels of impact force; a subject may produce only 100 pounds of force but be exposed to 500 pounds of force, or more.

With static testing, the force actually produced is almost always the same as the force imposed upon the subject. Some low level of impact force is unavoidable even in static tests; but if static tests are properly performed, the imposed force should not be more than one or two percent above the force produced by the subject. During rehabilitation, dealing as you usually are with an already damaged joint, the last thing you should be doing is imposing high levels of unrequired force during either testing or exercise . . . on the contrary, force should be as low as possible consistent with the requirements; if not, you may determine the limits of structural strength by producing an injury.

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Using an isokinetic machine (Cybex), if a known level of 100 foot-pounds of torque was imposed, and if the machine moved through a range of 90 degrees, this is the exact curve of torque that should be recorded. (see fig. 1)

But when a known torque was imposed upon a Cybex isokinetic machine, and permitted to move through a range of 90 degrees, this is the actual result (fig. 2). This is not a measurement of torque, instead shows the results of impact force produced by the rapidly changing speed of the machine. This machine does not, as is claimed, provide constant speed of movement; instead, the speed varies by several hundred percent, from far below the selected speed to far above the selected speed; with the resulting impact forces recorded here.

In figure 3, electronic damping of the force measurements distorts the actual test result until it looks like the curve shown here; with no relationship to either what should have happened (Figure 1) or what did happen (Figure 2), and the actual range of 90 degrees was changed to an indicated range of 183 degrees. These examples were produced by tests with a Cybex isokinetic machine; and several studies have been published in a number of scientific journals during the last few years showing similar results.

The actually very simple facts clearly demonstrated by the above illustrations do not require a degree in nuclear physics for you to understand them; but perhaps you may find it difficult to understand just why so many thousands of supposedly-educated people have been dumb enough to accept such test results: people who continue to believe in Cybex testing, or any form of isokinetic testing, are stupid. Not ignorant, stupid. Ignorance is merely lack of knowledge, and we are all guilty of that to at least some degree, but ignorance can be corrected; while, in contrast, stupidity goes all the way to the bone, cannot be corrected.

Nevertheless, the outright myth of isokinetics is so well established, and so generally accepted, that it is now being taught as fact in most, perhaps all, of the schools now doing what they call "educating" physical therapists, as well as in a large number of medical schools. The inevitable result being that almost all of the students of such schools go away believing something that is not only utterly false but is downright dangerous.

fig. 1

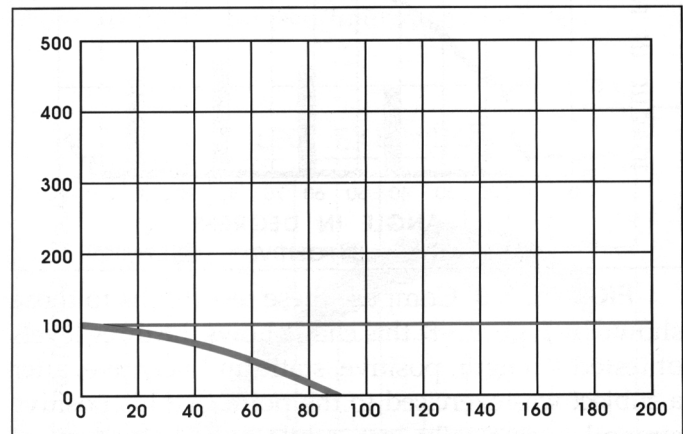


fig. 2

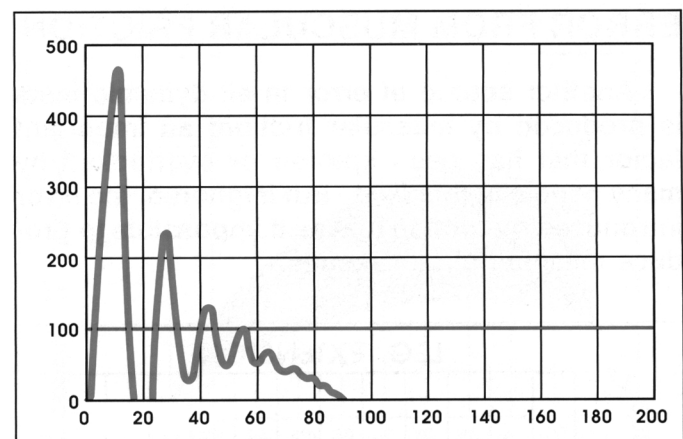
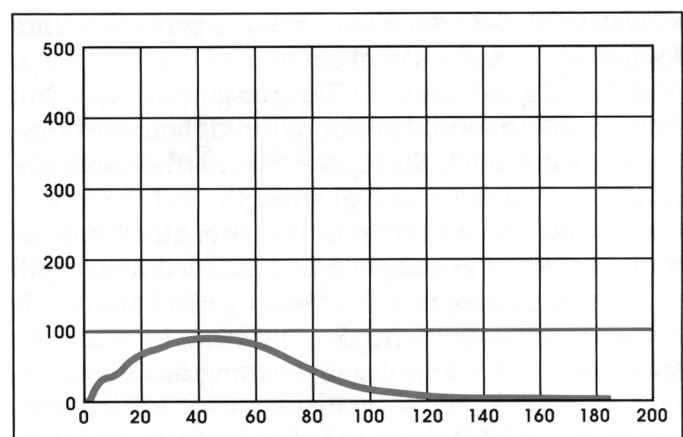


fig. 3



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A few years ago, Cybex published a large ad which stated that “more than 700 scientific studies have been conducted with Cybex machines and their results have been published in scientific journals”, . . . and, if true, as it may well be, all that was proven was the fact that everybody associated with any of those studies was utterly stupid. Who but an idiot would conduct research with a tool that cannot perform any of its intended functions? Actions that make as much sense as trying to weight yourself on your typewriter, or writing a letter on your bathroom scale.

The test results produced by any form of dynamic (moving) test procedure are biased by stored energy, by gravity acting upon the mass of the involved bodyparts, by internal muscular friction (which the supposed “experts” are not only unaware of but even deny) and, of course, are also biased by the impact forces illustrated above. All of which makes as much sense as trying to build a car without wheels, engine, or any of the other required parts, none.

It took us more than fourteen years of continuous research and development to produce the first tool that was capable of providing meaningful and accurate tests of strength, a very lengthy period of developmental work that resulted primarily from the fact that nobody was even aware of the requirements for meaningful strength tests at the start; and, believe me, it is very difficult to solve problems that you are not even aware of. Throughout those long years of research, being clearly aware that nobody, including us, could conduct meaningful strength tests, I was constantly irritated by the fact that people like those from Cybex were claiming to be able to do things that we knew were then impossible. And, worse than that, that thousands of people believed these phony claims.

With very few exceptions, and not even one significant exception that I am aware of, by far the majority of the currently-accepted theories on the subject of muscular function are based upon nothing apart from pure speculation, outright guesswork; primarily, I believe, because the authors of these theories were speculating about things that they could not measure; or, worse, based their theories upon test results produced by Cybex machines and were dumb enough to believe that such test results actually had some value.

Thus we have thousands of people believing that they are experts in a field about which they actually know less than nothing, many of which people are devoting their efforts in the direction of stuffing the heads of thousands of students with outright foolishness. So the rot is spreading,. And has already spread to such an extent that you can be sure that anybody with a degree in exercise physiology has learned very little, if literally anything, of value.

As I have stated previously, most of the utterly stupid theories that are accepted as fact by almost everybody are direct results of the fact that self-proclaimed “experts” who came up with these harebrained ideas reached their conclusions based upon nothing apart from pure speculation; in a very real sense, these crackpots were almost forced to deal strictly on a basis of speculation, because they were considering things that they could not measure, and thus things that they could neither evaluate nor understand.

If, which I doubt, there is ever a return to anything close to sanity in this country, somewhere in the distant future at least a few people may look back and wonder just how people in these times could have been so stupid; but, given the current direction in which the educational system is steadily moving, rapidly downhill, there is probably little reason for hope that things will ever improve.

Nearly thirty years ago, when the utterly stupid theories upon which so-called isokinetic forms of exercise and testing were first suggested by Cybex, the machines then being used had no negative, or, as the self-proclaimed “experts” insist upon calling it, eccentric, resistance; both exercise and testing procedures involved “positive only” work; that is, there was resistance against movement only when a muscle was contracting, and no resistance when a muscle was lengthening. Well, as it happens, there are damned few, if any, human activities that involve only positive work, and, apart from isokinetic exercises, no exercises that involve only positive work. Nevertheless, the Cybex people immediately started beating the propaganda drums in attempts to convince the great unwashed that negative work of any kind was bad, downright evil, dangerous, of no value, to be avoided like the plague, etc. Having no negative work themselves, perhaps they were afraid that somebody might notice this and mention it in print, so they went to great lengths to convince everybody that one of their major shortcomings was some sort of an advantage; and, guess what, millions of people were stupid enough to believe them. One physical therapist, a man who should be confined in a mental institution, or perhaps burned at the stake, stated, in an ad featured by Cybex that . . . “I refuse to expose my patients to the dangers of negatives.”

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Well, as it happens, if you remove all of the negative work from exercise, as Cybex did, you have not improved the exercise, you have, instead, removed almost all of the potential value; pure negative work, “negative only” exercise, where no positive work is involved, is probably the most productive style of exercise, but it is, unfortunately, not a very practical style of exercise because it usually requires help.

Assuming that you are dealing with a fresh muscle, any fresh muscle, then you will find that your negative strength is about 40 percent higher than your simultaneously coexisting level of positive strength; and while many people have been aware of this difference for many years, not a single scientist on planet Earth was smart enough to figure out just why this was true, and damned few, if literally any of them, understand the reason for this relationship even now, more than twenty years after I clearly explained a situation that is so simple that it should be obvious to everybody: your negative strength is higher than your positive strength because the friction in your muscles helps you during negative work but hurts you during positive work. An opinion? No, a simple fact of basic physics. Yet, in general, the members of the scientific community are not even aware that muscles have friction, and certainly do not even suspect its effects even though they encounter these effects every day of their lives. Everything in the universe that has mass and motion has friction, and muscles are no exception.

About twenty years ago, in *IronMan* magazine, I published an article entitled “Accentuate the Negative,” and then, a couple of years later, in the *Athletic Journal*, I published an article entitled “The Metabolic Cost of Negative Work,” and, since then, I have published several books and more than a hundred articles that clearly spelled out the facts concerned in the case of muscular friction as it relates to muscular function; yet, in the supposedly scientific literature, the subject is still being ignored, is not mentioned and obviously is not understood by any of the supposedly scientific authors. Whether it is a car, an airplane, a fish or a muscle, everything in the universe that has mass and motion also has friction, and the effects are identical in all cases: friction limits and reduces positive function while enhancing, adding to negative function. With a car, the friction limits both your acceleration and top speed, but helps you to stop, and exactly the same thing happens in a muscle. And this is not “rocket science” that requires the brain of a genius to understand, is, instead, basic physics at about a third grade of grammar-school level. Attempting to deny this simple fact is equivalent to trying to deny the existence of gravity; and failing to understand and consider the effects of friction in muscles makes it impossible to understand muscular function.

Another very simple fact that is still being ignored by the scientists, primarily because they are not even aware of it, is the effect of stored energy: if you took the dead body of a large man, put his corpse into a MedX Lumbar-extension machine, turned the machine on its side so that the effect of gravity acting upon the mass of his upper-body structures was removed, pulled him forward into a position of full flexion of the torso and locked him into that position, you would find that the testing machine would indicate that he was producing as much as 300 foot-pounds of torque, which is more torque than most car engines can produce. And, since the man was dead, it should be obvious even to a scientist that the torque being produced did not result from the force of muscular contraction, was, in fact, being produced by stored energy, which stored energy in turn resulted from compression and stretching of soft tissues in the subject’s body. Thus, testing lower-back strength while ignoring the effect of stored energy would unavoidably lead to an overstatement of the actual level of muscular strength. Apart from what I have published on the subject, I have seen only one mention of stored energy, and that less than a month ago.

Meaningful and accurate tests of strength can be conducted in only one way, not “the best” way but literally the “only” way, and if you believe otherwise then you are, at best, ignorant, uninformed or misinformed. **FIRST**, you must have a machine that provides total isolation of the joint involved in the testing, and if not then you cannot determine just which muscles are being tested; **SECOND**, tests must be performed in a static fashion in several positions throughout a full range of possible movement, this being essential in order to avoid the misleading effects of muscular friction that unavoidably bias and distort all dynamic testing procedures; **THIRD**, you must be able to determine the exact position in which each of the tests was conducted, because even a very slight change in joint position will change the output of measured torque; **FOURTH**, if a vertical component of movement, or potential movement, is involved, then you must compensate for the effect of gravity acting upon the mass of the involved bodypart by providing careful counterweighting; **FIFTH**, in each tested position you must measure the level of nonmuscular torque produced by stored energy and then factor those numbers into the levels of total torque that is measured. Having done all of those things, then you have the

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capability of conducting meaningful and accurate tests of muscular strength; such tests being possible only with MedX equipment. Everybody else selling testing machines simply ignores all of the actual requirement for meaningful testing, and thus their test results are pure garbage. Garbage that, in general, the scientists have swallowed hook, line and sinker. Today, in this country at least, science has far more in common with a religion than it does with actual science; the scientists are now the priests of this new religion, but are far worse than the older priests of the earlier religions, people who were, at least, sincere in their error. When these people burned you at the stake for heresy, they were doing it for the good of your immortal soul. Sure. Today, we would be a lot better off if we burned them at the stake.

So, believe whomever you like, do whatever you feel like; personally, as Rhett Butler said in *Gone With The Wind* . . .
“Frankly, my dear, I don’t give a damn.”