My First Half-Century in the Iron Game

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"Function dictates design;" or "Form follows function;" or, as somebody once said . . . "There is only one way to build a wolf; and if it performs like a wolf then it will look like a wolf."

Which, among other things, means that there is nothing accidental about the way your muscles and joints are designed; they have a certain shape because that shape is required for their intended functions. Disregarding the bones of the neck for the moment, a careful examination of the vertebral bodies in the spine starting at the top with T-1 and ending at the bottom with L-5 demonstrates clearly that spinal function is not constant from top to bottom. Rotational movement in a vertical plane is almost entirely restricted to the portion of the spine above T-11; below that point, such rotation is prevented by the interlocking design of the spinal facets. The lumbar part of the spine, together with T-11 and T-12, cannot rotate in that plane; any meaningful movement of that sort would destroy the spinal facets, their design being intended to prevent such movement.

For that reason, we have always cautioned against any attempt to stretch in that plane of movement; when you reach the end of a possible range of movement in that plane, while twisting or rotating the torso, it is impossible to determine just why additional movement cannot occur; and it could be that you have reached a limit determined by the design of the bones, and thus an attempt to increase the range of movement by stretching might damage the spinal facets.

For the same reason, the MedX Medical machine designed for testing and exercising the muscles that rotate the torso, the MedX Torso-rotation machine, is designed in such a manner that the range of possible movement can be limited to any desired range; thus there is never any danger from movement carried too far.

Nevertheless, while avoiding any stretching in this movement like the plague, we found that people who use the machine generally increased their range of possible movement, became more flexible. Which, initially, surprised us; which result we did not understand.

But now we do understand it. With many people, their initial range of movement is limited in this plane not by the bones but by the effect of stored energy. When you twist your torso you are compressing the soft tissue on one side of your body while stretching the soft tissue on the other side of the body, which compression and stretching produces "stored energy;" stored energy that will then produce torque that will try to twist your body back towards the neutral, relaxed, straight-ahead position. And the farther you twist your body, the greater the resulting level of stored energy.

Thus, when the level of torque from stored energy becomes as high as the torque from the force of muscular contraction, additional movement is then impossible. But, later, as you become stronger from the exercise, it then becomes possible to move farther in that direction. Many subjects, even those with a normal full range of movement in this plane, 120 degrees of rotational movement, 60 degrees to either side of neutral, when tested for strength in their weakest position, will produce ZERO torque, indicating that they have no strength in that position. But such test results occur only when you ignore the torque from stored energy. This occurs when the torque from muscular force of contraction is exactly equal to the torque from stored energy that is acting in an opposite direction. The "true" level of strength, NET MUSCULAR TORQUE, NMT, may be 50 foot-pounds, but if torque from stored energy is also 50 foot-pounds, then the output of measured total torque will be ZERO. 50 minus 50 is ZERO.

Therefore, obviously, it is impossible to produce an accurate test of muscular strength if you ignore stored energy. Stored energy cannot be avoided, cannot be removed, but it must be considered for any meaningful test of strength; MedX machines compensate for torque from stored energy by measuring it and factoring it into the test results. Which measurements can only be provided when using a static testing procedure.

In a test of torso-rotation, stored-energy torque overstates your true level of strength in the first half of a full-range movement and understates true strength in the second half of the movement, You might, for example, produce 200 foot-pounds of total torque in your strongest position, but that level is probably overstated by about 50 foot-pounds of torque from stored energy, thereby making it appear that you are 33 percent stronger in that position than you actually

are. Whereas, in your weakest position, you might produce only 1 foot-pound of total torque; but, again, that is meaningless, because, in that position, your true level of strength might be understated by 50 foot-pounds of torque from stored energy. In which case your true level of strength would be 51 foot-pounds of torque.

Thus, if stored-energy torque is ignored, it would appear that your strength in your strongest position (200) was two-hundred times as high as it was in your weakest position (1); when, in fact, your highest level would be slightly less than three times as high as your weakest level (150 vs. 51). Or if, as commonly happens. your indicated strength, ignoring stored energy, was ZERO, then it would appear that your ratio from highest to lowest levels was literally infinite.

But, until MedX equipment came upon the scene nine years ago, such things as stored energy torque were totally ignored by the scientific community, were not even suspected, and are still being ignored during most of the supposedly scientific strength research that is being conducted.

Which is only one important factor that has been, and is being, ignored by almost all of the current scientists, and which explains just why their conclusions and suggestions are so consistently stupid. But, not to worry, Joe Weider can provide the solution to all of your problems; or, if not, he will at least tell you some interesting lies.

Another self-proclaimed "expert" on the current scene, so-called "Dr. Squat," Fred Hatfield,. visited us more than nine years ago while he was working for Weider. While here, we tested his full-range quadriceps strength, and he was literally stunned by the results; it turned out that he was far below average strength in his quadriceps, we have tested more than a hundred women who weighed less than half of his 260 pounds and yet were stronger in the quadriceps than he was. The chart on page 558 shows a comparison of Fred's quadriceps strength to that of two other of our research subjects; Fred's strength is shown by the lowest curve on this chart.

Having seen his results, Fred insisted upon being retested the next day, but I told him . . . "Look, Fred, if twenty years of training has not done it, then 24 hours damned sure won't do it." And, of course, when retested the next day, his results were identical.

How, then, with such weak quads, can he squat with 1,000 pounds? Because the quads have very little to do with squatting strength; most of which comes from your buttocks, your hamstrings and your lower back. Which, in his case, obviously are not weak.

It should be noted, however, that such weak quads are no reflection on Fred; his quads are so weak because of their fiber type, it appears that he has only slow-twitch fibers in these muscles, has enormous endurance but very little strength in his quads. Which is a genetic factor that cannot be altered by training.

And, be informed, fiber type is not consistent throughout your body; you may have largely, or entirely, slow-twitch fibers in one muscle and largely fast-twitch fibers in another muscle. But it does not appear that anybody has only fast-twitch fibers in any muscle.

AGAIN: "what you can be" was determined before you were born, while "what you will be" can be influenced by training, within the limits dictated by your genetic potential.