

# Original Sin, Vacillations on Full-Range Exercise, and Misadventures with Acceleration

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## Prologue

I am republishing my favorite articles from the SuperSlow Exercise Guild Newsletters and posting them on [seriousexercise.com](http://seriousexercise.com). Only a few hundred people—mostly those members of the now defunct SuperSlow Guild—have ever read these. I believe that they provide an important historical perspective on both the good and bad foundations of Nautilus under the direction of Arthur Jones.

The following was published in 1998. It is now November 2018. Herein, I have included a few details left out of the original version. I have also deleted some extraneous information.

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Since 1989, I have alluded to the existence of a missing chapter from the *SuperSlow Technical Manual*. Only a few friends and Masters have seen this material. It was originally excluded from the *Technical Manual* at the request of two close and common associates whose relationship with Arthur Jones was at risk. As some time has passed, I also deemed it better suited to this newsletter than to the *Technical Manual*.

## Original Sin

In the early 1970s, Nautilus Sports/Medical Industries was a fledgling company. It could ill-afford risky advertising campaigns costing over \$25,000. It was during this era that Nautilus produced one of its first product catalogs, complete with pictures, prices, and explanations.

[The monies and copy quantities involved in this narrative are merely estimates based on reference from

Ed Farnham—Nautilus general manager from 1974 to 1986 and present at Nautilus headquarters from 1972 to 1987. Since such numbers are relative to the size of the business, their accuracy is not integral to the story's meaning. —K.H.]

Once photography, copy, and final editing were finished, 20,000 copies were printed. Now ready for distribution, Arthur Jones interceded, withdrew the catalog, and forbade its use.

Arthur had his reasons for censoring the catalogs. He blamed Ed Farnham for a copy and editing mistake. This mistake placed Arthur's personal integrity at risk as well as the ethical image of the company. To salvage face, Arthur forfeited his entire catalog investment and trashed the catalog—surreptitiously saved by his employees until the company moved in 1987.

Although Arthur's personal and business integrity—in Farnham's words—"often came at a high price"—even to himself—the offending mistake was a subtle matter. The actual discrepancy was the juxtaposition of a picture of a Nautilus Torso Arm machine with the common slogan in those days:

Nautilus: The Only Source of Full-Range  
Exercise.

To qualify as *full-range* an exercise must include all ten requirements for full-range exercise. Since they do not possess rotary-form movement—one of the ten requirements—compound movements do not qualify. The Nautilus Torso Arm machine is a pull-down exercise—a compound, linear-form (non rotary form) movement, therefore not full-range.

Arthur felt that the copy and picture juxtaposition implied a statement to the effect that, “the Torso Arm provided full-range resistance.”

Arthur was sorely disappointed that Ed and his staff did not appreciate compound movements as impossibly full-range. He was angry that the manager was insensitive to the ramifications of the misrepresentation.

Subsequently, Arthur refused to ever permit Ed's expression regarding full-range without his condescending interjections of Ed's dubious competency. As the opportunity arose for following decade or so, Arthur pointedly remarked to the effect that: “Since an understanding of full-range resistance is not one of your talents; and I seem to be the only one who understands it . . .” Arthur made it forever impossible for Ed or his staff to compensate for their alleged oversight in the original Nautilus catalog.

I know Ed Farnham as well as I know anyone. And I can tell you with certainty that Ed understood Full-Range Exercise as well as any one on the planet. In fact, Ed is a great and creative teacher of the subject. He and I engaged in many intuitive discussions regarding its application over a span of several years.

[Please read the primer on *The Ten Requirements of Full-Range Exercise* by Ken Hutchins and posted on [seriousexercise.com](http://seriousexercise.com). For now, realize that most of these requirements are unfounded.]

## The DuoSquat Compromise

In 1982, Arthur perfected the Nautilus DuoSquat machine to his satisfaction. Problems with its design were mostly resolved by the incorporation of the negative cam.

For the unveiling of the DuoSquat, Arthur held a mandatory meeting of all salesmen and distributors. I attended. There, Arthur remarked that the negative cam provided full-range resistance during the DuoSquat—a compound movement.

Kim Wood—manager of the Nautilus Midwest distributorship—begged Arthur to explain how the DuoSquat now qualified as full-range, since it did not provide for a rotary-form movement.

Kim Wood not only managed the largest and most

profitable distributorship for Nautilus, but he ran its own truck line for delivery, an asset not with any other distributorship. This gave him awesome inside influence with Arthur.

Also, Kim was a really sharp guy who understood the Nautilus exercise principles fluently and intuitively. What's more, Kim had incredible chutzpah—enough to confront Arthur on his level of nerve.

I sensed what Kim did. I'm sure some of the other Arthur Jones true believers in the room did also. Of course, some of the salesmen present, were there only about their jobs as businessmen and did not care a pittance or understand one iota about the Ten Requirements.

But I was not yet at the level of acceptance with Arthur as was Kim Wood. Besides, I was still trying to decide if I had heard Arthur correctly. I was desperate to convince myself that I had missed some detail in Arthur's explanation. I was unwilling to leap to the conclusion that the great Arthur was completely whoring himself.

Arthur responded that he did not mean “full-range” in its traditional sense. He meant: the cam provided meaningful resistance throughout the range of motion—from beginning to end but not including the end. The “end,” of course, is a lockout and incurs no resistance to the muscles, as resistance is totally supported by the bones.

The name, *The Ten Requirements of Full-Range Exercise*, is confusing enough as it is. Almost all uninitiated erroneously assume that *Full-Range* refers to *range-of-motion* like that of a joint or body part. It takes time and study to realize that *Full-Range*, instead, refers to a collection or list of requirements.

So as delicately specific as this meaning was, Arthur was deliberately allowing his listeners—many who had not yet discerned the accurate meaning of *Range* as in *Full-Range* as in *The Requirements of Full-Range Exercise*—to fall into his word trap to snare them with the idea of *range of motion*.

I assert that this apparent slip by Arthur was not an accident. He knew what he was doing. He had excoriated Ed Farnham for years for a marginally egregious blasphemy of *Full-Range*. (Ha—Ed was in the audience hearing this bullshit.) And I know (now) that Arthur was extremely rehearsed for this presentation,

although he often feigned extemporaneous deliveries. He sometimes commented that he came to a speech engagement merely to find out what he, himself, was going to say.

Kim correctly sensed that Arthur was bending his ironclad usage of “full-range” to suit himself. It was acceptable for Arthur to say that the DuoSquat “provided resistance to the fullest possible range of motion.” It was not acceptable to say that “it provided full-range exercise” without first redefining *full-range* in its representation of the Ten Requirement of Full-Range Exercise. This criticism is especially justified in light of Arthur’s rigid enforcement of “full-range” usage among his closest supporters, philosophers, writers, and staff. It was a contrived and deliberate sin retrospective of his demeaning rebuke of others for similar yet unintentional and innocent oversights.

By this point in my Nautilus career I was losing some patience with Arthur. In 1982, the Nautilus Osteoporosis Project commenced, the DuoSquat was introduced, and the Nautilus Lower Back machine was introduced. Each of these projects was grossly and irresponsibly mismanaged by Arthur. This is remarkable to this article only in that the events of 1982 sensitized me to Arthur’s management and character deficits as well as his gaping misunderstanding of acceleration.

### **Slamming Into Lockout 50-Repetition Squats**

Arthur created much excitement with the Nautilus DuoSquat machine. He motivated Jim Flanagan—Nautilus general manager succeeding Ed Farnham—and several other large men to experiment with high-repetition sets of 50 repetitions per leg. Putting the nonsense of such repetition schemes aside, I was more appalled with the violence Arthur permitted in form.

Arthur decreed that the seat be set so that the subject could just straighten his leg under the selected load. As Arthur pushed Jim Flanagan and others through their DuoSquat bouts in the prototype shop, they habitually fired out of every bottom position and slammed into every lockout. As a result of Arthur’s insistence in the gym, these subjects echoed his philosophies of “high repetitions for the legs” and “completely straighten the legs” to Nautilus customers.

At Nautilus Seminars I instructed customers to set

the seat so that lockout was impossible. I established lockout as a serious liability concern. I also declared that lockout was discordant with Nautilus Philosophy. It unloaded the desired musculature, excessively compressed the spine, excessively loaded the neck musculature, effected unilateral loading and imbalance on the pelvis, sacro-iliac joint, etc., and was unduly dangerous.

Arthur’s closer henchmen (I never considered myself accepted in Arthur’s inner circle, although Ed Farnham insisted that I was for a while.) reported to him that I was countermanding his protocol regarding the DuoSquat. I did not fear Arthur’s wrath, because I was his only willing and eligible pigeon slated for guard duty at the Osteoporosis Project.

As a result, Jim Flanagan orchestrated my trip to the woodshed, so to speak. As Jim and others observed from a distance, Arthur patiently explained and justified his recommended protocol for the DuoSquat.

I admit that I did learn from Arthur during this mild cross examination. He showed me how he had designed the negative cam radius—reduced (increasing resistance) only so far as to not exceed bone integrity. He asserted that he had calculated a safety margin and stayed on the safe side of that margin. (Neither of us could have known at this moment that I would eventually produce information that proved this to be hogwash.)

Arthur also explained that he had designed the seat tilt at such an angle (approximately 30 degrees) to the movement-arm line of force so that approximately 1/2 of the force (Sine 30 degrees) was supported through the pelvis and back-pad, not the spine, shoulders, and shoulder pads. This I had not considered and it set me off to ponder these statements for several months.

I then presented Arthur with my reservations of lockout. I also raised a question: “Are we using the machine to defeat the machine or to fatigue the muscle?” [Note that this was my first intellectual consideration and expression of *The Assumed vs The Real Objective* argument.] My question seemed to briefly grab him.

He then threw a rhetorical question at me:

Ken, do you realize that, upon reaching lockout, the force doesn't suddenly jump from the muscles onto the bones? The bones are supporting the load throughout the movement, not just suddenly at lockout?"

I replied that I had not considered the possibility that such a fear was lurking in my mind and affecting my bias. And I promised to reflect on the matter for a while to examine his protocol recommendations in light of this irrational fear as well as his other points recently shared.

### **The Force Does Indeed Jump From the Muscles Onto the Bones at Lockout**

I left for the Osteoporosis Project in October 1982. After unsuccessfully incorporating the DuoSquat for 6-8 months I wrote Arthur the following memo:

Arthur,

Approximately a year ago, we discussed my reservations regarding the safety of lockout during the performance of the DuoSquat. You speculated that my bias was the result of an unacknowledged and irrational assumption. The supposed fear: the resistance force suddenly jumps from the muscles onto the bones at lockout.

Although this notion may or may not have been lurking beneath my conscious process, you certainly planted the seed for its complete fruition. Note that five sources of force converge at lockout:

#### I

Disconnect the chain from the movement arms on the DuoSquat. Then place the subject as you dictate—seat so close that he can just barely lockout his legs against the frame of the machine. Here the subject encounters maximum force from body compression, movement arm flexion, pad compression, etc. Denote this *machine force*.

#### II

Once reconnected, the negative cam is at its smallest radius, hence its greatest resistance provision at lockout. Denote this *cam force*.

#### III

At lockout the quadriceps are no longer effecting knee rotation. They exert a force encouraging translational movement of the tibia into the femur. Denote this *quad force*.

#### IV

At lockout the hamstrings are no longer effecting hip rotation. They exert a force encouraging translational movement of the tibia into the femur. Denote this *hamstrings force*.

#### V

The screw-home property of the knee results in maximum stability at lockout. This occurs in part because the cruciate ligaments contract as they twist on one another akin to twisting the opposite ends of a dish rag. This tightly approximates the ends of the tibias and femurs. But if the knees are violently extended, this contraction is so forceful that the cruciates are commonly avulsed, carrying sizable chunks of their moorings with them. Denote this *cruciate force*.

As a result of lockout in the DuoSquat, five forces promoting translational shortening of the body [mostly between the hips and feet] converge at lockout. Therefore—in effect—these forces do suddenly jump from the muscles onto the bones at lockout.

Sincerely,  
Ken Hutchins

As usual, no reply came from Arthur. But his response was unmistakable at the next Nautilus Seminar. He and his henchmen began to warn customers to set the seat as I had detailed. A protocol involving lockout was no longer permissible or deemed safe. No one mentioned or dared remember that it was once recommended.

[My third person references incorrectly imply that I was not also one of Arthur's henchmen.]

[Note that the 5 sources of force rendered Arthur's calculations for a safe margin of safety completely irrelevant.]

I strongly believe that the Nautilus DuoSquat was the worst and most dangerous machine that Arthur made before his stint at MedX. He may have later surpassed the DuoSquat in ways to maim people with the MedX Lumbar.]



**The vintage Nautilus DuoSquat.**  
**Left:** Bottom position for right leg.  
**Right:** Top position for right leg.