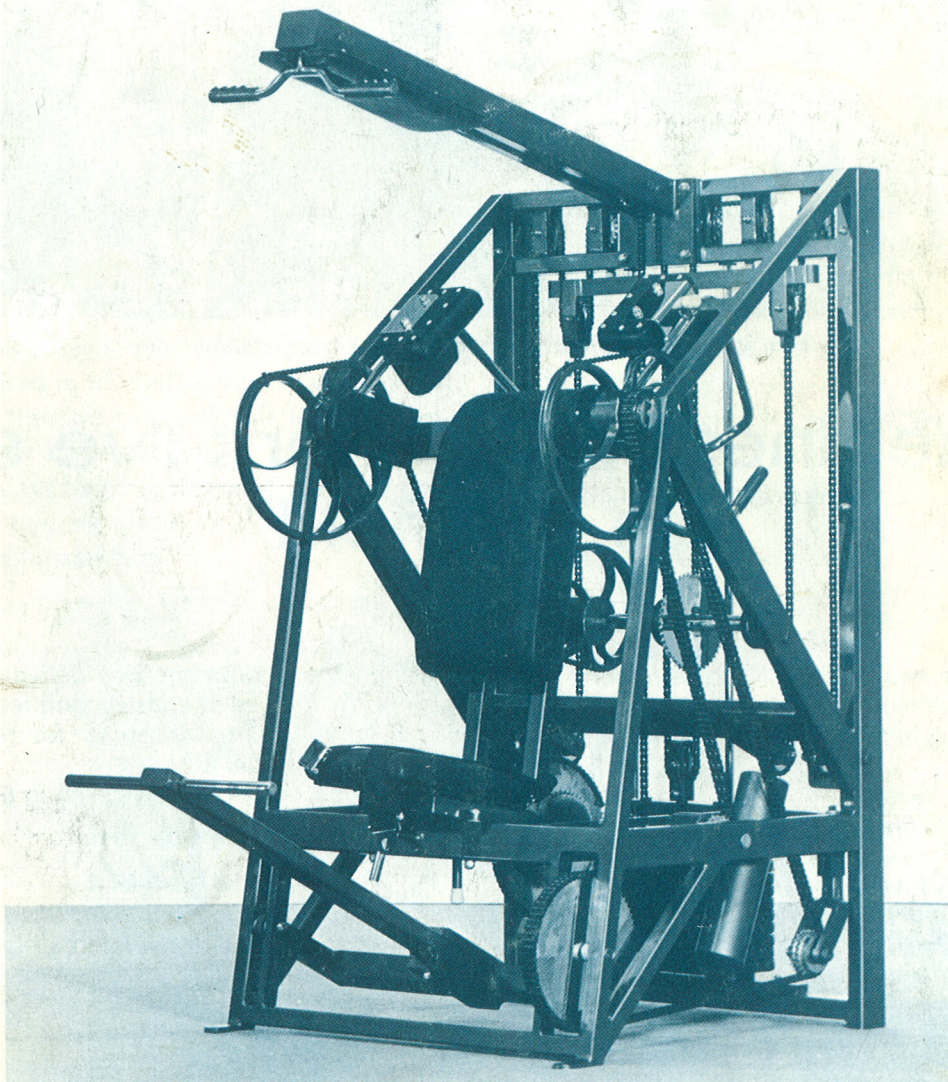
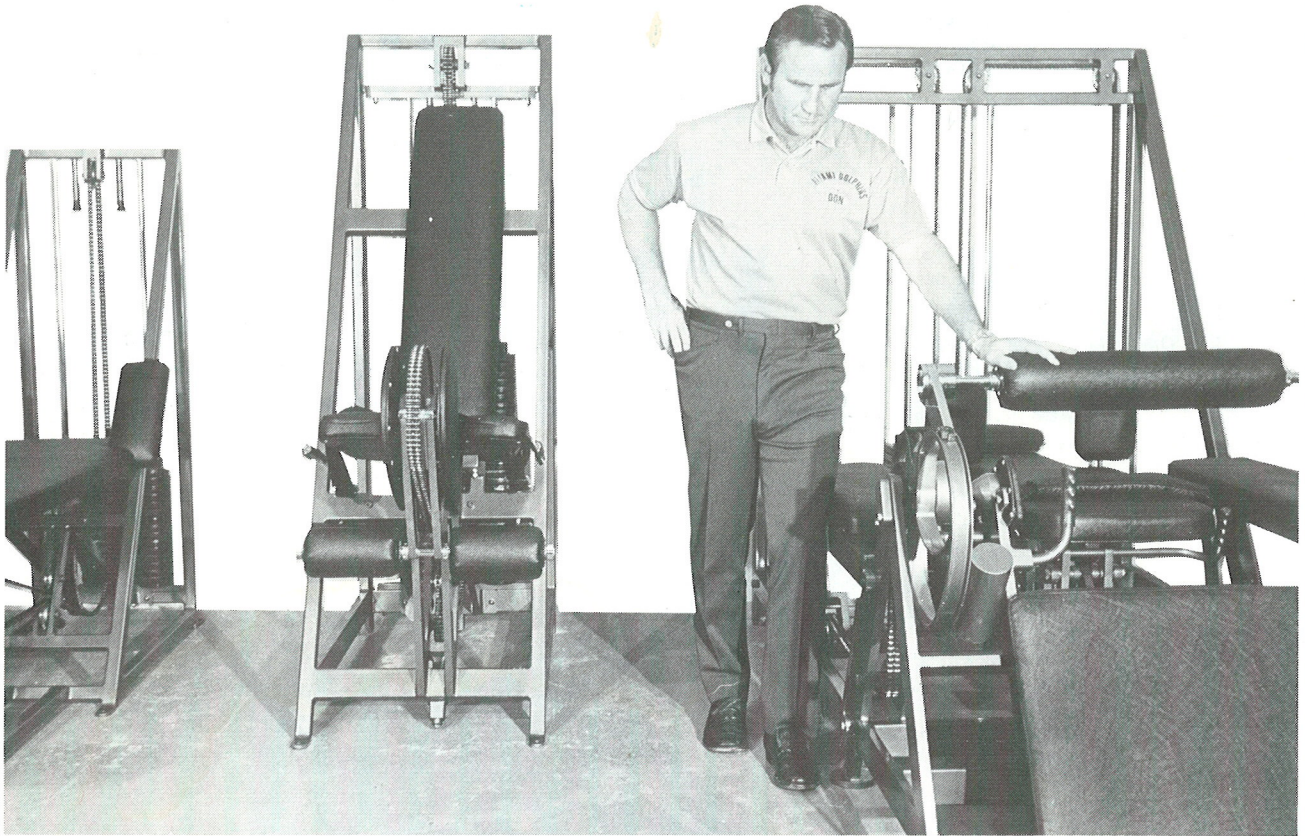


“TIME MACHINES”
BY
NAUTILUS



NAUTILUS SPORTS/MEDICAL INDUSTRIES



Don Shula in the Miami Dolphins' Nautilus Training Facility.

“...The finest equipment I've seen in the field”

I first became aware of the Nautilus training program through Mercury Morris, who had been training with Nautilus equipment in a commercial gym in Miami.

Upon Merc's recommendation, I sent our personnel man to the Nautilus plant to personally evaluate the equipment.

When he returned with an enthusiastic recommendation, we purchased the Nautilus equipment for the Miami Dolphins.

When the equipment was delivered, I was impressed by its rugged construction features and obvious durability—so necessary for the training of strong professional athletes.

The finest equipment I've seen in the field.

Coach Don Shula

Don Shula

*World Champion Miami Dolphins
Professional Football Team*

Nautilus equipment is now being used by Cincinnati Bengals, Miami Dolphins, Buffalo Bills, Dallas Cowboys, Atlanta Falcons, Kansas City Chiefs, Houston Oilers, Washington Redskins, St. Louis Cardinals, University of South Carolina, University of Tennessee, Florida State University, Auburn University, Colorado State, Ohio State, University of Georgia, Louisiana State University, University of Florida, Notre Dame, and hundreds of other professional, college, and high school athletic teams.

"TIME MACHINES"

BY NAUTILUS

Time is the most important factor in any physical activity.

Time is one of the few things you can't buy.

Training time should be devoted to the most productive type of training . . . and proper utilization of Nautilus exercises will produce maximum strength increases in minimum time.

Recovery time **MUST BE** adequate for total system recovery between training periods; if not, then losses in strength will be produced instead of increases. Properly performed Nautilus workouts are so brief and infrequent that total recovery is assured between training sessions . . . strength increases steadily and rapidly, and the athlete is not left in a constant state of exhaustion between workouts.

Most of any athlete's training time and energy **MUST BE** devoted to directly sport-connected training . . . football players must practice and develop the skills required in football, sprinters must sprint. Supplemental training can and will improve performances in any athletic activity . . . but it must not conflict with other training programs. Nautilus provides strength training that does not make inroads into other training activities.

Everything else being equal, a stronger athlete will always win . . . in any sport.

It is neither necessary nor desirable to build great strength and muscular mass into the torso and arms of a sprinter or a basketball player . . . but athletes involved in those sports do require maximum strength in the muscular structures that contribute directly to those activities. Two or three weekly training sessions properly devoted to high-intensity Nautilus exercises will quickly produce large-scale increases in both strength and endurance . . . improving both running and jumping ability.

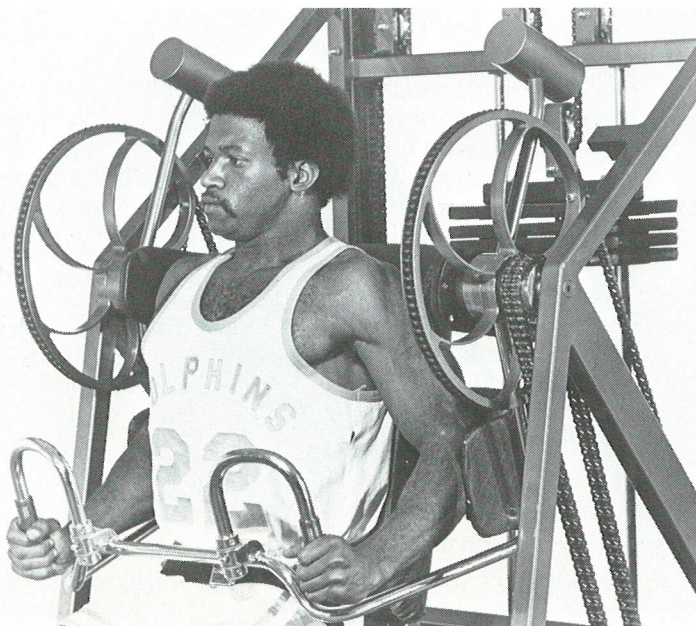
Time properly devoted to Nautilus exercises will improve any athlete . . . in any sport.

Less than one hour of weekly training time is all that is required for the production of maximum results with Nautilus exercises . . . more training is neither necessary nor desirable.

"HIGH INTENSITY . . . LOW FORCE" exercise

By NAUTILUS

The **ONLY** full-range exercise



Mercury Morris of the World Champion Miami Dolphins in a Nautilus Pullover-Torso Machine.

FULL-RANGE EXERCISE

By Arthur Jones

An exercise is "full range" ONLY if there is resistance in the extended (starting) position. Resistance in the extended position is important for two reasons . . . (1) because it is required for "pre-stretching" the involved muscles, and (2) because it increases flexibility.

But important as it is, resistance in the extended position is not enough . . . nor does it, by itself, provide full-range exercise.

For full-range exercise you must also have resistance in the contracted (finishing) position . . . the ONLY position in which it is even possible to involve ALL of a muscular structure.

Any exercise that lacks either one of those two basic requirements is NOT a full-range exercise.

Yet, most exercises provide neither one of those requirements . . . and no conventional exercise provides both of them.

Nautilus is the ONLY source of full-range exercise.

Conventional exercises are "mid-range" movements . . . strength is developed only in the mid-range of possible movement. And little or nothing is done in the way of improving flexibility.

If you can "lock out" and hold, as you can in most exercises—then there is no resistance in that position. And without resistance there is no exercise.

You can lock-out in most conventional exercises—the squat, the leg-press, bench press, standing press, parallel dips, curl, pullover and many other movements; thus all of these are mid-range exercises . . . NONE of them are full-range exercises.

You can NOT lock-out in Nautilus exercises—Nautilus provides resistance in every position.

If you encounter areas of movement with little or no resistance, as you do in almost all conventional exercises . . . then you do NOT have full-range exercise.

This does not happen in Nautilus exercises . . . Nautilus provides proper resistance in every position.

If you have "sticking points" where the resistance feels much heavier than it does in other areas of the movement . . . than this is simply another clear indication that you do NOT have full-range exercise. Such sticking-points are encountered in both squats

and leg-presses, in bench-presses and standing-presses, in curls and in almost all other conventional exercises.

But there are no sticking-points in Nautilus exercises—Nautilus provides exactly the right amount of resistance in every position. Never too much, never too little.

Nautilus is the ONLY full-range exercise.

But what about the new "Isokinetic" exercises? Don't they provide full-range resistance?

NO . . . Isokinetic exercises are NOT full-range exercises.

Isokinetic resistance is linked to movement . . . you encounter resistance only when you are moving. There is no resistance in the extended (starting) position—and no resistance in the contracted (finishing) position.

Some conventional exercises do at least have resistance in either the starting position OR the finishing position—although never in both; but Isokinetic exercises have no resistance in either of these all-important positions.

Full-range exercise is simply IMPOSSIBLE with Isokinetic resistance; because there is no "back pressure" to pull the muscle into a pre-stretched and fully extended position at the start of the movement—and no resistance to work the muscles at the end of the exercise when additional movement becomes impossible.

Nautilus is the ONLY full-range exercise.

"Function dictates design." There are certain basic requirements for full-range exercise . . . and if even one of these requirements is not provided, then full-range exercise is simply impossible.

These requirements are . . . (1) rotary-form movement, (2) omni-directional resistance, (3) direct resistance, (4) balanced resistance, (5) automatically-variable resistance, (6) negative-work potential.

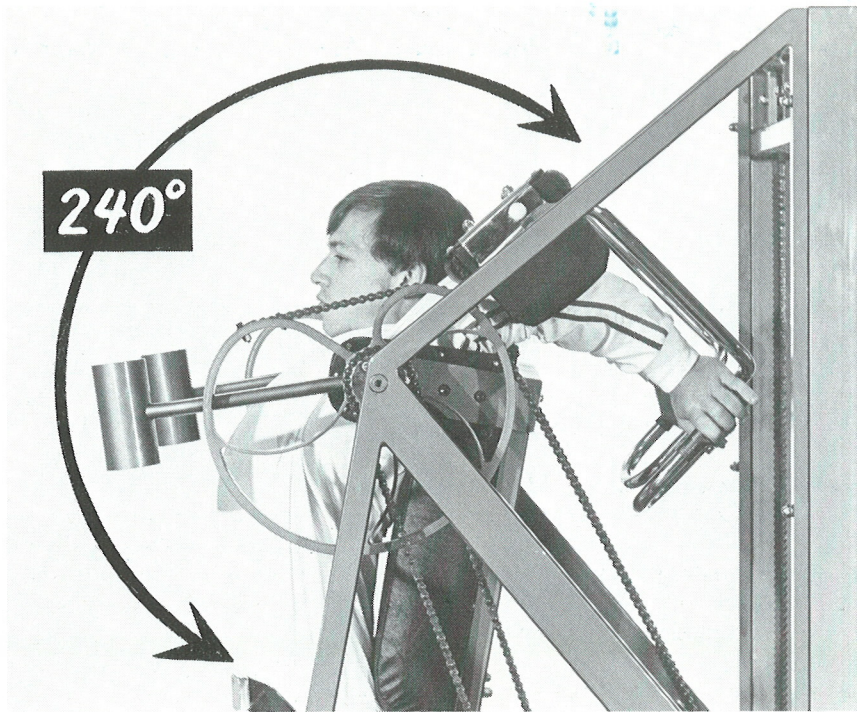
Conventional exercises provide only one of these basic requirements (negative-work potential)—Isokinetic exercises provide NONE of them.

Nautilus provides ALL of these requirements.

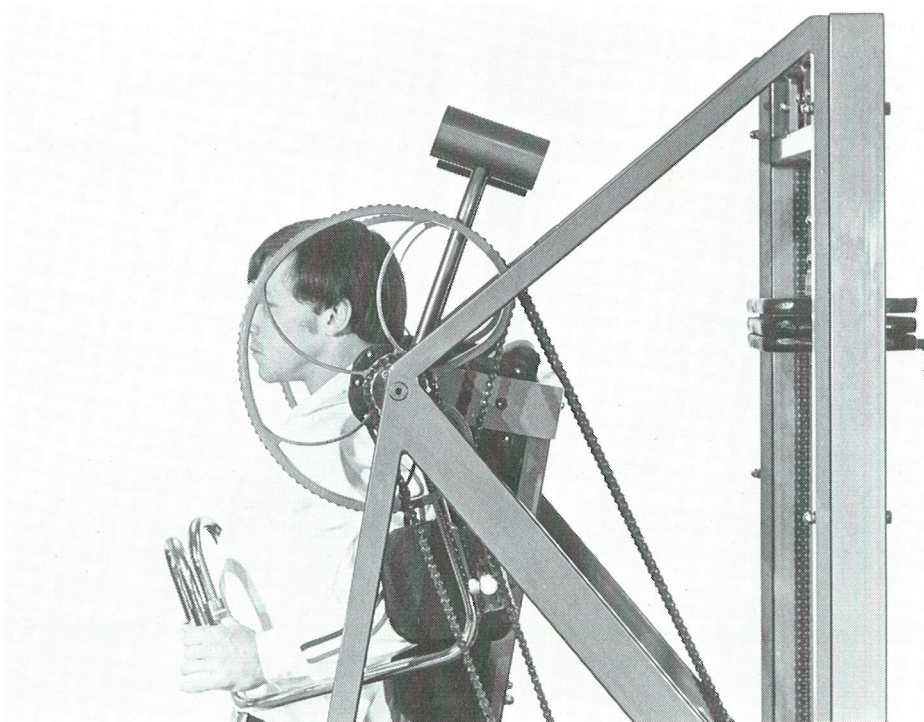
Nautilus is the ONLY full-range exercise.

NAUTILUS

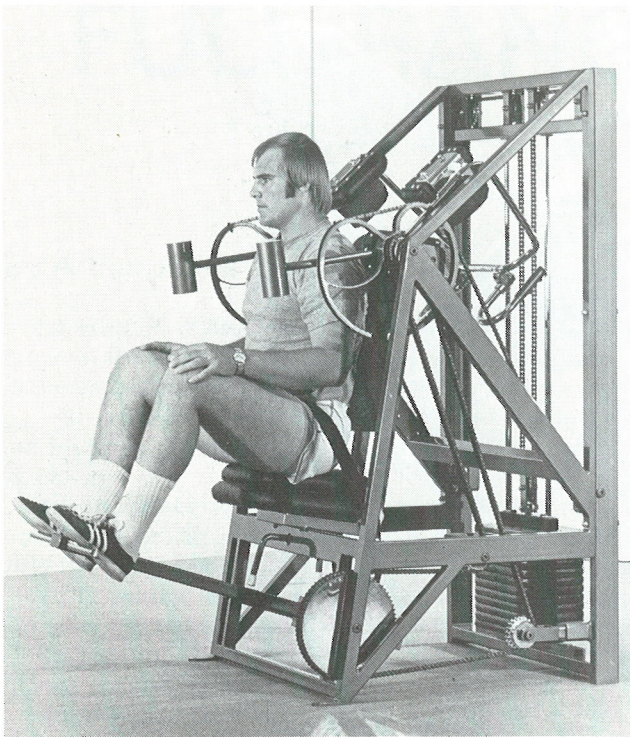
Is The ONLY Full-Range Exercise



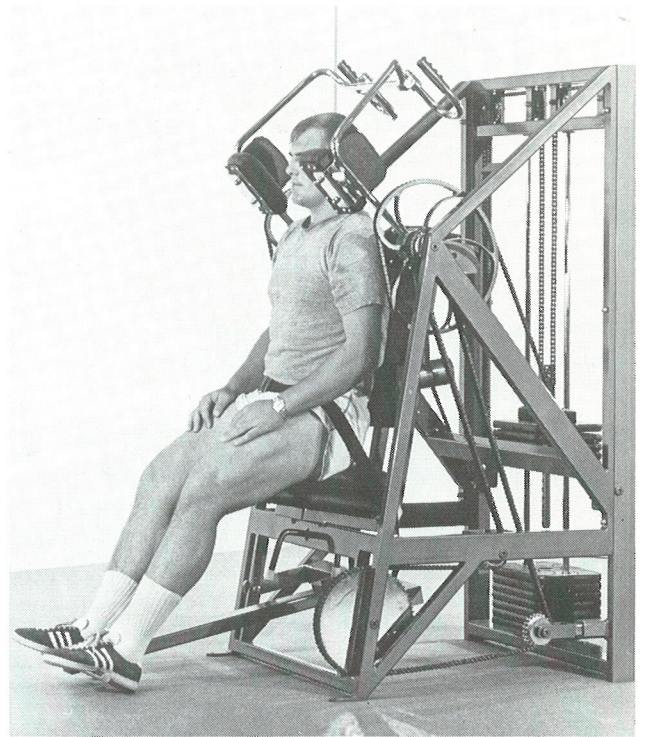
A careful comparison of these two pictures of a Nautilus Pullover Torso Machine gives a clear indication of just what is meant by a truly "full range" exercise. The range of movement is more than 240 degrees—against constant and automatically-variable resistance. The top picture shows the extended or "starting" position—providing the essential pre-stretching that is so important for maximum stimulation of muscular fibers—and equally important for promoting flexibility in the shoulders.



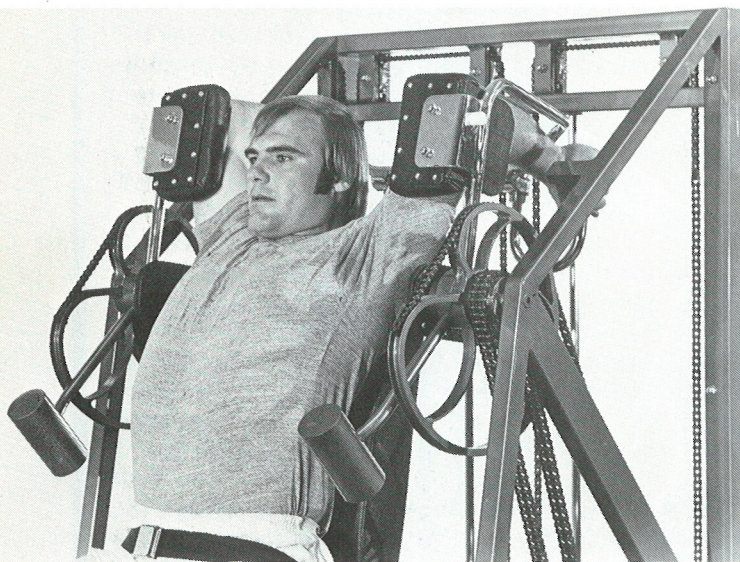
This lower picture shows the fully contracted or "finishing" position—providing heavy resistance in the only position in which it is possible to involve all of the muscular mass. There is no "lock out" in Nautilus exercises—the contracted position must be held by muscular action.



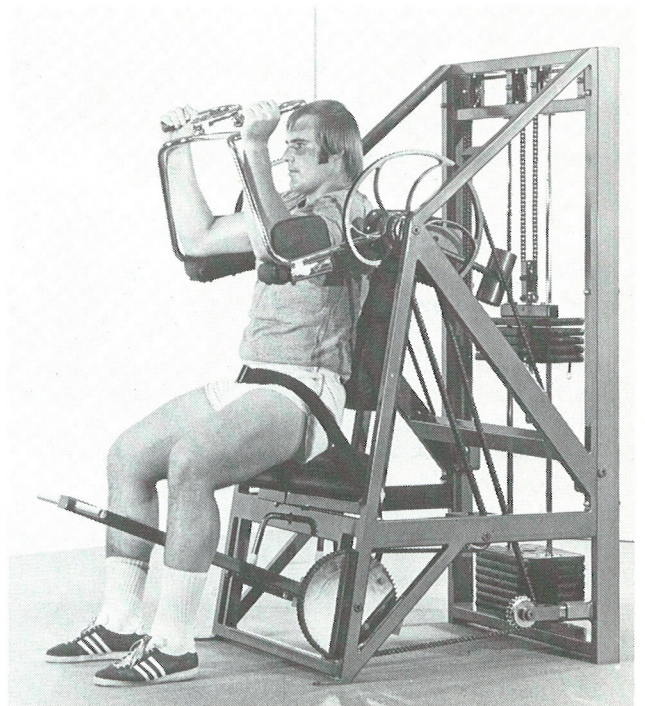
1. Fasten seat-belt and place both feet on foot-pedal.



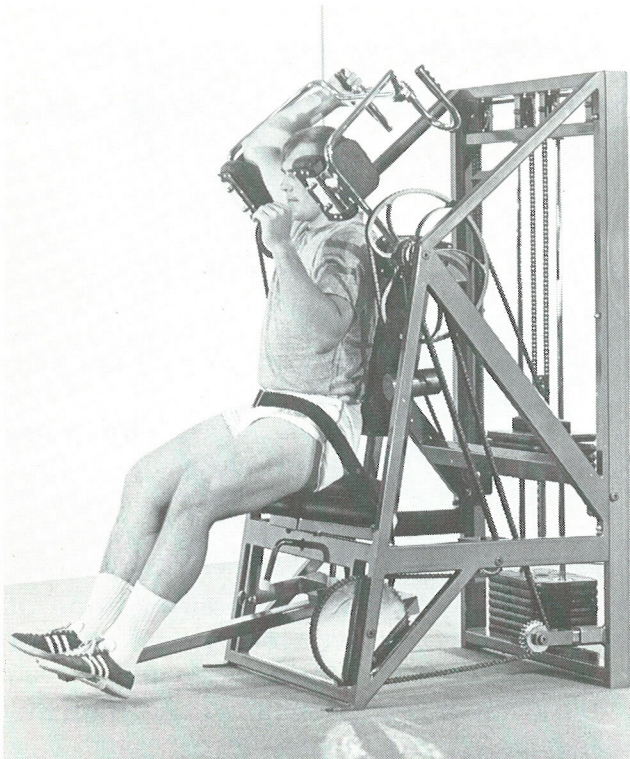
2. Push foot-pedal and the "resistance arm" automatically rotates forward for easy entry.



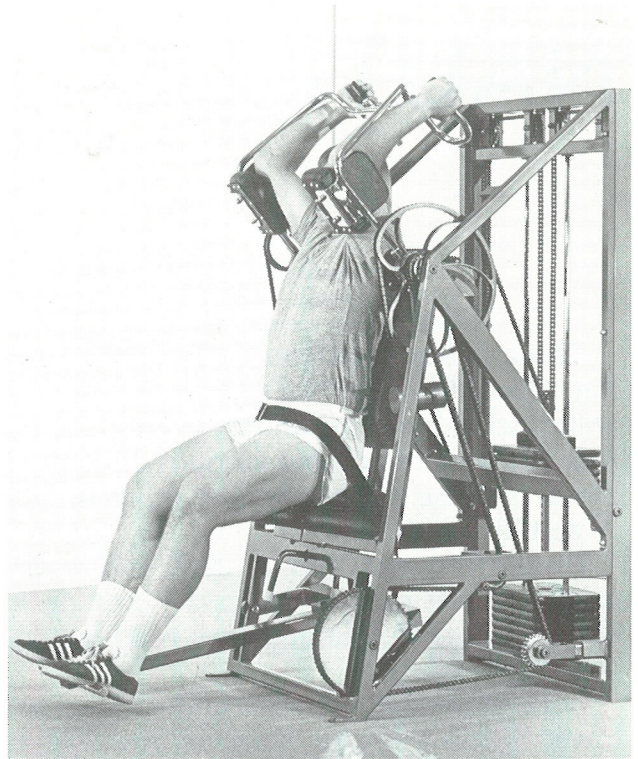
5. When the foot-pedal is released the resistance is directed against the elbows . . . and the athlete should permit the arms to be pulled back as far as comfortably possible. This is the "starting" position of the exercise.



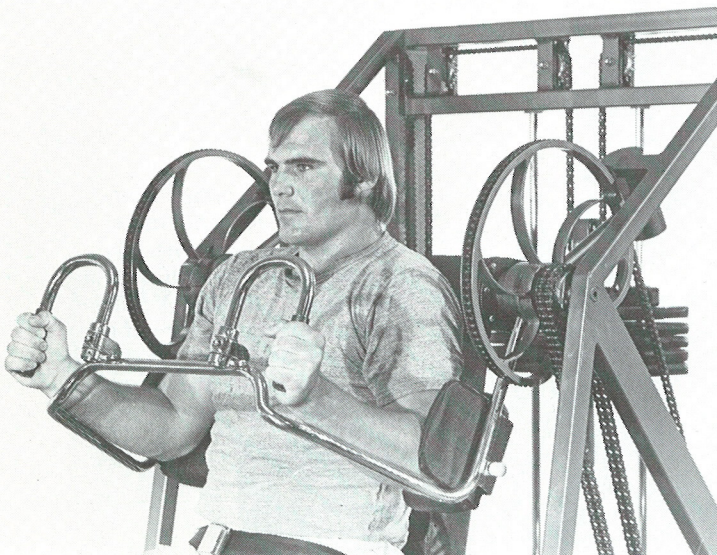
6. The arms are then rotated forward against constant resistance . . . the hand-grips are not functional, since they are swivel-mounted and can not be used as a means of pulling the resistance-arm forward. The hand-grips assure proper placement of the arms and hands . . . and PREVENT the use of arm muscles in this exercise, thus producing direct exercise for the torso muscles.



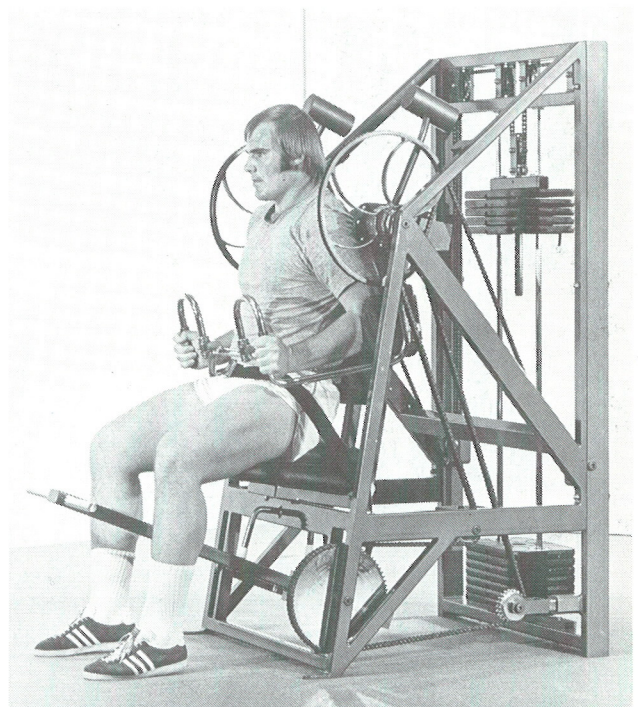
3. Place one elbow on the elbow-pad and grip the hand-grip.



4. With both arms in position, you are ready to start the pullover exercise. But resistance will not be exerted against the elbows until the foot-pedal is released . . . thus the "entry/exit" device serves a dual purpose, making entry and exit easy and safe, and serving as an adjustable restraining device so that the machine can be used for the rehabilitation of shoulder injuries.



7. Approaching the contracted "finishing" position—your strength is highest at about this point, and the resistance is greatest in this position. But it will "feel" the same in every position . . . because it is always balanced to match your available strength.



8. In the fully-contracted, finishing position your muscles are still required to work in order to hold this position.

(Demonstrated by Guy Dennis of the Cincinnati Bengals.)

NAUTILUS LEG TRAINING...

Three or four minutes of PROPER training, repeated two or three times weekly . . . will quickly build maximum strength in the legs and lower back. No amount of conventional exercise will produce an equal degree of results.

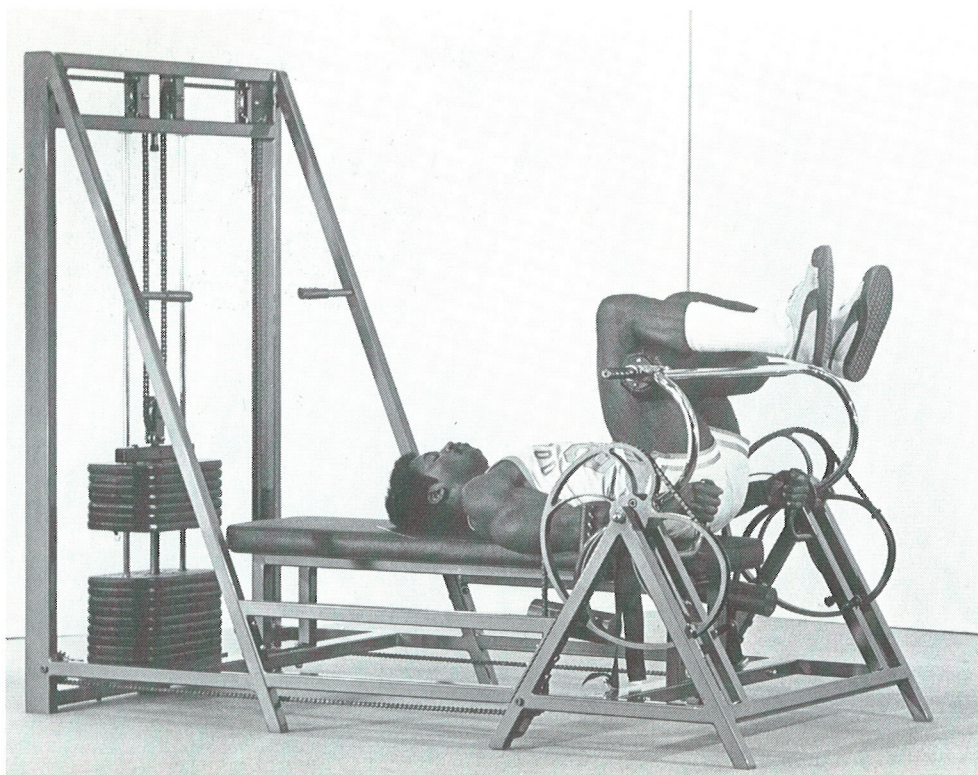
Long, frequent and system exhausting workouts are neither necessary nor desirable . . . MORE training does NOT equate BETTER training.

A properly performed Nautilus leg and lower back workout involves the use of three pieces of equipment. The athlete should use EITHER the Super Leg Machine OR the Compound Leg-Machine . . . BUT

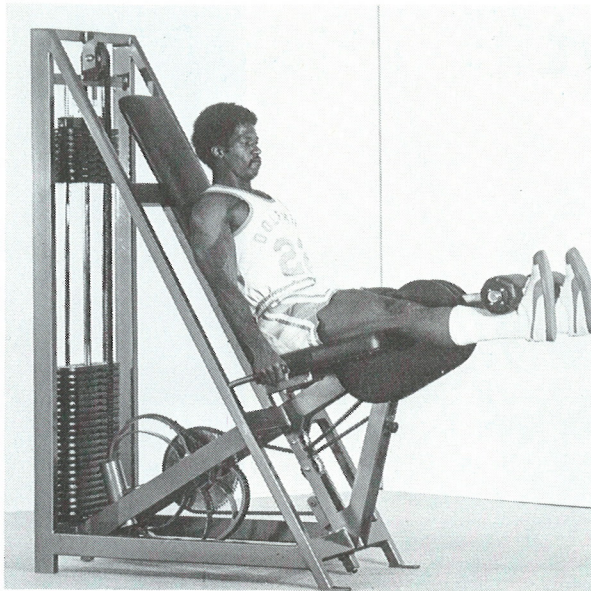
NOT BOTH. Plus the Hip and Back Machine and the Leg-curl Machine.

If the Compound Leg Machine is used, then the entire workout consists of only four "sets" of approximately ten repetitions each . . . a training session lasting about four minutes. To be repeated two or three times weekly . . . a total weekly training-time of eight minutes (for two weekly workouts) or twelve minutes (for three workouts).

If the Super Leg Machine is used, then the workouts consist of only three "sets" . . . with a weekly training time of six minutes for two workouts or nine minutes for three workouts.

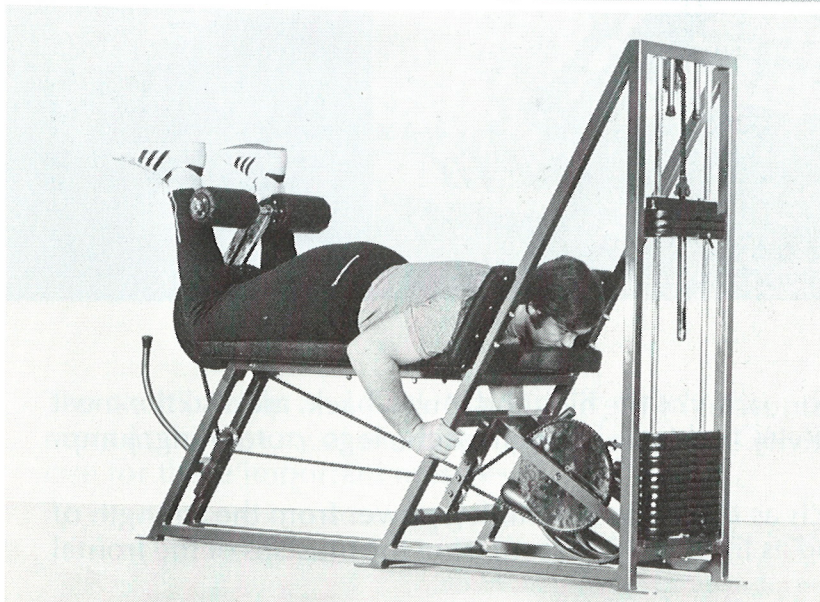
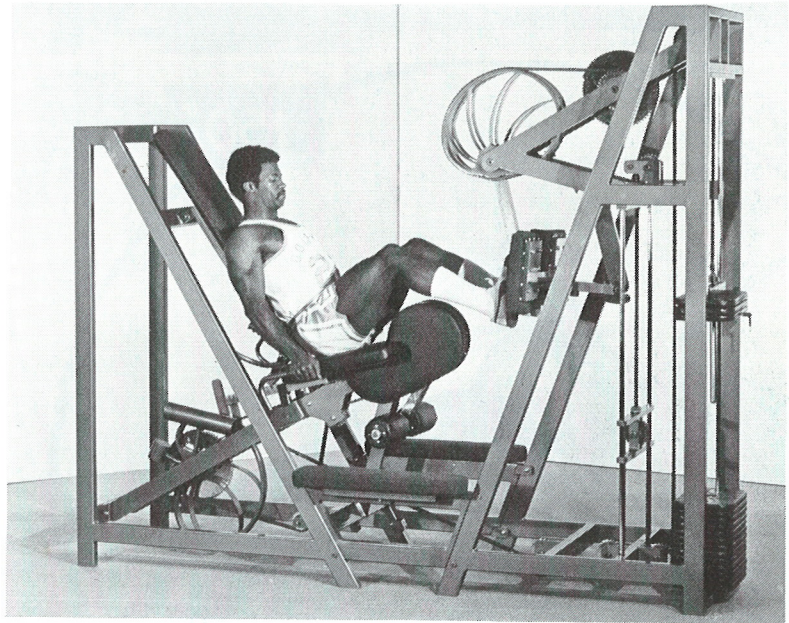


The most important exercise in the leg and lower back cycle is performed on the Nautilus Hip and Back Machine . . . the ONLY full-range exercise for the strongest and most important muscles in the body. This exercise should be performed FIRST in all workouts.

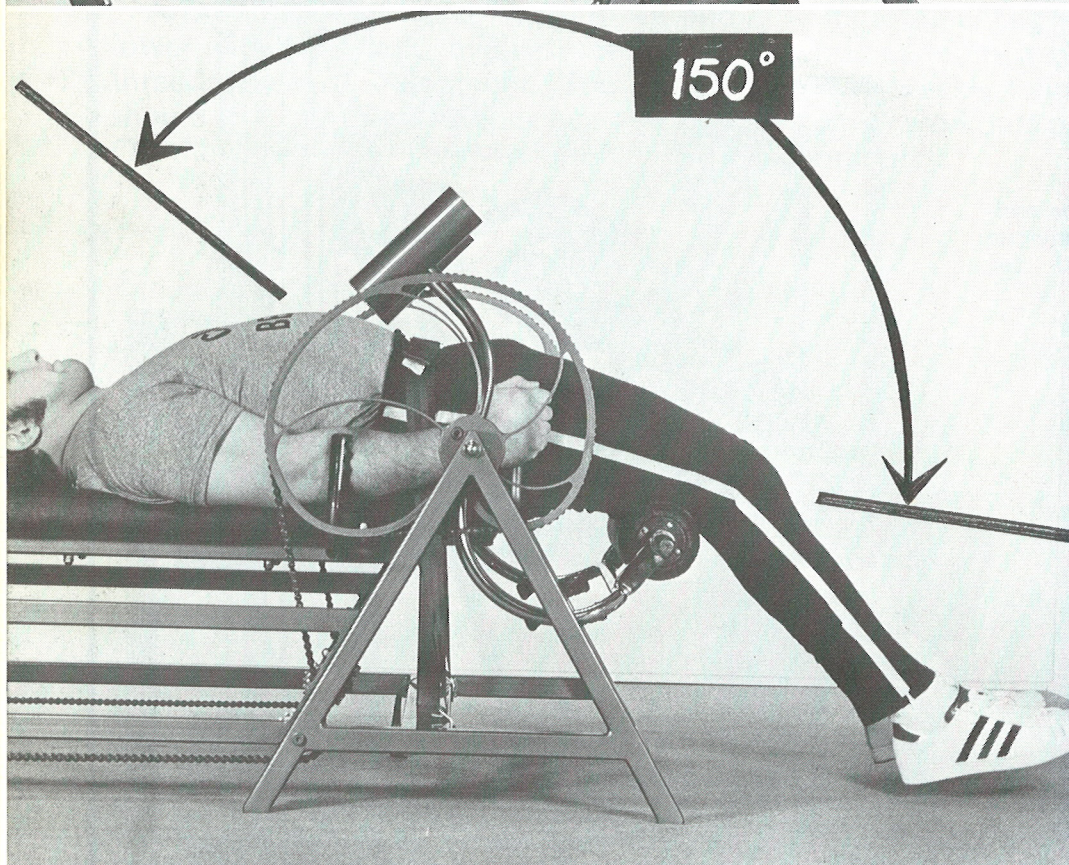
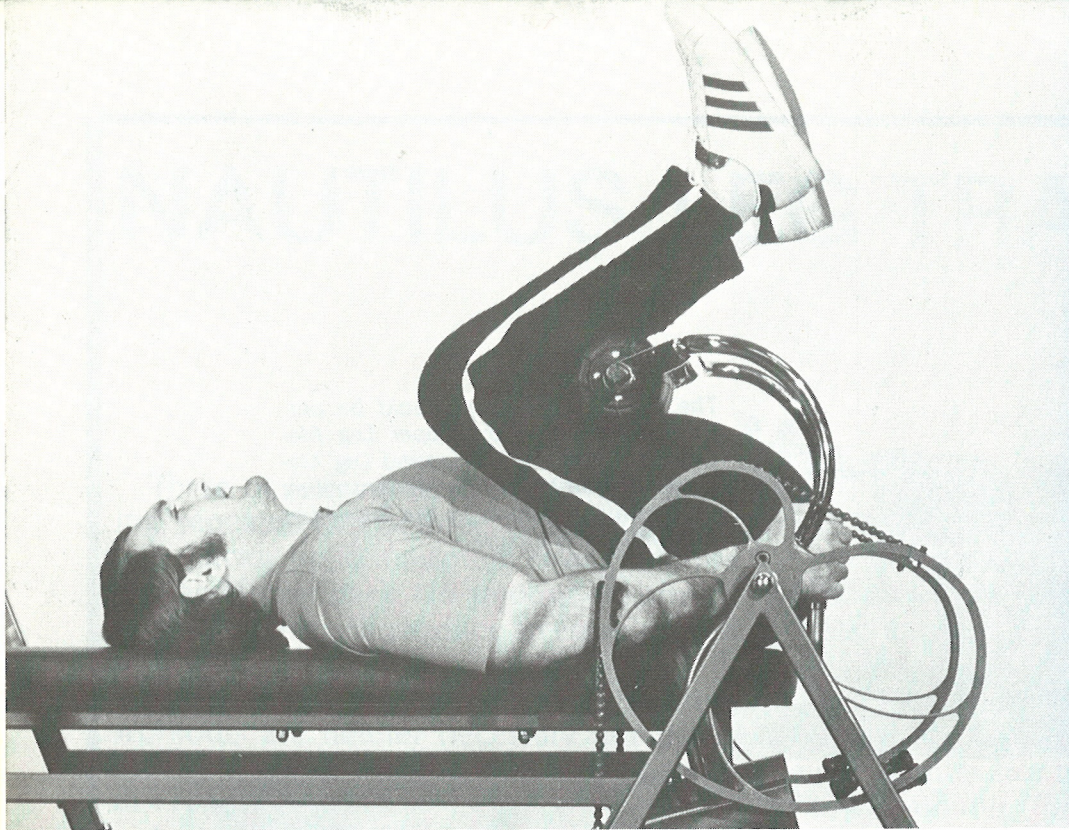


The *SECOND* exercise should be performed on either the Super Leg Machine . . . OR the Compound Leg Machine. Mercury Morris is demonstrating the finishing position in the Super Leg Machine in this picture.

Mercury Morris demonstrates the mid-range position in the secondary exercise performed on a Compound Leg Machine.



The *FINAL* exercise should be performed on a Nautilus Leg-curl Machine . . . an important exercise that is much too often neglected, resulting in injuries that could be avoided. Weakness in the areas developed by this exercise is directly responsible for many athletic injuries . . . strength should *ALWAYS* be developed proportionately, in all areas.



By comparing this picture of the starting position in a Nautilus Hip and Back Machine to the next picture of the same exercise . . . it is easy to understand the enormous range of movement provided ONLY by Nautilus. Also compare the Nautilus exercise to the two pictures of a conventional leg-press . . . and note that Nautilus provides more than two and one-half times as much range of movement.

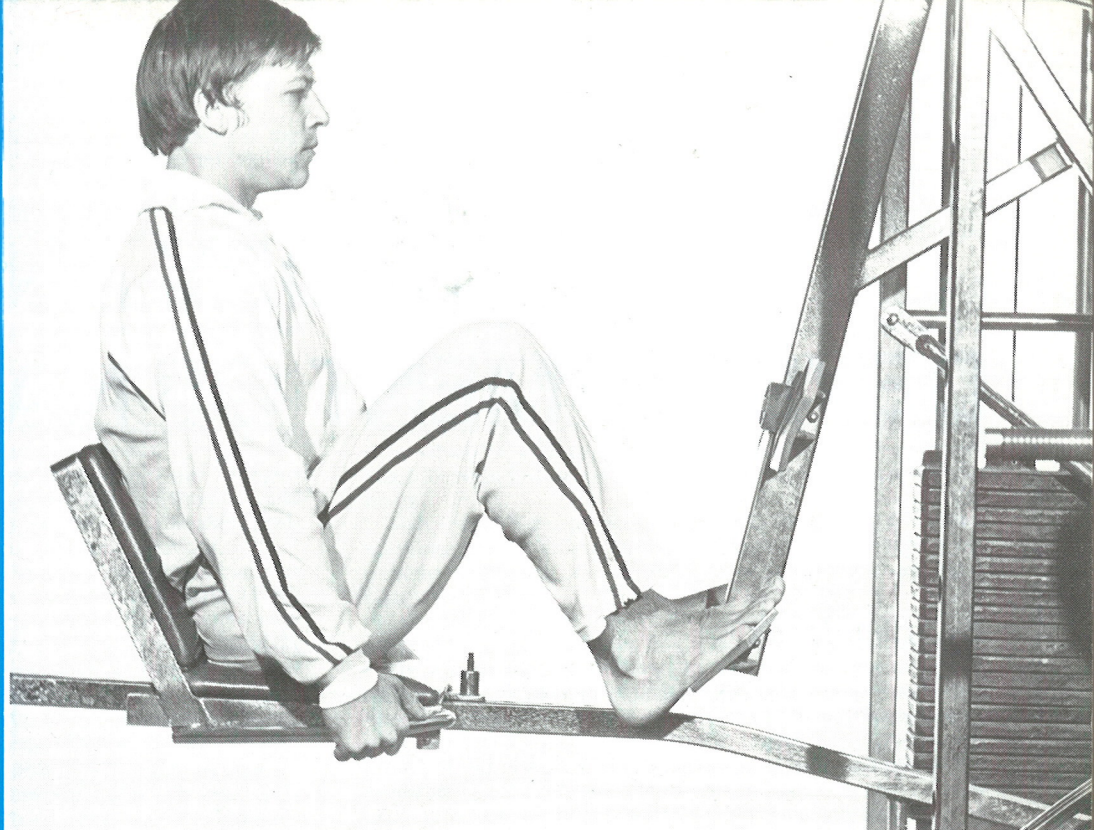
Through a full 150 degrees of movement . . . the exclusive Nautilus cam provides resistance in proportion to available strength. Less resistance in your weaker positions, more resistance in your stronger positions—correct resistance in every position.

The fully-contracted finishing position must be held by muscular action . . . unlike conventional exercises, you cannot "lock out" and hold the finishing position without resistance. Nautilus provides resistance in the finishing position—and in every other position.

The strongest muscles in the body, the muscles of the hips and lower-back, are also the most important muscles for any athletic activity involving strength of the legs . . . running, jumping, football, basketball or track.

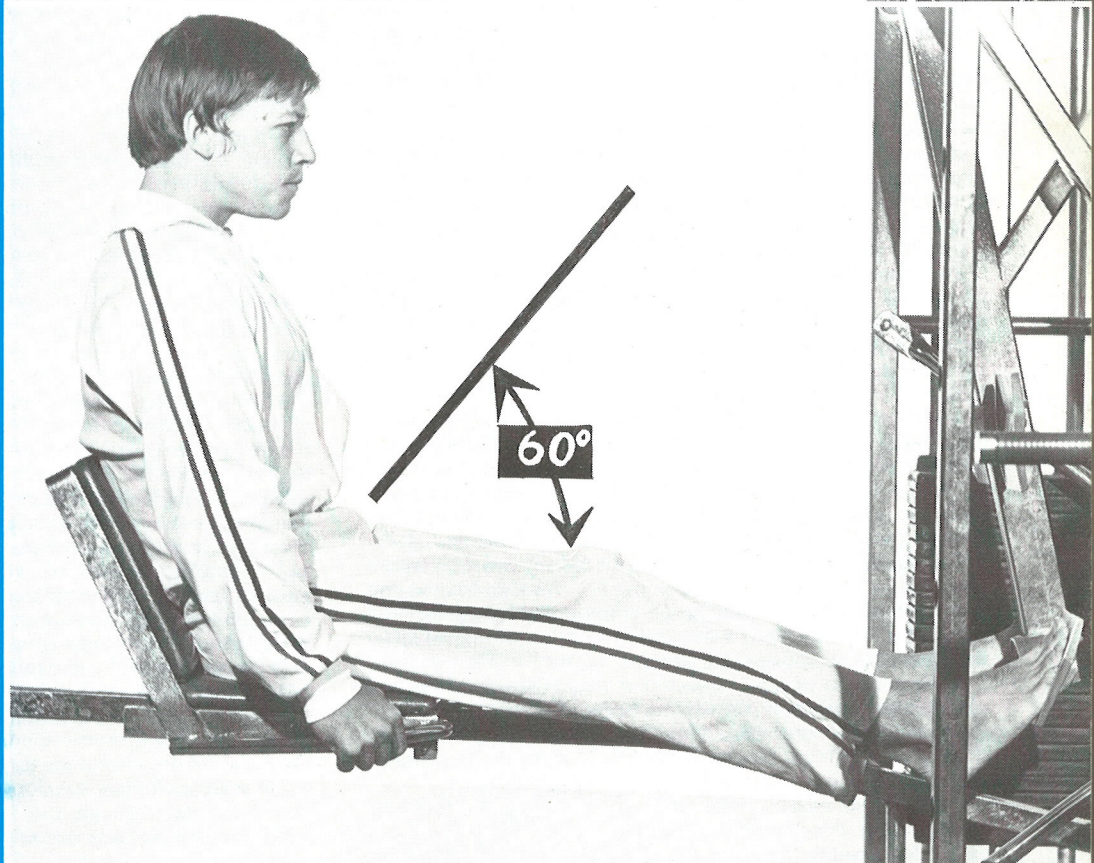
A strong athlete may produce as much as 80 percent of his leg power from the strength of his hip and lower-back muscles . . . and as little as 16 percent from the muscles of the frontal thighs.

The limited range of movement in a conventional leg-press is obvious when these two pictures are compared.



The leg-press has only 60 degrees of movement—but LESS THAN 60 degrees of EXERCISE; because the “locked out” position at the end of the movement reduces the effective resistance to ZERO.

Also note that another full 60 degrees of movement against resistance would be required to reach a position of full contraction . . . movement and resistance that are NOT provided. The leg-press is a “mid-range” exercise with major shortcomings.



The Nautilus Hip and Back Machine is clearly the most important piece of training equipment in the history of exercise . . . providing the ONLY source of full-range and direct exercise for these important muscles.

THE HISTORY AND DEVELOPMENT OF NAUTILUS

By Arthur Jones

The first Nautilus machine was built in 1948 . . . but the first Nautilus machine produced for sale was built more than twenty-two years later, in 1970.

The first type of machine was a Pullover Torso Machine—and the first type delivered to a customer was also a Pullover. But in fact, the two machines—the first built, and the first sold—had little more than the name in common. During the twenty-two years of developmental work that passed prior to the first sale of a Nautilus machine, twenty-seven distinct models of the Pullover were built and tested—and literally hundreds of other models were considered and rejected before reaching the prototype stage.

In short, it was a long, slow process—leading to a final result that probably would never have occurred under any other set of circumstances. The first Nautilus machine was not built for commercial purposes—instead, it was built in an attempt to produce a literally perfect exercise tool.

The first Nautilus machine was built at a time when quite a number of people were beginning to realize that something basic was missing in conventional exercises. The barbell (and is) a tool capable of producing outstanding degrees of muscular strength—eventually; but it obviously is not the ideal tool.

At or about the same time that the first Nautilus machine was built, other people were also making attempts in the direction of improving the tools available for exercise—but they made the mistake of going in exactly the wrong direction. Instead of devoting their attentions and efforts to exercise, they concentrated on attempts to improve the available tool, the barbell.

You can design a better saddle for a horse, you can feed a horse better, you can train a horse better . . . but so long as you restrict your attentions to a horse, you will be forced to work within the limitations of a horse. And you will never travel faster than the maximum speed of a horse.

Modern speed of travel developed only after the horse was scrapped as a means of practical transportation.

Conventional weight machines that merely copy the functions of a barbell are now about as practical for the purpose of exercise as a horse is for the purpose of transportation.

Nautilus was based on the concept that the basic tool was wrong, so the development of Nautilus equipment was a process of determining the functions of human muscular structures—in an effort to design new and much improved tools that could meet the actual requirements of muscles. Instead of trying to fit human muscles to an imperfect tool, the barbell—Nautilus was an attempt to design perfect tools that would exactly fit the requirements of muscles.

But just what are the requirements of muscles?

To answer that question, you must first clearly understand the functions of muscles . . . but that is simple enough, if the problem is approached logically.

Pick a particular muscle, any particular muscle . . . first move into a position where the muscle you are observing is stretched into a fully extended position, where additional movement in the direction of extension is literally impossible.

Next . . . fully contract the same muscle, and carefully observe the resulting movement of the related body part.

Having done so, you should then be clearly aware of the movement that is produced by that particular muscle . . . the full range of movement, from full extension to full contraction.

If you are interested in designing an exercise to develop the strength of that particular muscle, you must build a piece of equipment that will provide constant resistance against the full range of movement—if not, then only part of that muscle will be exposed to exercise, and only part of the muscle will be developed.

One of the basic faults with the barbell is the fact that the resistance is not “direct”—instead of being directly applied to the prime body part that is actually moved by a particular muscle, the resistance is applied against a secondary body part that is “indirectly” moved.

As an unavoidable result, the muscle you are trying to work is not exposed to resistance in proportion to its own ability—instead, a point of failure is reached when a weaker muscular structure is unable to continue.

For example . . . “chinning” type exercises are practiced for the purpose of developing the major muscular structures of the torso, the powerful muscles of the back and chest that are attached to and move the upper arms.

But in practice, the torso muscles are never exposed to actually heavy resistance during chinning type exercises . . . because the torso muscles are attached to and move the upper arms, but the resistance is not applied against the upper arms. Instead, the resistance is applied against the hands—the result being that the bending muscles of the arms are also involved in the exercise.

And since the arm muscles are smaller and weaker than the torso muscles, a point of failure is reached when the arm muscles become exhausted . . . and this occurs long before the larger and stronger torso muscles have been exposed to anything even approaching a proper intensity of exercise.

To properly exercise the muscles of the torso . . . **THE RESISTANCE MUST BE APPLIED DIRECTLY AGAINST THE UPPER ARMS.** In effect, against the elbows. When this is done—and ONLY when this is done—then you have “direct” resistance for the powerful muscles of the torso.

But until and unless it is done, you have only “indirect” resistance—filtered through the weak-link of the arm muscles, which will always and unavoidably limit your development during conventional exercises.

For all practical purposes, you do have “direct” resistance for the bending muscles of the arms during chinning-type exercises—and such exercises are very productive for increasing the strength of the arms. But such exercises will not—literally **CANNOT**—do much in the way of developing the strength of the torso muscles.

The first Nautilus machine was built in an attempt to solve that exact problem . . . in an effort to provide “direct” resistance for the torso muscles, while removing the involvement of the arm muscles.

Obviously, the resistance had to be applied directly against the upper arms, the elbows . . . and this was done. But doing so involved the design and construction of a machine that would provide a rotary form of resistance—since the resulting movement of the elbows is rotary in nature.

So the first basic requirement for a perfect exercise for the muscles of the torso was "direct" resistance—applied against the elbows.

And the second basic requirement was a rotary form of resistance—rotating on a common axis with the upper arms, rotating around the axis of the shoulder joints.

When such a machine was first built, it was immediately obvious that we had gone a great distance in the right direction . . . but it was equally obvious that a lot more remained to be done.

For one thing, we then became clearly aware that "constant" resistance was not enough . . . because you are much stronger in some positions than you are in other positions. So the resistance had to change during the actual movement.

If we used a weight that we could handle in our strongest position, then it was far too heavy in any other position . . . and if we used a weight that we could handle in our weakest position, then it was far too light in our strongest positions.

Twenty-five years ago, we first approached this problem by using a base weight that was proper for use in our weakest position . . . but then we attached a number of chains to the base weight. As the weight was lifted, the chains were gradually pulled off the floor—steadily adding their weight to the base weight.

It worked . . . even if not perfectly. But it certainly was NOT a practical method of regulating the weight. And while it was thus possible to increase the weight at any desired rate . . . we could not then decrease it if that was required. And it was required; because, in most situations, your available strength increases with movement in the direction of contraction . . . increases up to a point, but then decreases.

So we needed a method of regulating the resistance that would permit us to increase the weight up to a certain point and then decrease it—and we could not do that with chains.

Thus the Nautilus "cam" was born.

The Nautilus cam regulates the resistance automatically, instantly, exactly . . . providing resistance that meets your requirements in all positions.

In a typical situation . . . at the start of the movement your available strength is at its lowest level, so the radius of the cam is small and the resistance is low. But as you move into another position your strength increases, so the radius of the cam becomes larger in proportion—and thus the resistance is increased to match your higher strength level.

When you reach your strongest position, the radius of the cam is also at its maximum—and thus the resistance is maximum.

Then, as you pass the point of greatest available strength and start moving into a weaker area of movement . . . the radius of the cam automatically and instantly reduces itself in exact proportion, thus reducing the resistance in proportion to your declining strength.

The actual resistance is thus changing constantly throughout the movement . . . but it doesn't "feel" like it is changing. Instead, it feels the same in every position. It feels the same because it is always in proportion to your available strength.

If the resistance was actually the same in every position, as it would be if the cam was perfectly round . . . then it would feel like it was changing. But in such a case it wouldn't be the resistance that was changing . . . instead, it would be your strength that was changing.

To make this point perfectly clear to visitors with little knowledge of basic physics . . . we had, until recently, a very early model Nautilus Pullover Machine that actually had round pulleys instead of eccentric cams. Thus this machine had constant and even resistance.

Seated in this machine, and belted in, a visitor would be given a weight that he could easily handle in his strongest position . . . and it would feel very light to him, in that position.

But then we would tell him to let the weight pull him back in the direction of an extended position . . . and as he moved, the same weight would start to feel much heavier. After about sixty degrees of rotary movement, the weight would feel VERY HEAVY . . . and the visitor would suddenly realize that the weight was far too heavy for him to stop the movement. It would appear that a weight which had been light in his strongest position was now going to tear his upper arms out by their roots.

And it would . . . except, at that point, we removed the weight. Such a demonstration is of far more value than a million words of explanation. Because, an explanation may or may not

be understood—but such an example can be experienced, can be felt, cannot be denied.

Such a demonstration makes you clearly aware of the absolute REQUIREMENT for variable resistance, for resistance that changes instantly and automatically as you move during an exercise.

You may understand that such a requirement exists . . . but it is very unlikely that you will fully appreciate the enormous IMPORTANCE of such variable resistance; until you experience a full range, direct exercise that does not have variable resistance.

You probably understand the advantage of round wheels on your car—but it is unlikely that you will fully appreciate round wheels until and unless you try driving a car with square wheels. After which experience, any lingering doubts about the requirement for round wheels will be permanently removed from your mind.

Many of the features incorporated into the design of Nautilus machines are not fully appreciated by people . . . until they experience a full range, direct exercise that does not provide those features.

For example . . . the mass of the "resistance arms" is counter-weighted in such a manner that it is perfectly balanced, effectively weighs literally nothing. In the Pullover Machine, this mass would add a total of 383.25 "inch pounds" of torque to the resistance in some areas of the movement—and would subtract an equal amount of resistance in other areas of movement—and would disrupt the variation of resistance throughout the movement.

In some places, this uncontrolled mass would "help" you—in other areas of movement it would "hurt" you—and in all areas of movement it would make exact regulation of the resistance impossible.

So it MUST BE BALANCED OUT—and when it has been balanced out, then you might not fully appreciate just how important a requirement that really is. Unless you tried a machine that had NOT been counter-weighted.

In the combination Pullover and Torso/Arm Machine, the required counter-weight "club" weighs 52½ pounds—and one of the sprockets that drives this counter-weight weighs 23 pounds—and the heavy double chain has a test strength of 7,400 pounds. All of which size and strength of construction is REQUIRED.

In that machine, the counter-weight is "timed" like an automobile ignition system . . . it must be, in order that it will always exactly "balance out" the mass of the resistance-arm during a full 240 degrees of rotary movement.

Without this counter-weight system . . . the resistance would be much too heavy in the starting position—and too light in the finishing position. And FAR TOO LIGHT in the position where you are strongest.

If you remove the counter-weight from a machine, the exercise performed on that machine will then feel like an entirely different exercise—because it would be an entirely different, unbalanced exercise.

There is absolutely nothing "random" about the design of a Nautilus machine . . . "function dictates design," and the functions demanded by a perfect form of exercise dictate the design of Nautilus machines.

Over a period of more than twenty years we gradually became clearly aware of all of the requirements for a perfect form of exercise . . . these requirements are . . .

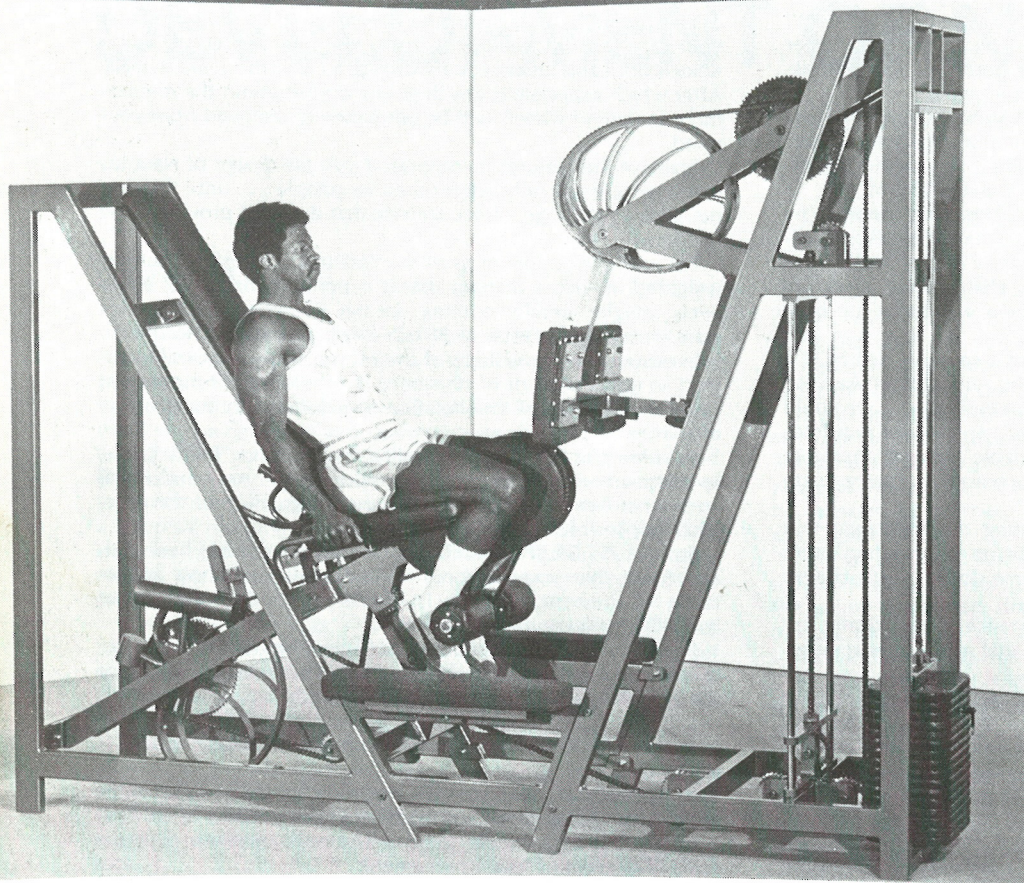
- 1—Full-range resistance
- 2—Direct resistance
- 3—Balanced resistance
- 4—Omni-directional resistance
- 5—Automatically-variable resistance
- 6—Rotary-form resistance
- 7—Negative-work potential

Conventional exercises provide only one of those absolute requirements (negative-work potential) and thus conventional exercises are NOT full-range exercises, are NOT proper exercises, are nowhere near as productive as they should be in proportion to the amount of time and effort devoted to them.

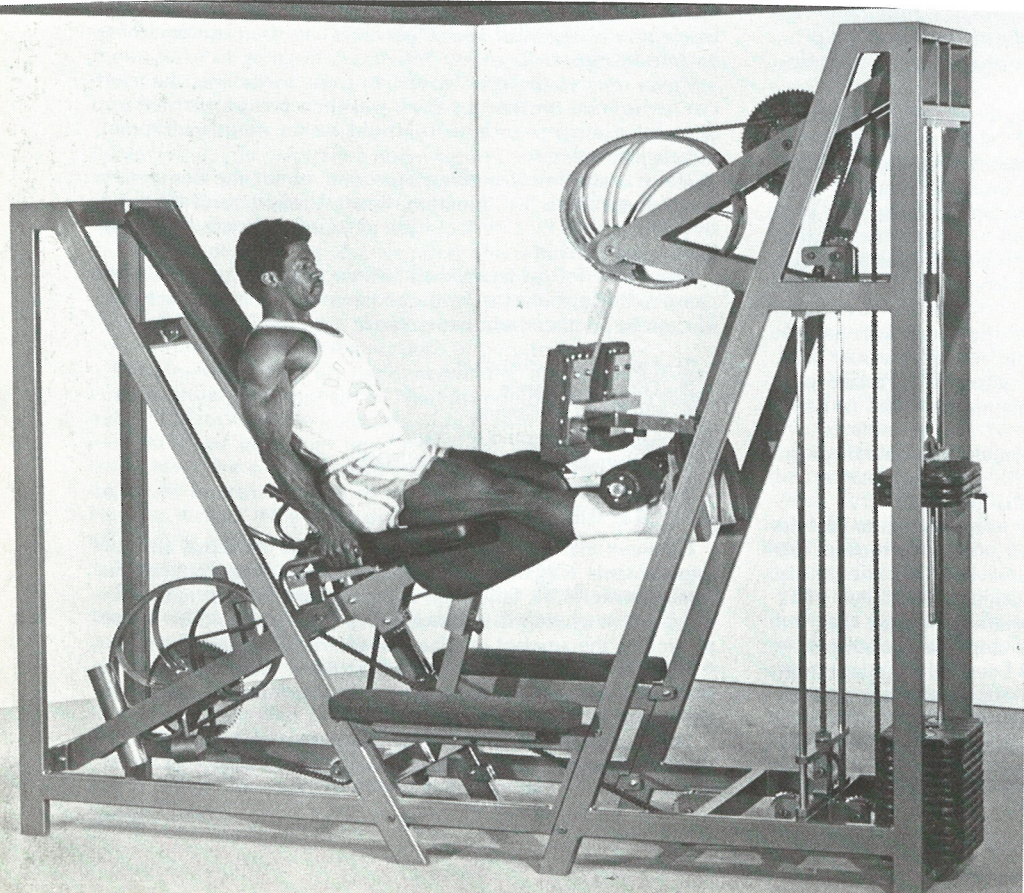
Isokinetic exercises have NONE of these features—and thus Isokinetic resistance is the least productive form of exercise for any purpose.

Nautilus provides all of these requirements. Nautilus is the ONLY full-range exercise. Nautilus is the ONLY source of "total" exercise.

NAUTILUS, THE ONLY



Mercury Morris demonstrating a Nautilus Compound Leg Machine. The "compound" series of Nautilus machines produce an intensity of exercise that was previously impossible. In this first picture, Mercury is in the starting position of the "primary" movement — full range, direct, rotary form, automatically variable, balanced resistance in the leg-extension.



The position of full muscular contraction at the completion of the leg-extension movement. Direct exercise for the large muscles of the frontal thighs.

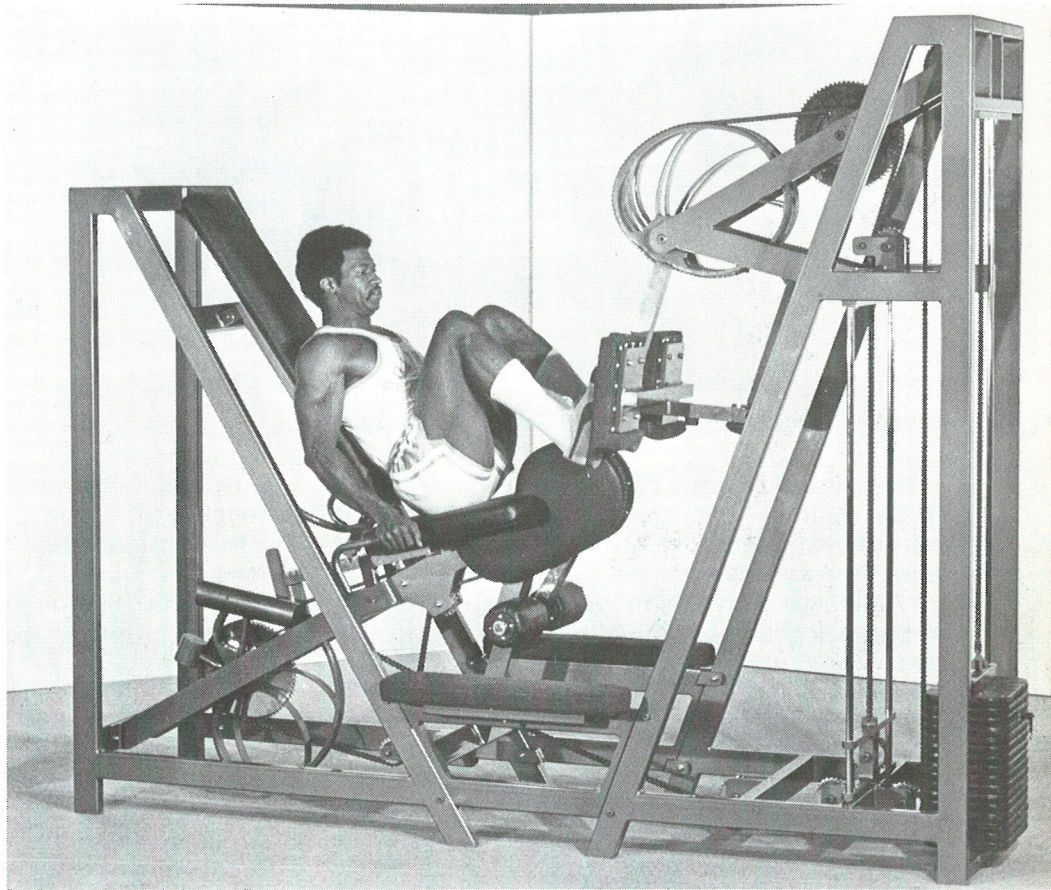
**NAUTILUS
LEG**

FULL-RANGE EXERCISE

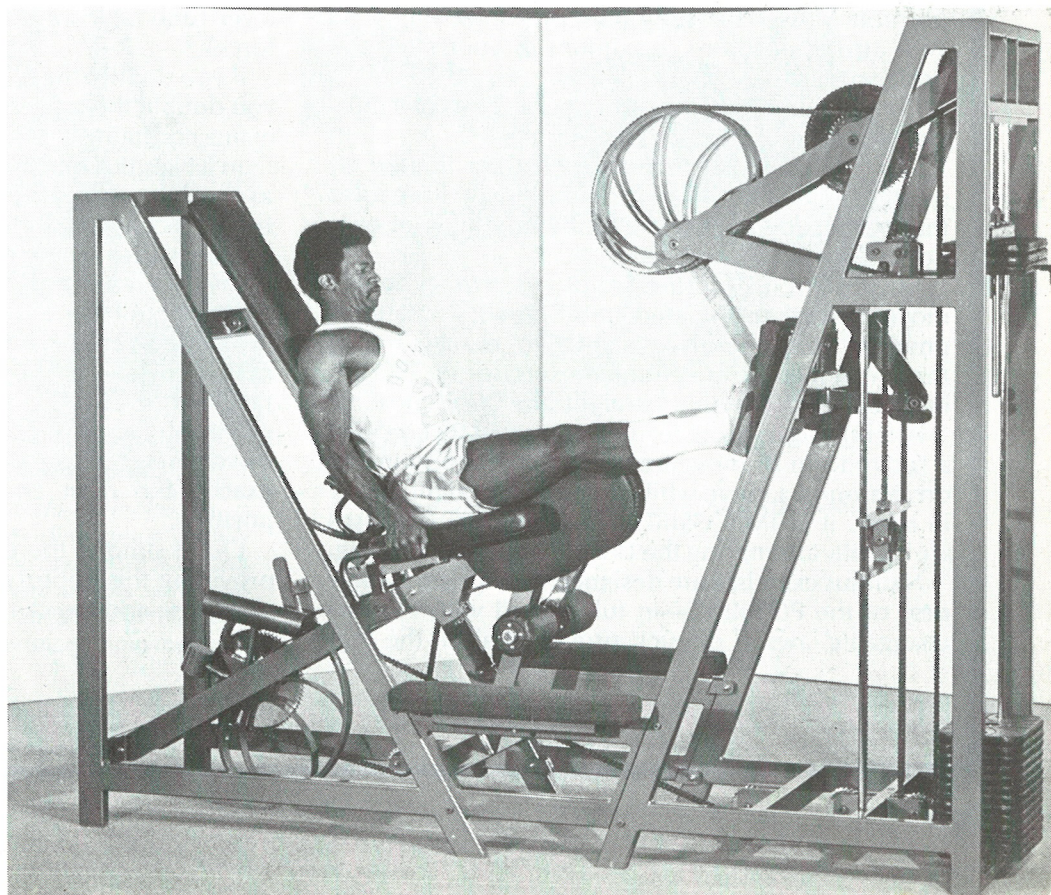
Muscles worked in isolation to a point of momentary failure have a "half life" of recovery of approximately 3 seconds. Thus the "secondary" movement, the variable-resistance leg-press, must be started as quickly as possible after the primary movement has been completed.

It is simply impossible for an athlete to finish the first exercise in one machine, and then move to another machine and start the second exercise within a period of less than 3 seconds . . . so the two exercises MUST be performed in one compound machine.

Immediately after reaching a point of failure in the leg-extension exercise, Mercury has moved his feet up to the leg-press pedals and starts the next exercise.



The finishing position in the leg-press. The primary exercise works the thighs to a point of momentary failure—then the secondary exercise, by bringing the muscles of the hips into action, permits the frontal thighs to be worked to a level of intensity that is otherwise impossible. Such "double sets"—first an isolation exercise, immediately followed by a compound exercise—utilize the extremely productive "pre-exhaustion" style of training. Maximum strength increases from a minimum of training time.



COMPOUND MACHINE

HOW DOES NAUTILUS WORK?

By Dick Wall

The "heart" of every Nautilus machine is the exclusive Nautilus "Cam" . . . the spiral-shaped pulley that automatically and instantly varies the resistance as movement occurs.

When you move, you become stronger—or weaker—depending upon the direction of movement. The Nautilus cam instantly compensates for the resulting change in strength—automatically increasing or reducing the resistance to match your changing strength.

With conventional exercises you are always limited by your strength in the weakest position—thus you never have enough resistance in the stronger positions.

Nautilus provides correct resistance in every position—lower in your weak positions, higher in your strong positions, maximum in your strongest position.

Conventional exercises work only "part" of a muscle—Nautilus works ALL of a muscle.

With conventional exercises you are limited by poorly designed tools—with Nautilus you have tools that permit you to exercise to the limit of your own potential.

Muscular contraction produces "rotary form" movement of the related body part . . . Nautilus provides rotary-form resistance to exactly match that movement. Conventional exercises do NOT—instead, they have only "straight line" resistance.

Attempting to provide full-range resistance against a rotary form of movement is exactly like trying to drive around a curve while going in a straight line—in short, it is IMPOSSIBLE. Conventional exercises are literally attempting the IMPOSSIBLE—and failing.

Nautilus exercises are designed with a clear awareness of the POSSIBLE—in full accord with the unchangeable laws of physics, providing all of the fea-

tures and functions that are required for proper exercise.

Nautilus exercises are designed without limitations of any kind—if it was possible to improve an exercise in any possible manner, then the features required to produce such an improvement would be added.

The Nautilus cam is the only practical method of automatically changing the available resistance during the actual movement—it does so by instantly and automatically changing the "moment arm," and thus the torque.

Muscular contraction produces torque . . . "rotary force around an axis" . . . and torque is a resultant of two factors, (1) the length of the moment arm (or lever), and (2) the amount of weight (or straight-line force).

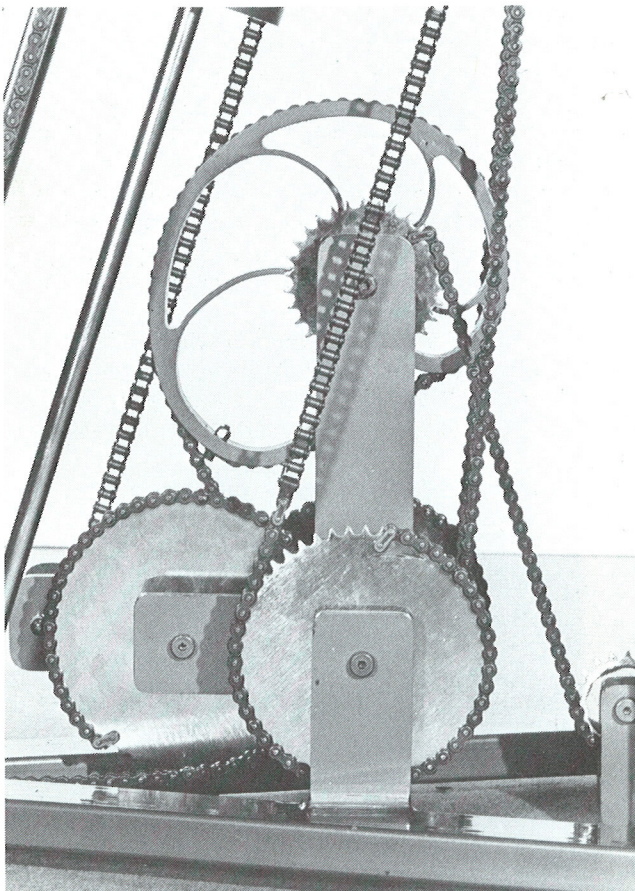
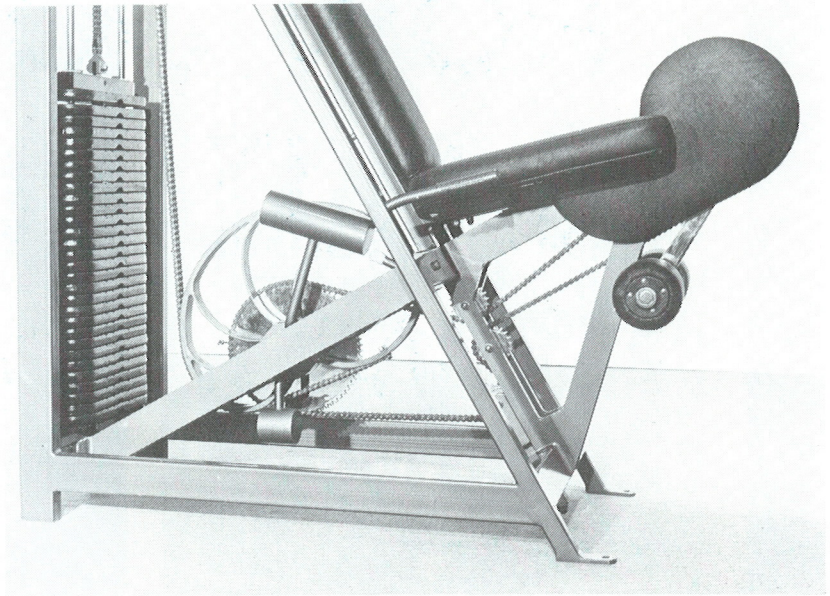
If you double the length of the moment arm, then you double the torque—even though the weight remains constant.

In a Nautilus machine, the selected weight can be as much or as little as you require—and the weight remains constant during the exercise. But the Nautilus cam varies the moment arm as movement occurs—thus increasing or reducing the effective resistance, the torque.

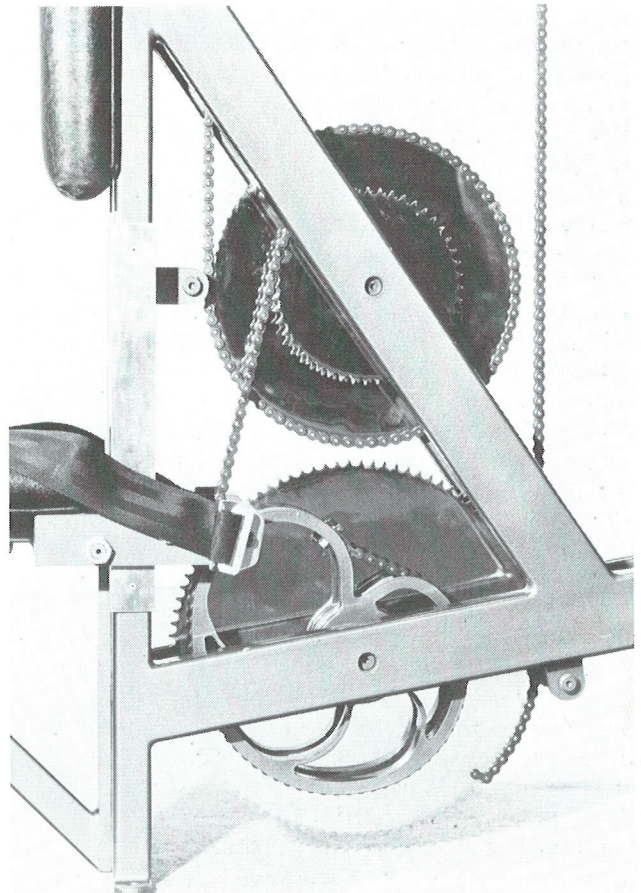
Just as a light man can balance a much heavier man on a see-saw—by moving out to a greater distance from the axis of rotation—the Nautilus cam gives you an automatic advantage in leverage, or a disadvantage, in order to provide your muscles with exactly the right amount of resistance in every position.

Quite simply, there is NO OTHER METHOD of providing this important requirement for full-range exercise—and the cam is exclusive with Nautilus.

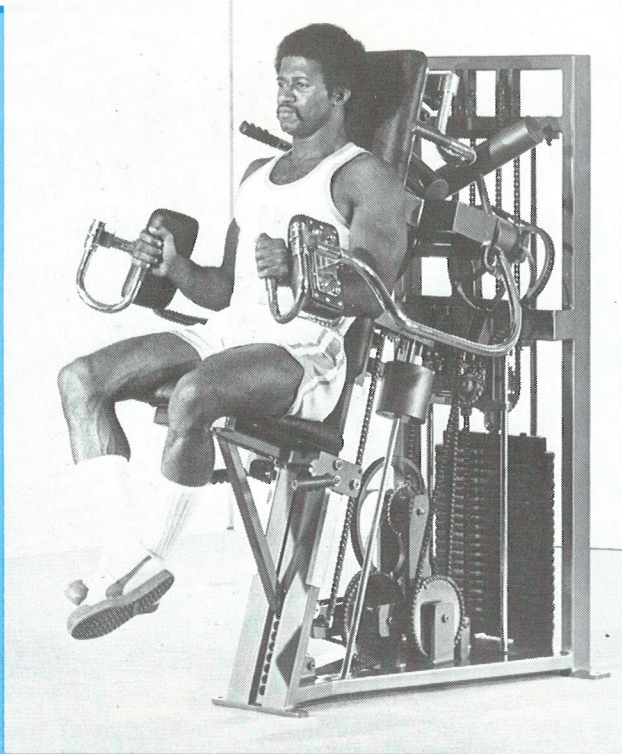
The exclusive Nautilus "cam" in a Super Leg Machine. Also note the two counter-weight clubs. The smaller counter-weight exactly balances the eccentric mass of the cam. The larger counter-weight exactly balances the mass of the "resistance arms" and shin pads—removing the random torque that would otherwise be produced by movement of the machine itself. Thus the only source of resistance is directed through the cam—which exactly regulates it in accord with your strength in every position.



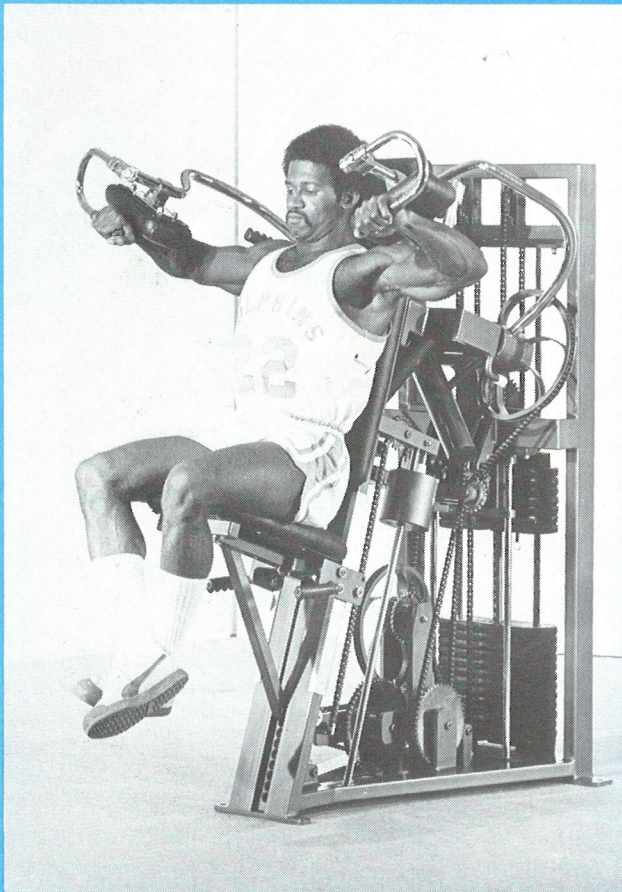
The Nautilus cam and some of the sprockets in a Double Shoulder Machine—providing automatically variable resistance during the secondary movement. Two other cams, located elsewhere in this same machine, provide full-range, automatically variable, balanced, direct resistance for the primary movement.



The Nautilus cam in a Torso/Arm Machine.



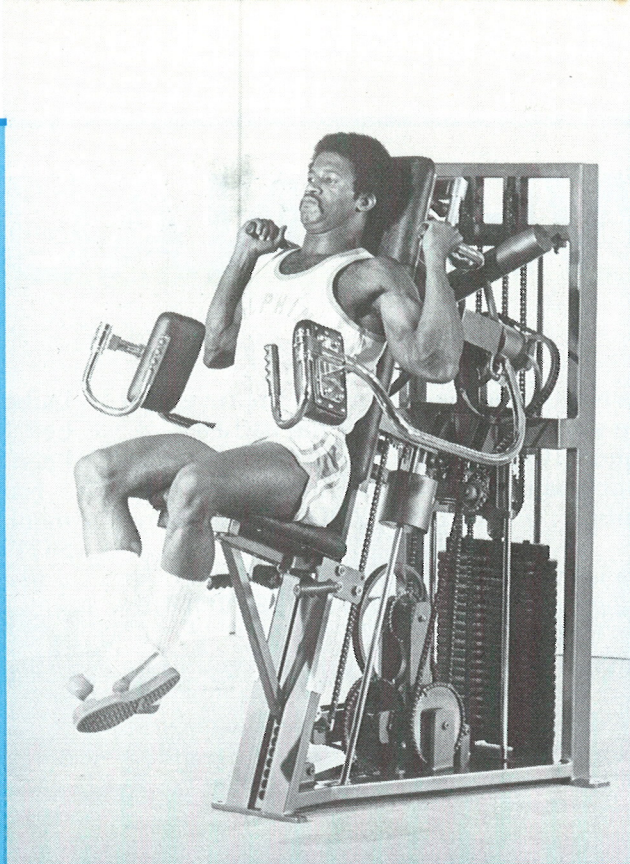
Starting position of the primary exercise in the Nautilus "Double Shoulder" Machine. The resistance is directed against the backs of the wrists—and twisting of the arms is prevented by the hand-grips . . . totally removing the strain that is usually imposed on the elbow joints in "side raise" exercises.



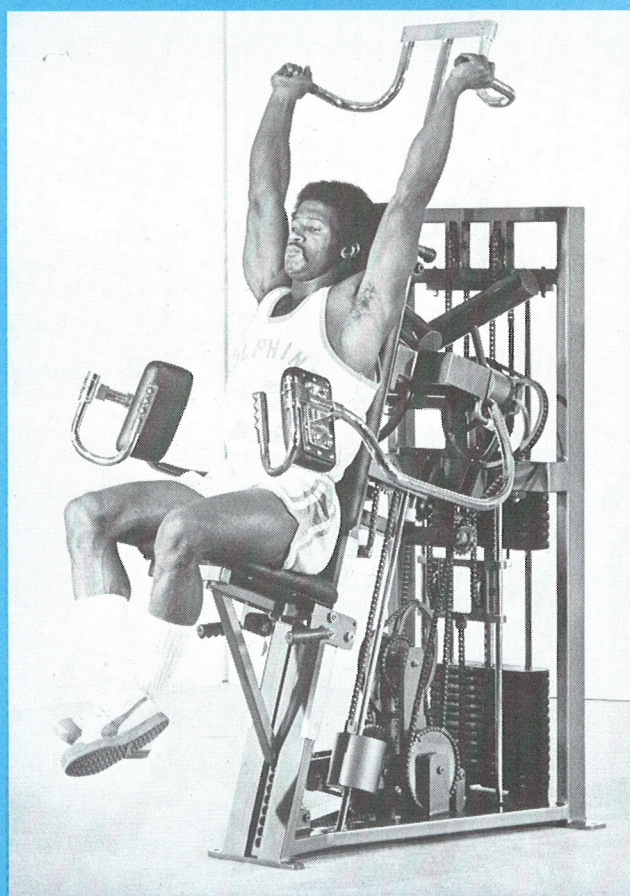
Finishing position of the primary exercise . . . all of the work being performed by the muscles of the shoulders, with no involvement of the arm muscles.

NAUTILUS DOUBLE

Start of the secondary exercise in a Double-shoulder Machine . . . the "behind-neck" press, with automatically-variable resistance.



Finishing position of the secondary exercise. The press is performed after the "pre-exhaustion" that is provided by the primary exercise . . . bringing the arm muscles into work, so that the muscles of the shoulders can be exercised beyond a point of normal failure, providing an intensity of exercise for the shoulders that is impossible in any other manner.



SHOULDER MACHINE

WHY NAUTILUS?

Because Nautilus is the only actual improvement in exercise since the invention of the barbell.

Conventional weight machines are more attractive than a barbell, safer than a barbell, more convenient than a barbell . . . but **LESS PRODUCTIVE** than a barbell.

Nautilus is even more attractive, much safer, far more convenient . . . and **MUCH MORE PRODUCTIVE** than a barbell.

Conventional machines offer several worthwhile features—at the price of an actual loss in function.

Nautilus offers all of the same worthwhile features, plus a number of other exclusively Nautilus features of even more value—while greatly improving function.

The barbell was a very productive and worthwhile tool—in its time. But that time has passed.

The barbell revolutionized physical training—in its time. But the barbell has now been outmoded.

Machines that attempt to copy the functions of a

barbell are forced to work within the limits of a barbell—so conventional weight machines have also been outmoded.

Nautilus has created a new revolution in physical training—without compromise, because Nautilus is **NOT** working within the limitations of a barbell.

Instead, Nautilus exercises are designed to work within the limitations of the human body.

If you are not already using Nautilus exercises—you will. Because, once you clearly understand the basic principles upon which Nautilus is founded—you cannot then fail to realize the value to be found only in Nautilus exercises.

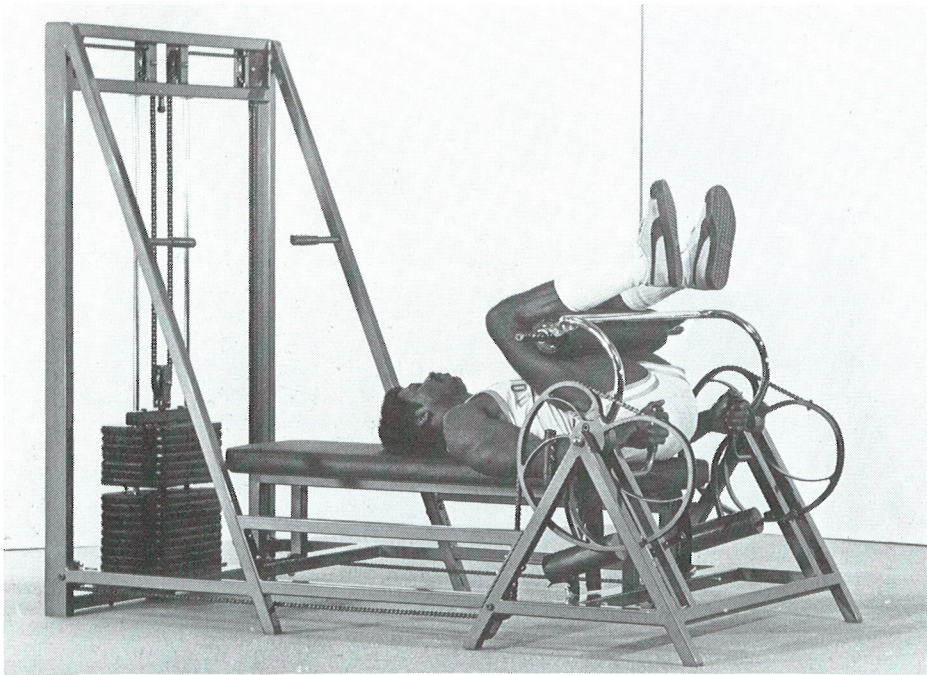
Nautilus is **NOT** the “latest thing” in exercise—instead, it is the “final word” in exercise. Because it is the first logical approach to exercise—the only type of exercise based on a solid foundation of facts, undeniable laws of physics, established principles of physiology.

NAUTILUS SPORTS/MEDICAL INDUSTRIES

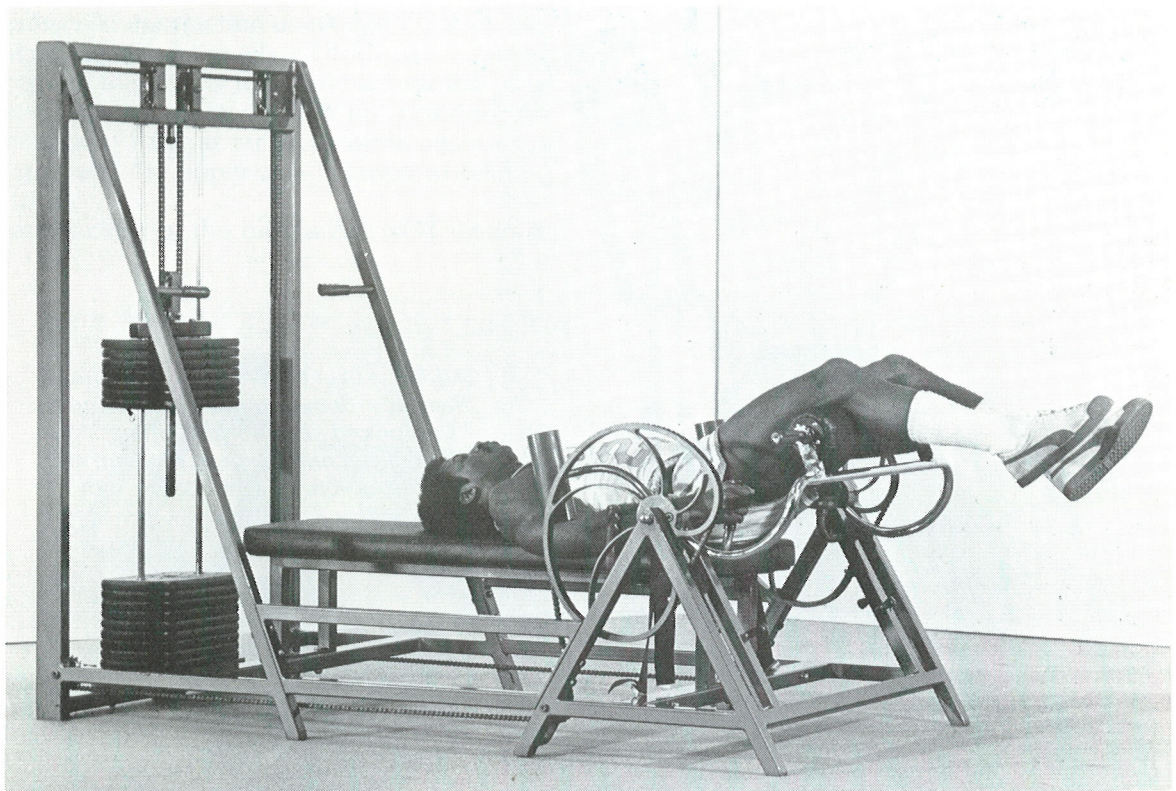
P.O. Box 1783

DeLand, Florida 32720

Phone area code 904 / 228-2884

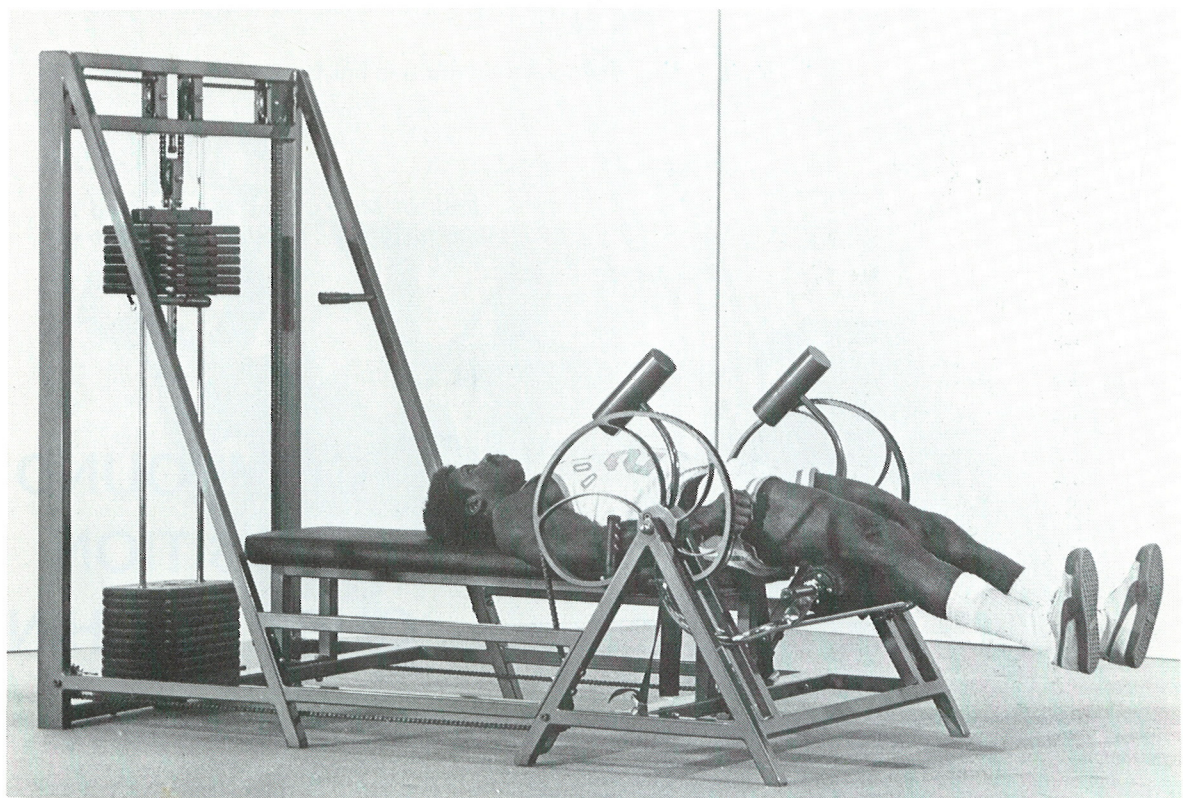


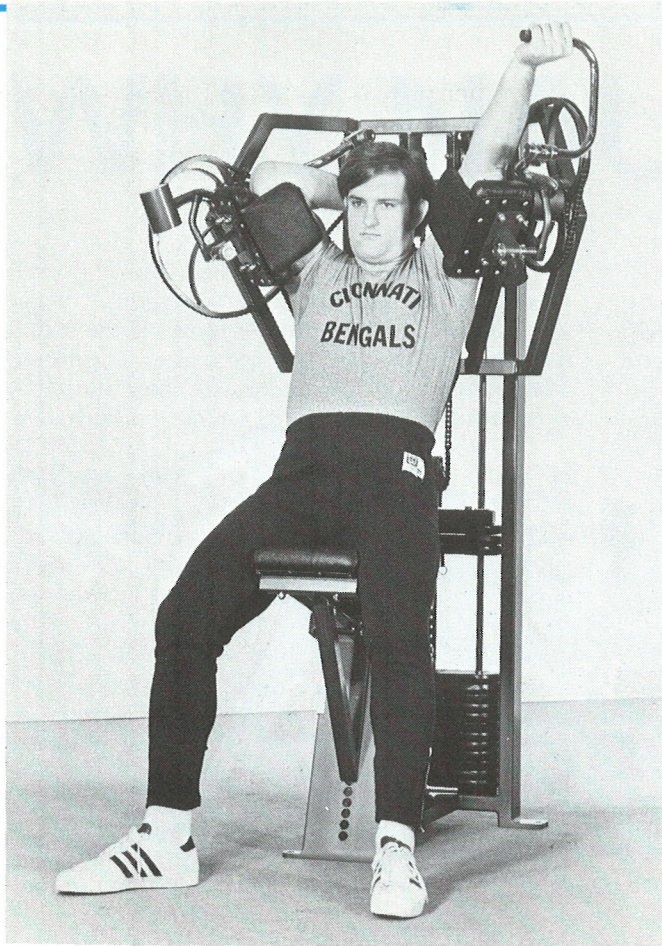
Mercury Morris of the Miami Dolphins—demonstrating a Nautilus Hip and Back Machine, the ONLY full-range exercise for the strongest muscles in the body, the important muscles of the hips and lower back. The most important muscles for any athletic activity requiring strength in the legs, running, jumping, driving, in football, in track, in basketball.



The exclusive Nautilus cam varies the resistance throughout the movement in direct proportion to the athlete's strength in each position.

The fully contracted finishing position provides the required resistance that is not provided by conventional exercises—and eliminates the "lock out" experienced in conventional exercises.





All-Pro Mike Reid of the Cincinnati Bengals demonstrates a Nautilus "Compound Position" Curling Machine. Full contraction of one arm and full extension of the other arm is illustrated.



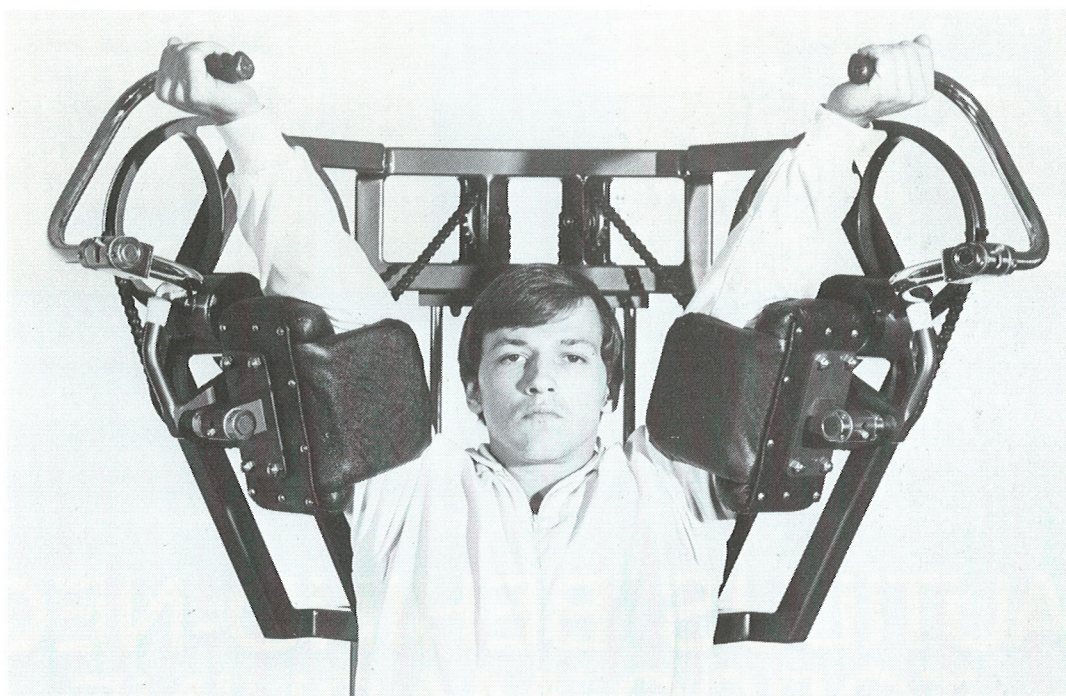
Both of Mike's arms are extended in this picture . . . the starting position of the exercise.

COMPOUND POSITION CURL MACHINE

Full muscular contraction unavoidably results in a particular position of the related body part . . . when the biceps of the arm is fully contracted, the hand is twisted into a supinated (palm up) position, the forearm is bent back as far as possible against the upper-arm, and the upper-arm is raised in relation to the torso.

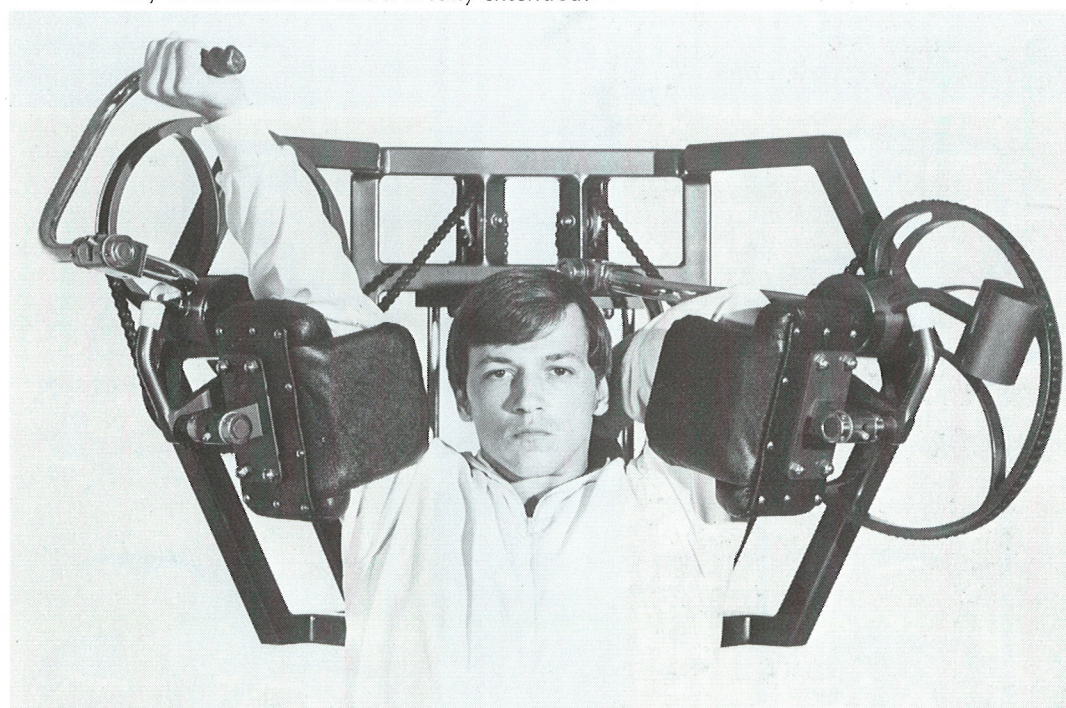
Full contraction of the biceps can NOT occur in

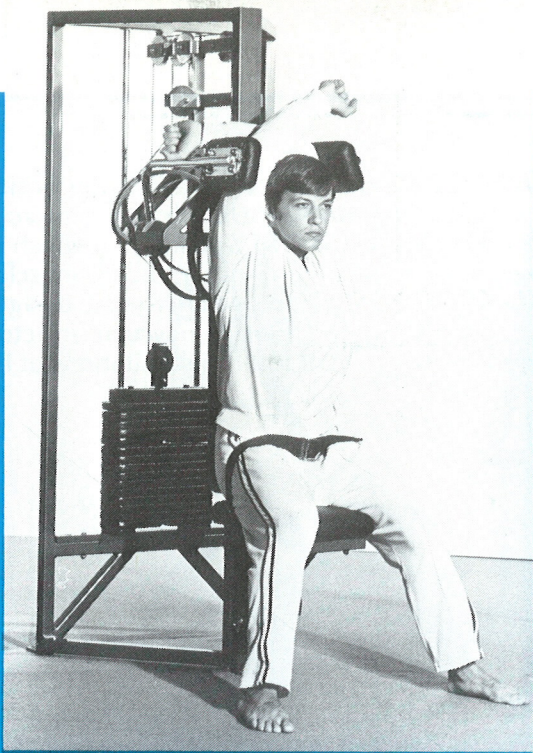
any other position . . . because this is the position that will result, **MUST RESULT**, if full contraction occurs. Thus this is the **ONLY** position in which it is even possible to involve all of the biceps muscle in any form of exercise. Nautilus exercises are designed with the functions of human muscular structures clearly in mind . . . instead of the limitations of bar-bell exercises.



Closeup of the fully-extended starting position.

One arm fully contracted and one arm fully extended.





The Nautilus "Behind-neck" Torso Machine provides a good example of the meaning of FULL-RANGE exercise. The fully-extended, pre-stretched, starting position in this machine results in crossing the arms behind the head . . . a required position that is literally IMPOSSIBLE to reach in conventional exercises.



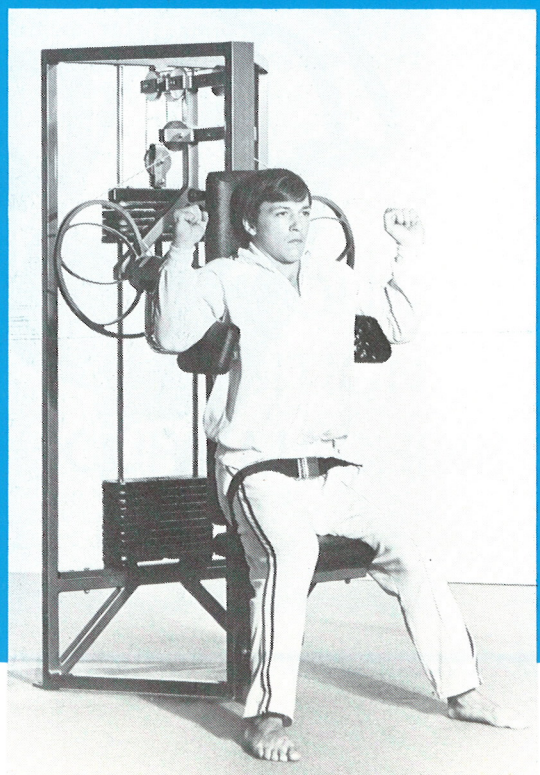
In this closer view from the front, the extreme range-of-movement is even more obvious . . . such truly FULL-RANGE exercise results in great increases in flexibility.

NAUTILUS BEHIND-NECK TORSO MACHINE

After 90 degrees of movement against constant and automatically-increasing resistance.



Nearing a position of full muscular contraction . . . 162 degrees of rotary-form, direct, automatically-variable, balanced, FULL-RANGE, omni-directional resistance.





RIVERFRONT STADIUM · CINCINNATI, OHIO 45202 · 513 / 621-3550

Mr. Arthur Jones
Nautilus Sports/Medical Industries
P.O. Box 1783
Deland, Florida 32720

February 24, 1973

Dear Arthur:

In order to set the record straight for the benefit of possibly interested parties

I first became aware of Nautilus in 1970, as a result of articles in a national magazine.

In 1971, having read a number of magazine articles and two books on Nautilus exercise methods--I began to feel that Nautilus was perhaps the first logical approach to the subject of exercise. So I decided to investigate personally.

In 1972, as a result of several trips to the Nautilus plants in Florida with the trainer and one of the coaches from the Bengals--we placed an order for the full line of Nautilus equipment.

To say the least, the results were dramatic--after only a few weeks of Nautilus training, the Bengals players were both stronger AND FASTER. As you told me in advance that they would be.

For the first year in his football career--Mike Reid, All Pro Bengals lineman, played an entire season without missing a single game. Repeated knee injuries requiring four separate operations had always caused him to miss part of each season--but not this year. After training on Nautilus equipment, Mike played every game with no sign of knee trouble.

So, later in 1972, I bought the Nautilus franchise for the state of Ohio. And, in February of this year, I extended the franchise to cover the states of Illinois, Indiana, Kentucky, Wisconsin, and Michigan.

In a period of only a few short years, I have seen the almost fantastic growth of Nautilus Sports/Medical Industries--growth based on the solid foundation of a logical approach to exercise. So I am proud to announce the formation of "Nautilus Midwest"--to sell and service Nautilus equipment in the heart of America.

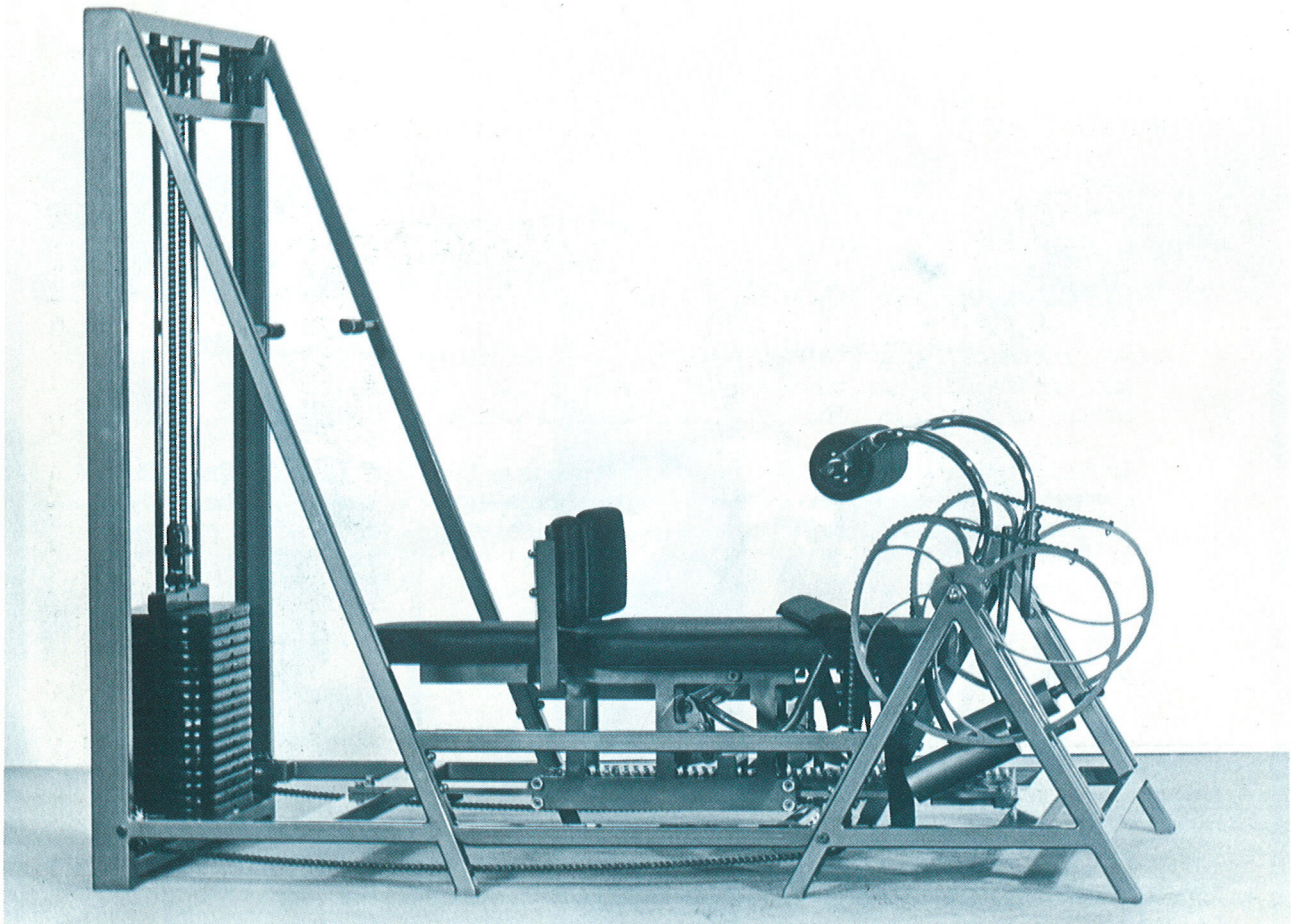
Arthur, it is already obvious to me that the future of exercise belongs to Nautilus--in sports, in medicine, in every field.

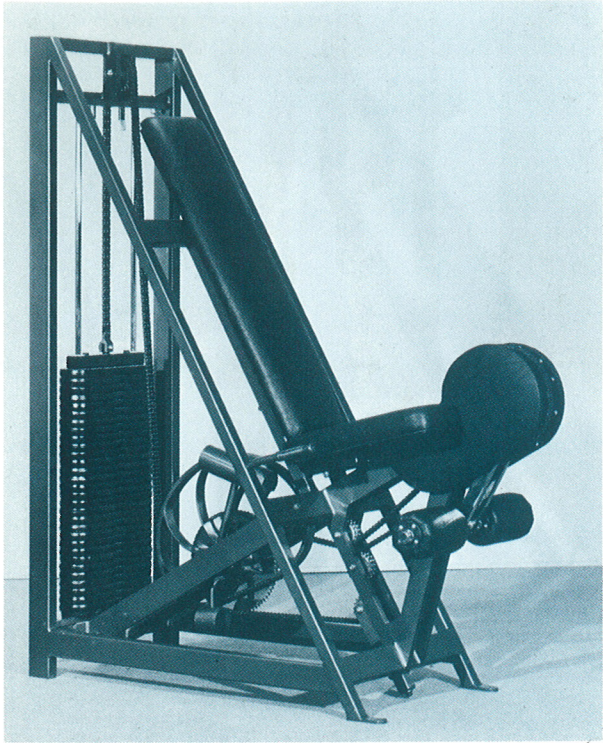
Sincerely,

PETE BROWN
DIRECTOR OF PLAYER PERSONNEL
CINCINNATI BENGALS

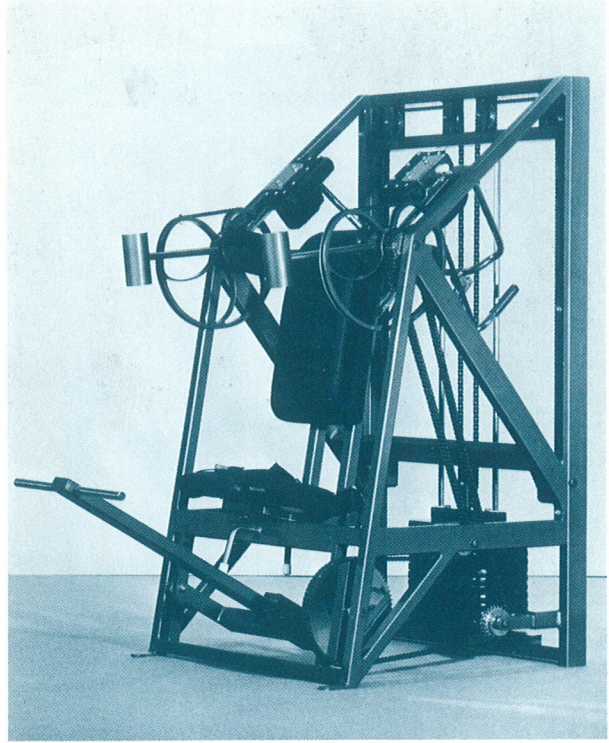
“TIME MACHINES” BY NAUTILUS

GEARED HIP AND BACK MACHINE



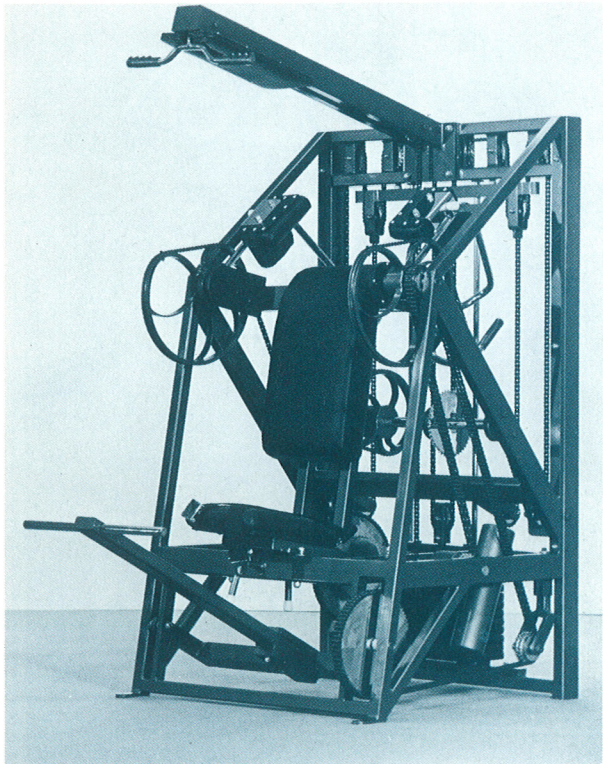


SUPER LEG EXTENSION MACHINE

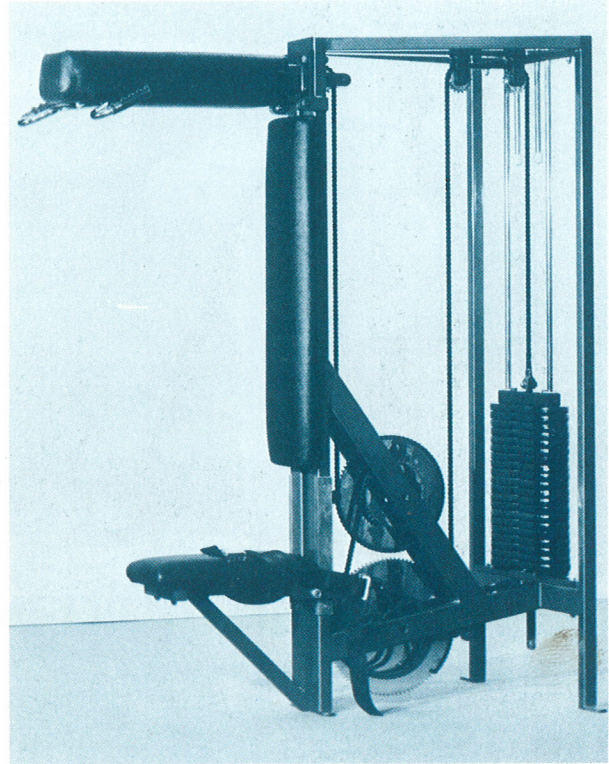


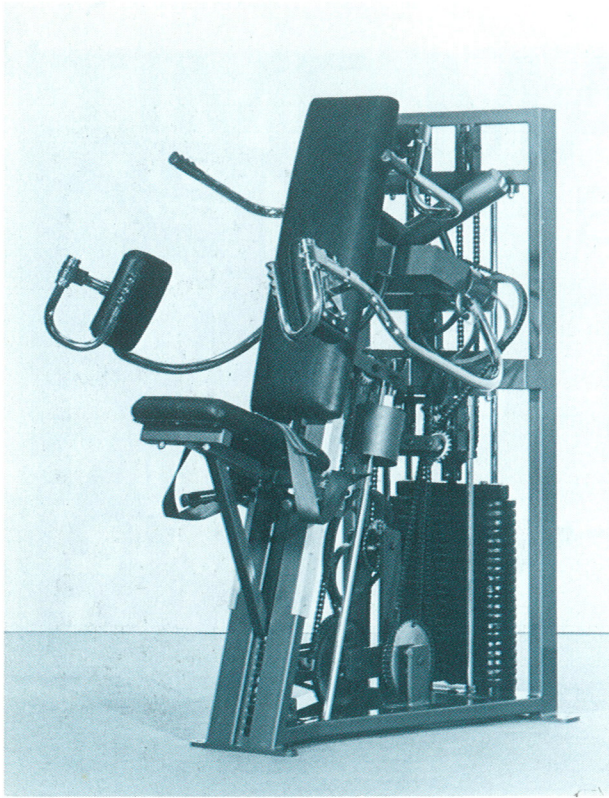
SUPER PULLOVER-TORSO MACHINE

PULLOVER-TORSO ARM MACHINE

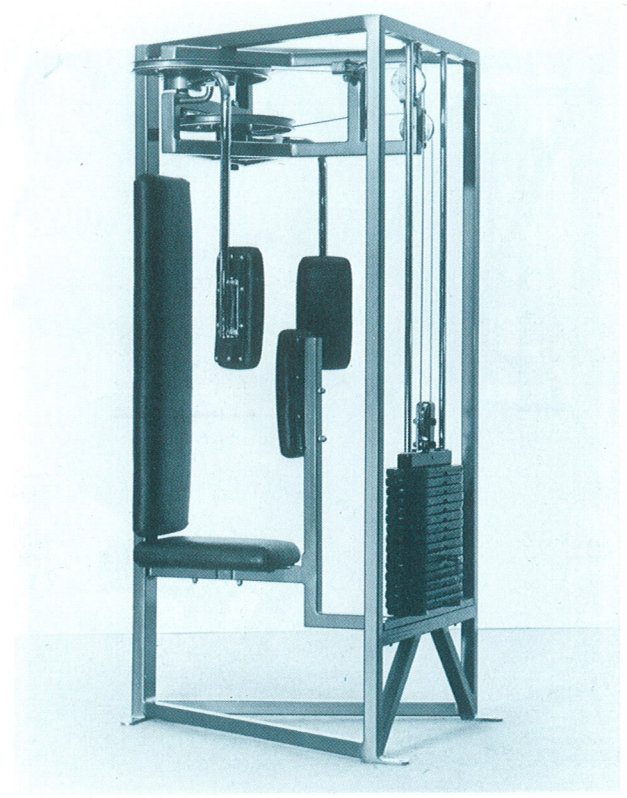


TORSO ARM MACHINE



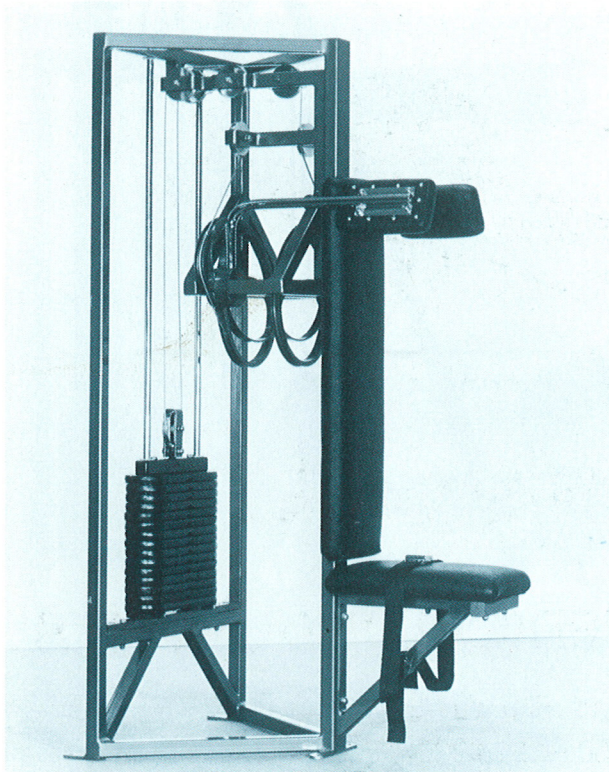


DOUBLE SHOULDER MACHINE

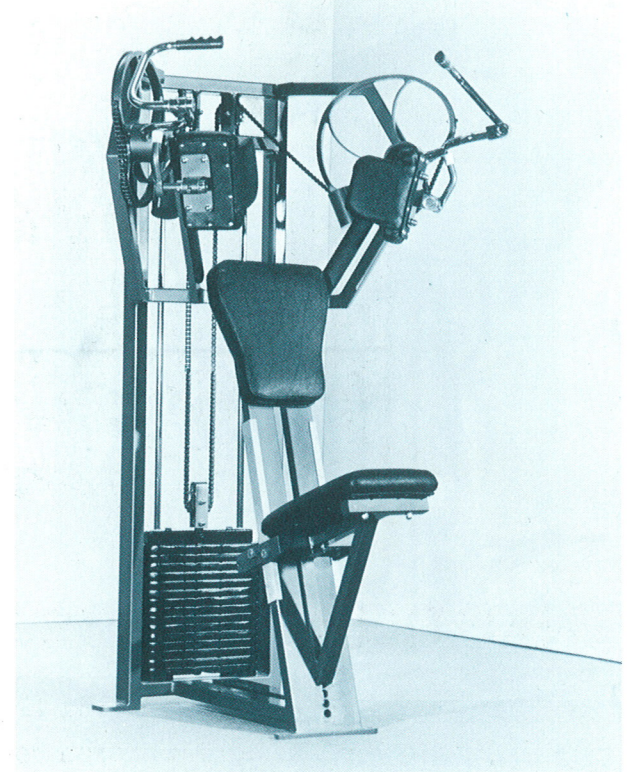


ROWING-TORSO MACHINE

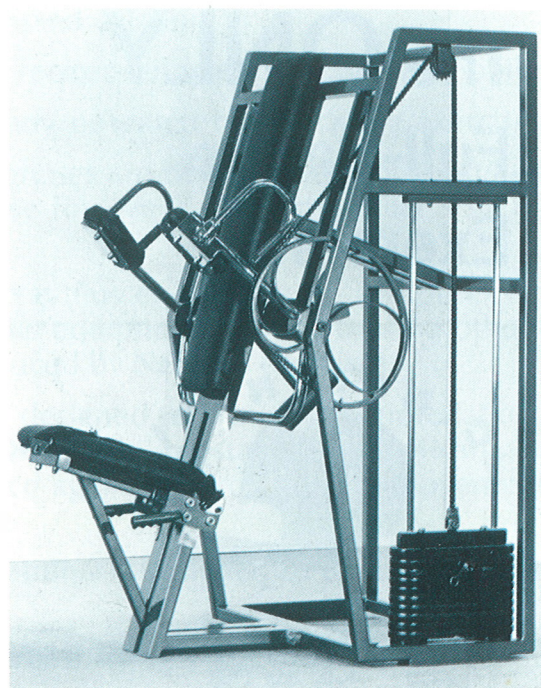
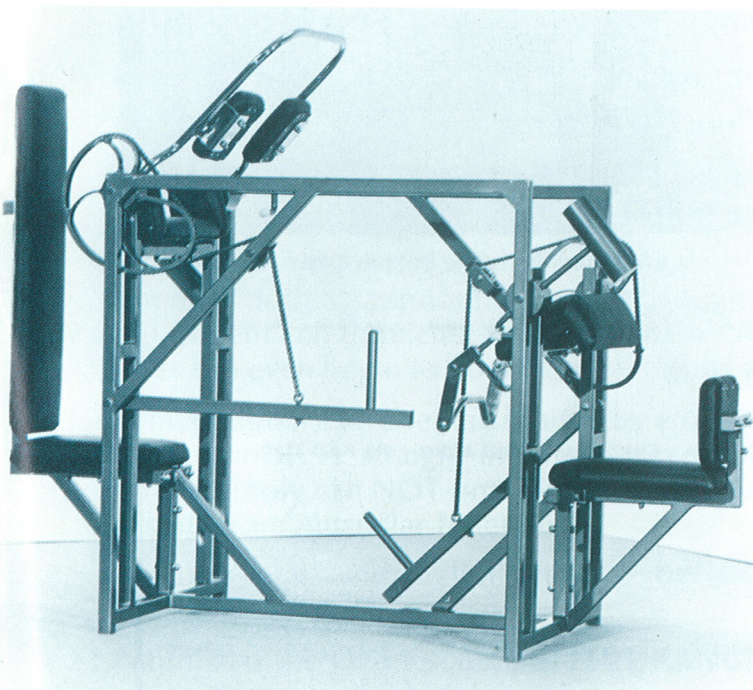
BEHIND/NECK-TORSO MACHINE



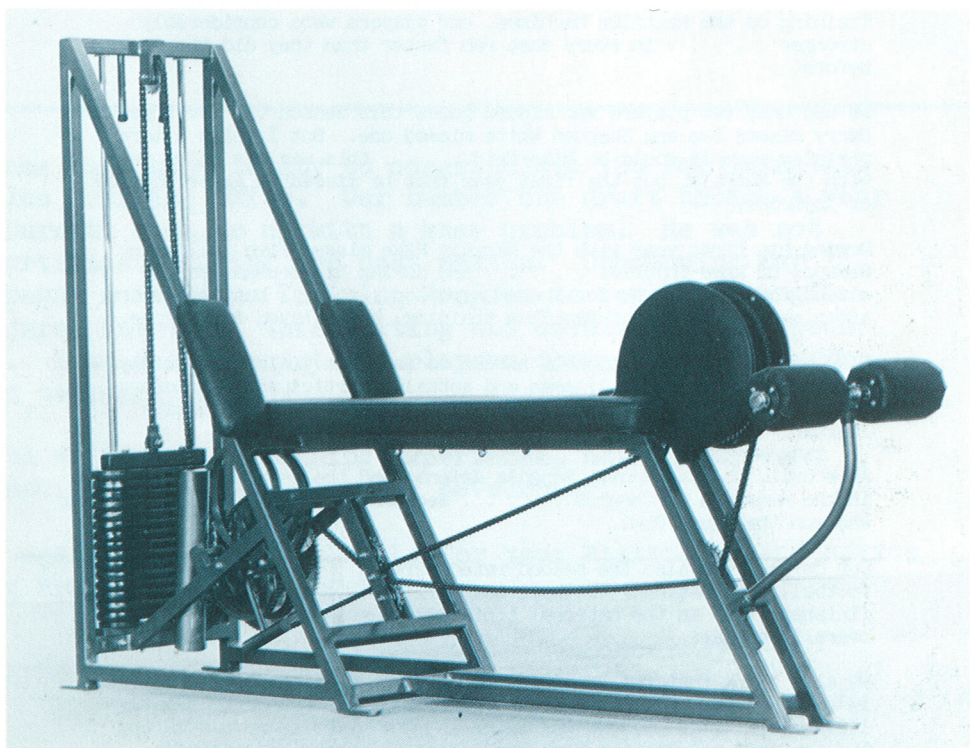
COMPOUND POSITION CURL MACHINE



CURLING AND TRICEP MACHINE



LEG CURL MACHINE



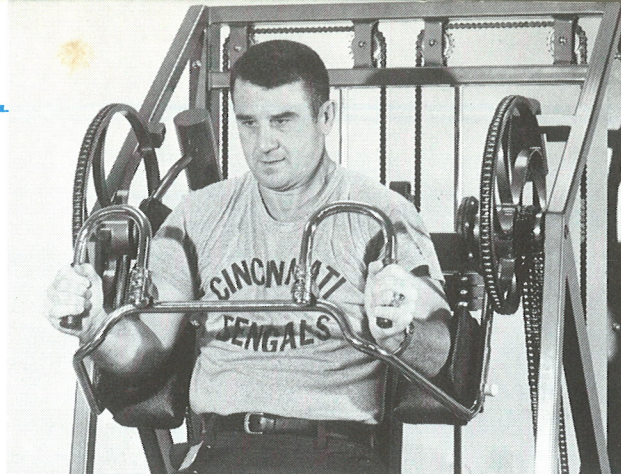
COMPOUND POSITION TRICEP MACHINE

NAUTILUS SPORTS/MEDICAL INDUSTRIES

P.O. Box 1783 DeLand, Florida 32720

Phone area code 904 / 228-2884

NAUTILUS The ONLY Full-Range Exercise



Chuck Studley of the Bengals Coaching Staff



RIVERFRONT STADIUM · CINCINNATI, OHIO 45202 · 513 / 621-3550

Mr. Arthur Jones
Nautilus Sports/Medical Industries
P.O. Box 1783
Deland, Florida 32720

January 23, 1973

Dear Arthur:

Training on the Nautilus Machines, our players were considerably stronger in every case ran faster than they did the year before.

We had only two players who missed games this season Royce Berry missed two and Sherman White missed one. But I think a more striking example would be Mike Reid this was his third year with the Bengals, but the first year that he missed no games because of injuries.

During his first year with the Bengals Mike missed five full games because of knee injuries and during his second year he missed four full games for the same reason but this year, after several months of Nautilus training, Mike played every game.

Mike probably applied himself harder to Nautilus training than any of our other defensive linemen and actually participated in more plays from the line of scrimmage than any other Bengal defensive lineman.

As a unit, the Cincinnati Bengals defense had the second rated defense in the American Conference second only to the Miami Dolphins, who won the Super Bowl.

Our defense was also the second rated defense in all of professional football, the National Football League as the team that finished first in the national conference ranked third behind us in overall defense.

We also think that the Nautilus training was certainly instrumental in the fact that we improved our "win-lose" performance by exactly 100% in 1972 we won twice as many games as we did during the previous season, and were very close to making the playoffs.

Sincerely,

CINCINNATI BENGALS

Chuck Studley

CHUCK STUDLEY

ROTARY-FORM engines have already revolutionized aviation . . .

ROTARY-FORM engines will eventually outdate reciprocating engines in automobiles . . .

NAUTILUS ROTARY-FORM EXERCISE has already outdated reciprocating exercises . . .

"FUNCTION DICTATES DESIGN" . . . Nautilus exercises are designed to provide full-range, high intensity, low force, **ROTARY-FORM** exercise for every major muscular structure in the body.

There is nothing random about the design of Nautilus equipment . . . no other type of equipment can duplicate the functions of Nautilus equipment . . . and thus no other exercises can even begin to duplicate the results produced by Nautilus exercises.

Conventional exercises are limited by equipment designed to provide a reciprocating form of resistance . . . "straight-line" resistance, "back and forth" resistance, which form of resistance simply can NOT provide constant resistance against the rotary-form movement that results from muscular function.

Nautilus builds with no limitations . . . because Nautilus is designed to the specifications of muscular function.

Nautilus is the **ONLY** source of **FULL-RANGE** exercise.

Welcome this opportunity to congratulate you for inventing the Nautilus Training Units. Our number one draft choice a year ago, Ken Durrett came to us with a knee problem. He was not able to participate during the past season. Commencing May 15, 1972, he began a Nautilus Training Program to regain strength in his injured knee. At this writing his development has been marvelous. I am going to put our players through this program during our training period.

In all my years of training experience, have never seen such a dynamic program for strength developing.

Once again, my grateful thanks for your assistance and advice concerning Ken Durrett's recovery.

Sincerely,



Joseph D. Keefe
Head Athletic Trainer
Kansas City Kings
Professional Basketball
Club
210 West 14th Street
Kansas City, Missouri

**NAUTILUS
SPORTS/MEDICAL
INDUSTRIES**

P.O. Box 1783
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