The Maximum-Power Stimulus Theory For Muscle

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Abstract

The maximum-power stimulus theory was valid without exception or failure for a variety of sports on land, in the water and in the air, for a range of competencies from quadriplegics to elite athletes of both genders, and in age brackets from childhood to old age. It proved more potent and efficient than rival theories including hormonal stimulation, like anabolic steroids, and permitted achieving national or world ranking status in mere weeks whereas rival methods of training had failed for years. The theory simplified and unified maximal muscle performance and solved enigmas that go back 2500 years to the first Olympic Games.

There are links to physics and chemistry as well as physiological mechanisms known from biochemistry. The theory functions by the arousal from DNA of unmanifested muscle proteins that provide structural and functional advantages within 24 hours. It permitted mathematical modeling and predicted objectively, accurately and reliably. It illuminated allied theoretical questions like specificity of training, overtraining, and the limits of muscle performance. From the first series of successful experiments in 1967 identifying the hypothesis, there were numerous opportunities to discover exceptions or weaknesses or some conceivable link to "evolution," but none were found. As far as the numerous experiments over a span of 25 years could determine, the theory objectively, validly and reliably explains a complex, quickly reactive design that is universal and the antithesis of "evolution."

Introduction

A muscle subjected to training may enlarge structurally as well as functionally. The new proteins are aroused from the organism's genetic morphological reserves and selectively synthesized (Pette and Staron, 1993). One of the earliest observations on the stimulus for structural enlargement was suggested by Morpurgo in 1897. He compared the muscle enlargement, from propelling the same treadmill, in a small dog and a large dog. The small dog did less than half the work of the large dog, but it displayed greater enlargement of its muscles as indicated by microscopic cross-sectional area determinations. These observations suggested that some other factor, something other than the total work done, was the stimulus for muscle enlargement (Morpurgo, 1897; Mastropaolo, 1991). Petow and Siebert reported that Lange in 1917 associated the stimulus inducing the structural enlargement with causing the muscle to produce an "unaccustomed greatest power from overcoming a high resistance in a short period of time." In 1925, Petow and Siebert stated that the stimulus for structural enlargement was performing more work per unit of time, that is, more power, whereas the total work done was without importance. Their data showed that the enlargements of the heart and the gastrocnemius were directly proportional to the training power, not the total work done (see Figure 1) (Petow and Siebert, 1925; Siebert, 1928).

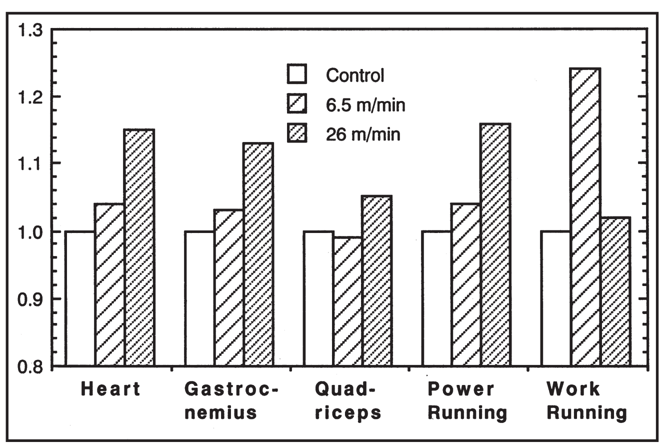

Figure 1. Relative muscle weights, power and work running. In the training of rats, the increases in relative heart and skeletal muscle weights were coupled to the power rather than the work of running (Petow and Siebert, 1925).

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In 1956 and again in 1958, Hellebrandt and Houtz showed that training at the torque force that elicited maximum power for 30 seconds on an ergometer increased muscle performance over the entire load-work rate spectrum (Hellebrandt and Houtz, 1956; 1958). Thus, observations from Morpurgo to Hellebrandt and Houtz, suggested that maximum power was the stimulus for the functional as well as the structural enlargement of muscle. Derived from genetic morphological reserves, those alterations were associated with the synthesis of new proteins in the actin and myosin contractile filaments (Pette and Staron, 1993).

It is well known that muscle also may atrophy in size and function. Therefore, one interpretation of these studies is that the size and the function of a muscle may be changed, positively or negatively, in direct proportion to the change in maximum power demanded in the muscle's spectrum of activities. This conclusion may be called the maximum-power stimulus theory for muscle.

The Enigmas

One of the earliest observations on the functional improvement of muscle comes from the lore of the Ancient Olympics of about 500 B.C. Milo of Crotona, Olympic wrestling champion once as a boy and five times as an adult, carried a steer on his shoulders into the Olympic stadium. When asked how he had become so strong, he replied that he had lifted the steer every day from the day it was born. For many years, this method has been called progressive resistance training. It suggests that the stimulus for the functional improvement of muscle is an increase in the force demanded of it. This led to two enigmas, the first of which was that adding weights to a runner or cyclist for training may result in worse, not better, racing performance. For theorists, this enigma was circumvented by dividing training theory into two mechanisms. One was a "strength" mechanism for which load was the stimulus and the other an "endurance" mechanism for which long duration (time) or total work was the stimulus.

The second enigma concerned the observation that a heavy weight was necessary for training to improve strength, but the heaviest weight did not give the best results. This enigma remained unresolved for more than a decade, possibly because an advance in technology was necessary to test true force (mass times acceleration), rather than merely the static force (mass) (Mastropaolo, 1989a; 1989b; 1992a; Mastropaolo and Takei 1991). That research found that the maximum-power stimulus training resulted in 1.8 times the gain in strength and 1.6 times the gain in power of the progressive resistance (mass) training. The maximum-power stimulus point of view resolved both enigmas while simplifying and unifying training theory. Whether one movement or many movements, whether with heavy loads or light loads, the maximum-power stimulus seemed to be the trigger which aroused the structural and functional improvement mechanisms (Mastropaolo and Takei 1981; Mastropaolo 1984; 1989a; 1989b; 1992a).

Testing the Maximum-Power Stimulus Theory

That a theory simplifies and unifies is a necessary but not sufficient sign of its validity. Another requirement is universality. The theory ought to work on both genders, all ages, all activities in all environments at all physiological competence levels without exceptions or failures. A valid theory ought to be high in potency and high in efficiency. It ought to compare favorably to training with hormonal stimulation, like anabolic steroids, which although illegal and hazardous to health, have been shown to be high in potency and efficiency. In succeed or fail conditions, it ought to succeed where rival theories have failed. There also ought to be links to known physiological mechanisms as well as more basic science, like chemistry or physics. If it is truly scientific, then it ought to permit mathematical modeling, that is, a definition in the language of science. Like any good theory, it ought to predict objectively, accurately and reliably. If truly valuable, it ought to illuminate allied theoretical questions like specificity of training or overtraining or the limits of performance.

To test the maximum-power stimulus theory, four quadriplegic students were given maximum-power training (Kenyon and Ruel, 1982). They had as little as 15% of the body's major skeletal muscle under voluntary control. Their physicians gave them no hope, because their heart rates could not rise above 90 beats per minute. They were told that they could not achieve target heart rates to reverse the physiological degeneration from the disuse of the denervated parts of their bodies and therefore were doomed to deteriorate progressively and die young. Maximum-power training on a cranking ergometer improved all of them with evidences of marked muscle hypertrophy. This suggested that the mechanisms for morphological modification were stimulated from within the active skeletal muscle, not the heart. Some of the quadriplegic students were then able to achieve qualifying times for wheelchair racing, and they anecdotally reported that new horizons had opened for them. They said they had first-hand evidence of physiological improvement and did not feel doomed to die young.

Conspicuous improvements also were obtained by two cyclists, a runner, a swimmer, a kayaker, and a muscle-powered flyer (Mastropaolo, 1984; 1992b). The muscle-powered flyer won prizes of 85,000 and 220,000 dollars—prizes that had been sought in vain for 18 to 20 years by teams worldwide. Twenty-two years later, those records still stand (Allen, 1979; Grosser, 1981; Long, 1978; Mastropaolo, 1982). The improvement beyond personal records in these elite athletes was five per cent per month, thereby exceeding in eight weeks the gains from anabolic steroids in eight years, according to the best documented case for training with anabolic steroids (see Figure 2) (Mastropaolo, 1992b). Some of these athletes achieved national or world rankings in weeks whereas rival methods had failed to produce such results in as long as 18 years. Conspicuous results also were obtained with archers, gymnasts, rowers and weight lifters (Mastropaolo, 1984; Mastropaolo and Takei 1991). The subjects included men and women from four to 82 years of age.

In summary, the maximum-power stimulus theory was valid for a variety of sports on land, in the water, and in the air for a range of competencies from quadriplegics to elite athletes of both genders in age brackets from childhood to old age. It proved more efficient than anabolic steroids and permitted achieving national or world ranking status in mere weeks whereas rival methods of training had failed for years. Although the tests did not cover every circumstance, there were numerous opportunities to discover exceptions or weaknesses in this training strategy but none were found.

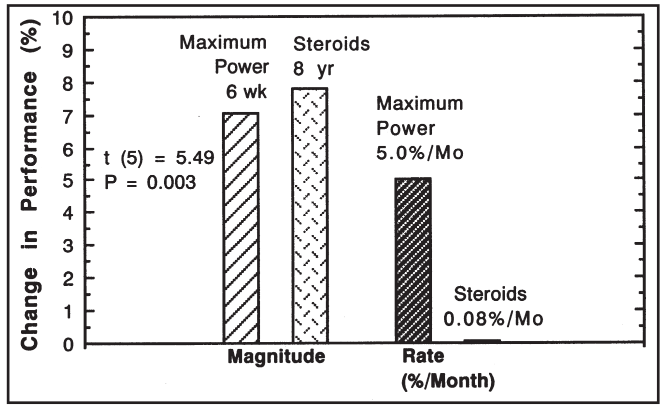

Figure 2. Maximum-power training versus steroids, magnitude and rate of change compared. The cases for steroids (N=1) and maximum-power training (N=6) were compared. The progress made beyond the personal record with steroids in eight years could be exceeded in eight weeks with maximum-power training. The probability, P, that this conclusion is wrong is three chances in 1000 (Mastropaolo, 1992b).

Possible Linking Mechanisms

Is there a potential link of the maximum power stimulus to known physiological mechanisms? Maximum power requires maximum metabolic rate, maximum energy conversion, and maximum heat release at the site of contraction. This site is also the intracellular area sustaining the greatest consequences from this severest of metabolic storms. The flood of heat, 80 per cent of the energy converted, and the flood of other metabolites, are known to instigate the synthesis of heat-stress proteins, and other new proteins, which configure the cell to withstand these physical and chemical shocks from maximum metabolism (Mastropaolo, 1992a). Other new proteins are known to reconfigure the contractile properties of the actin and myosin filaments themselves, and these new proteins are induced from genetic morphological reserves (Pette and Staron, 1993). The concept that emerges is that the genetic morphological reserves provide new contractile proteins to permit higher maximum metabolic rates while also providing heat-stress and other new proteins to withstand the increased heat and chemical shocks. The stimulus site summoning the coordinated synthesis of the new proteins is probably the area experiencing the full fury of the metabolic storm, the site of contraction.

This maximum-power stimulus theory also needs to address the more passive tissues of the musculoskeletal system, the stroma and bone. The stroma structurally enlarges and toughens permitting enlargement of the muscle cells and the transmission of higher forces without rupture. The cortex of bone thickens and the trabecular network reconfigures to withstand higher forces or velocities or power generated by the muscles. If the triggers for these alterations in stroma and bone are intracellular and responsive to both force and velocity, the components of power, then this would provide punctual changes congruent with those proceeding in muscle and render a consistent overall theory for the entire musculoskeletal system.

Structural Alterations

Morpurgo and others demonstrated that the structural enlargement of muscle is by hypertrophy of the individual cells, rather than by an increase in the number of cells. Morpurgo identified the enlargement as increased sarcoplasm and subsequently Seiden found a significant enlargement of the sarcotubular system (Morpurgo, 1897; Seiden, 1976; Mastropaolo, 1991). In analogous terms, the cellular engine increases size by increasing the water jacket and the ignition system. The water jacket not only serves as a heat sink but also contains the fuel systems, which must enlarge structurally and functionally to permit the maximum energy conversions required for maximum power output. The water jacket also serves as the reservoir where myoglobin may be synthesized de novo to enhance the carburetor, which ultimately supports the maximum energy conversions with oxygen

Muscle cells may be looked upon as engines converting chemical energy to mechanical energy at variable meta-

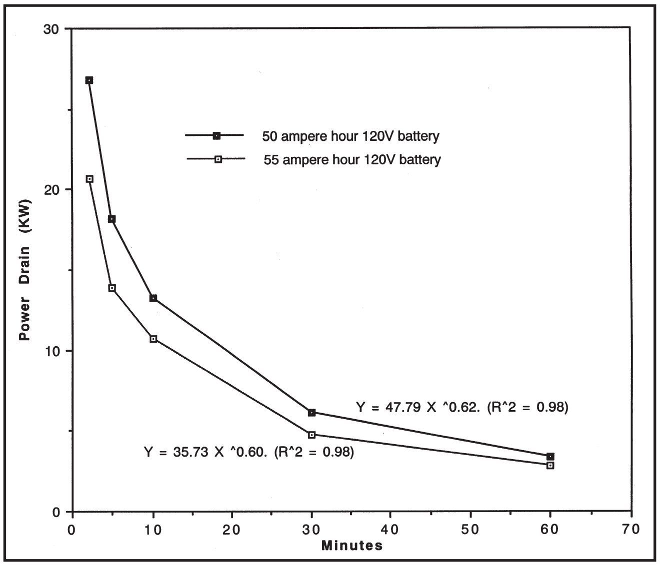

Figure 3. A chemical-electrical analogue of a chemical-mechanical cell. The 55 ampere hour battery was designed for a longer discharge time than the 50 ampere hour battery and discharged at lower power for each time shown. Batteries are chemical-to-electrical energy converters and may be considered analogues of muscle cells, which are chemical-to-mechanical energy converters. Muscle cells designed by the structural modifications of endurance (long discharge) training discharge at lower power levels like batteries. Like muscle, the discharge rates of both batteries are described well by Y = a X^b (Massaro, 1985).

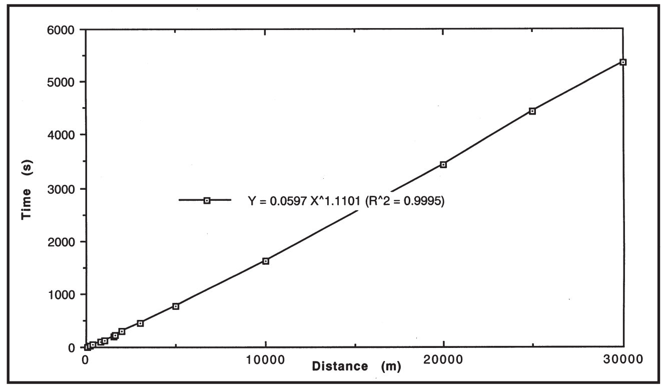

Figure 4. Sprint and running world records 1990. Sprint and running records from 100 m to 30,000 m are described with 99.95% precision by Y = a X^b (The Athletics Congress, 1990).

bolic rates, or rates of discharge. Analogously, batteries may be looked upon as devices that convert chemical energy to electrical energy also with variable rates of discharge. A battery designed for a longer discharge time will yield lower power levels than a battery designed for shorter discharge times (see Figure 3). Similarly, muscle cells trained and thereby structurally configured for endurance (long discharge times) also perform at lower power levels (see Figure 4). For muscle cells and for batteries, the same mathematical model may be employed, $Y = aX^b$, where Y is the predicted score, a is the constant, X is the score and b is the exponent.

A Mathematical Model

The mathematical model of choice, appropriately called power equation, takes the form : $Y = a X^b$, and accurately models maximal muscle performance. For example for 1990, the equation for the track records for men from 100 m through 30,000 m is $Y = 0.0597 X^{1.1101}$ [Figure 4] (The Athletics Congress, 1990). The R^2 of 0.9995 shows that the data are modelled with an accuracy of 99.95%. The equation for the more powerful battery in Figure 3 is $Y = 47.79 X^{0.62}$ ($R^2 = 0.98$) and for the battery designed for the longer discharge, $Y = 35.73 X^{0.60}$ ($R^2 = 0.98$) (Massaro, 1985). These high modeling accuracies show that battery power, as well as running power, conform closely to the mathematics of the power equation.

A basic test of the model's predictive accuracy is to confirm that given a longer time a lower power will be predicted. The model passed that test, as is shown by as good a fit for the longer running times at lower power as for the shorter running times at high power (see Figure 4). A step further would be to check the accuracy of those predictions. For that purpose, the model may be constructed with data different from those to be predicted. For example, if all that were known were the records for the 1500 m, the 5,000 m and the 10,000 m, could the model predict the record for 30,000 m? The model would predict a time of 5,370.06 s compared to the actual record of 5,358.80 s for an error of 0.2% (The Athletics Congress, 1990). The model seemed to predict accurately even with the minimum of three data points required for the formulation of the equation and even if the extrapolation was 20,000 m from the last data point.

For another test of predictive accuracy, the data for 100 m through 1000 m were used to formulate the model ($Y = 0.0506 X^{1.1352}$, $R^2 = 0.9982$), extrapolations were made to the 1500 m and the mile (1609.3 m), then the predicted times were compared to the actual records. The predicted times were 204.01 s (7.36 m/s) for the 1500 m and 220.97 s (7.29 m/s) for the mile and these were compared to the actual records of 3:29.46 or 209.46 s for the 1500 m and 3:46.32 or 226.32 s for the mile (The Athletics Congress, 1990). Accordingly, the predicted values were in error 2.6% and 2.4%, respectively. The model predicted reasonably well, but curiously in both cases the model predicted lower times. This raised the question of whether faster records were feasible.

From popular journal accounts, a runner was reported near record times for the 1000, 1500, and 3000 m. The question arose as to whether he could break the 1990 records for the 1500 m and the mile. If the equation is formulated with the 1990 records for the 1000, 1500 and 3000, then the model predicts new records by margins of 1.18 s for the 1500 m and by 1.08 s for the mile. In 1993, the runner broke those records by 0.6 s and 1.93 s, respectively. The model's predictions were in error 0.28% and 0.38%, respectively. The model did seem capable of predicting accurately where effort may be placed to break world records and was used in similar ways in order to obtain the conspicuous results reported above in the wide variety of sports at the elite level for which the investigator had little or no experience as a competitor or coach.

General Versus Specific Power

The question arose as to whether breaking a record in one event would permit breaking records in other events. If a record is broken, that indicates that the system is more powerful and other records may be broken. Yet, the principle of specificity of training argues that records will be broken by some unquantified amount only where the training occurred. Which is correct? The question was investigated by the author with a series of maximum-power tests to establish a baseline, specific training to break one record on the baseline, then retesting. All of the tests showed improvement, with the greatest improvement where the training had taken place. The improvements regressed from the training site according to the same equation, $Y = a X^b$, which in retrospect seems quite logical if the basic premise, the maximum-power stimulus theory, is valid. Therefore, training at one point on the power spectrum does increase the power capacity generally, with the greatest improvement being noted where the training occurred and decreasing from there according to $Y = a X^b$. These results support the maximum-power stimulus theory on the one hand and on the other they describe mathematically what hitherto was a gross unquantified principle, the specificity of training.

Weight Lifting

Repeating the experiment in the weight lifting realm yielded a new observation—that power was lost at the lowest forces as it was progressively gained at higher force levels. The force-velocity curve pivoted at the force that yielded peak power (Figure 5). This was observed with a simple movement, like the bench press, as well as with a more complex movement, such as the press to handstand simulated on a modified weight lifting machine using experienced gymnasts as subjects (Mastropaolo and Takei, 1991; Mastropaolo, 1992a). This suggests, contrary to conventional wisdom, that weight lifting is not beneficial for all athletes. It would benefit athletes competing in the slow-high-force portion of the force-velocity curve, as in weight lifting competitions. It would be of marginal benefit for those competing in the middle portion of the force-velocity curve, as in long distance events in track, and would be detrimental for those performing in the high-velocity-low-force portion of the curve. In this latter region, we might mention sports like badminton, tennis, table tennis, and baseball.

Speculation on what causes the pivoting of the force-velocity curve must consider likely changes in angle of pull of the muscle with the bone as hypertrophy increases. However, judging from the appearance of the curves in Figure 5, the changes seem to have a more fundamental cause, like a change in leverage at the molecular level of the contractile mechanism. It remains to be seen whether this judgment will be supported by future research.

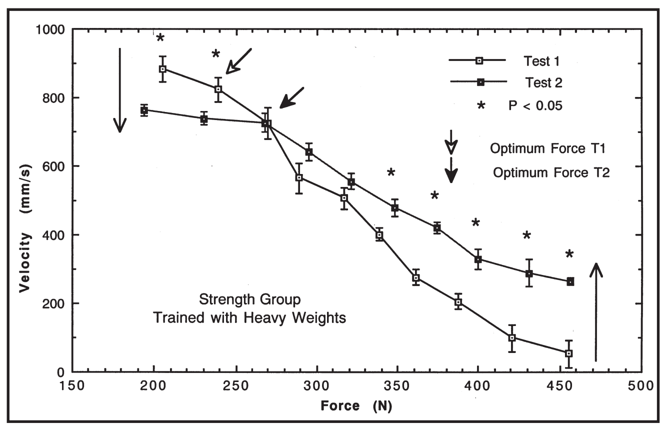

Figure 5. Weight lifting training pivoted the true force (F = ma)-velocity curve. Eighteen male university varsity gymnasts were tested and trained in a simulated press to handstand on a modified weight-lifting machine. For the five highest forces, the gymnasts became significantly faster and for the two lowest forces significantly slower (P < 0.05). The optimum force, yielding greatest power, increased with training. The pivot was the optimum force on Test 2 (Mastropaolo and Takei, 1991).

The Limits of Muscle Performance

In the course of training that progressively increased power, four series of tests were performed, starting from the lowest force, and power equations were derived from the lowest force to the force that yielded maximum power. The constant, a, decreased from 5.49 to 3.78 to 2.00 to 1.56 whereas the exponent, b, increased from 0.52 to 0.61 to 0.71 to 0.76 and R^2 ranged from 0.96 to 0.99. If the analysis is carried out for the differences from the first test, then the effect is magnified because the constant, a, decreased from 1.80 x 10^{-5} to 1.51 x 10^{-8} to 2.56 x 10^{-12} and the exponent, b, increased from 2.43 to 3.58 to 5.15 with R^2 of 0.95, 0.87 and 0.95. The constant's approach to zero proceeded from three orders of magnitude to four orders of magnitude suggesting this as the better indicator, with the greater resolution and sensitivity, compared to the exponent, for any athlete's approach to ultimate performance.

Ancillary Applications

An ancillary application of these findings would be to evaluate the range of alterability of a particular athlete's skeletal, muscle and stromal structure given a particular protocol to develop maximum power. Another application might be to compare protocols for the development of maximum power for genders, ages, and levels of physiological competence. Another application is to evaluate the volition of an athlete. A series of power tests has a distinctively high R^2 for an athlete with high volition that is easily distinguished from the low R^2 of an athlete with weak volition. The athlete with weak volition may be provided an objective tool to motivate greater volition.

The maximum-power stimulus theory permits relief from the type of overtraining associated with tissue damage. For weight lifting, textbooks advise no more than two or three training sessions per week, because the subject is expected to use progressive resistance protocols with heavy weights, thereby causing tissue strains that require rest for healing (Fahey, 1994). While training for maximum power, subjects use the medium weight that elicits maximum power with no sign of tissue strain. In this way, they may break power records seven days per week, as was done in the weight lifting experiments, without strains or injuries and thereby progress more efficiently.

Currently for racing even short distances, an athlete is often subjected to vast quantities of work which may cause the type of overtraining associated with chronic overwork and diminished motivation. The maximum-power stimulus theory permits power records to be broken as often as every training day with short, focused training sessions. Athletes breaking power records in this way do not become overtrained, because there is no overwork and the frequent breaking of records is highly motivational. This suggests that the maximum-power stimulus strategy may eliminate the problems of overtraining from injury or overwork.

Training the musculoskeletal system has been used to modify other systems. For example, physical activity may alter total serum cholesterol, which has been considered a risk factor for coronary heart disease. In careful experiments, in which exercise was measured and diet was measured and weighed to control total calories and nutritional composition, total serum cholesterol was decreased by the high power of the training, not the total work, and the risk of coronary heart disease was thereby diminished (Mastropaolo, 1967). This suggests that the maximum-power stimulus strategy may simplify and unify theories of arousal stimuli for structural and functional alterations elicited from morphological genetic reserves as induced by muscle for muscle and for other cells of the body (Mastropaolo and Takei, 1981).

Without allowing the bone to move, muscular contractions against strain gauges have been observed to train the muscle to produce more force, called isometric strength, and for a longer time, called isometric endurance. The question arose as to whether training in the usual dynamic fashion according to the maximum-power stimulus strategy would increase isometric strength and endurance. It did and there were no statistically significant differences between the maximum-power stimulus method of training and isometric training (Kent, 1982). This suggests another facet of universality for the maximum-power stimulus theory.

It also suggests another analogous attribute for the muscle as an engine. Unlike gasoline engines that have fuel and air mechanically coupled and can be stalled, the myofilaments cannot be stalled. Therefore, increasing the power of the muscle would be reflected in every way the muscle may be used. In turn, this permits another simplification because there is no fundamental need for the categories of contractions called concentric (shortening), isometric (no bone movement) and eccentric (lengthening). If the muscle produces enough power, then the bone moves, the muscle shortens and the load is lifted. If less power is produced, then the lifting stops, the bone stays in place and the muscle maintains its length. If still less power is produced, then the load is lowered under control as the bone returns to the starting position and the muscle lengthens. A more powerful muscle will permit greater competence in these and other uses, even if there is difficulty with the equation for power because there is no discernible movement or movement seems to go negatively. Such a conceptional difficulty from physics ought not to hold back muscle power theory. It ought instead to signal the need for an alternative marker immune to such difficulty, like metabolic rate.

Refinement of the Theory

What is needed is an indicator of the energy converted, like steady-state metabolic rate. In light of this refinement and the other studies reviewed, the definition suggested in the fourth paragraph above may be modified and supplemented as follows. The stimulus for the structural and functional change of muscle, and the alterations induced in other cells, is directly proportional to the maximum rate of energy converted in the muscle's spectrum of uses. This may be called the maximum-power stimulus theory for muscle.

Design Versus "Evolution"

The maximum-power stimulus aroused the synthesis of new proteins that were not manifestly present in the muscles undergoing alteration. These new proteins were summoned apparently from the genetic morphological reserves in the DNA already present in the individual and did not have to wait for alleged eons of hit-or-miss mutations. Often within 24 hours, the new proteins were synthesized with the unerring precision and punctuality expected from intelligent design, not from some blind, mindless, iterative, failure prone, unpredictable, unobservable speculation like "evolution."

Batteries like those of Figure 3 are not constructed by phantom, chance, physicochemical forces acting selectively and mysteriously on minerals. They do not "evolve." Engineers do not throw battery enclosures into the ocean or any "primeval soup" or any fossil pit and expect "natural forces" to "evolve" batteries. The engineers who constructed the batteries of Figure 3 designed with mathematical precision the chemical, electrical and structural requirements. They strenuously eliminated chance and any possibility for any random "mutation" to their blueprints. As electronic engineers, they knew that if a "mutation" takes place in the circuitry of a television set, for example, then degraded audiovisual reception would result, because chance builds nothing and disintegrates everything. It is also noteworthy that for those meticulously engineered batteries the performance equations are the same type as those for human muscle. That strongly suggests that the human muscle was meticulously nanoengineered by a designer of unimaginable intelligence using mathematics and creative powers for complexities beyond human comprehension.

Billions of observers for thousands of years have witnessed many billions of new individuals arise only from reproduction and never from "evolution." Billions of observers for thousands of years have witnessed many billions of new individuals expressing latent genetic morphological reserves cyclically, as in the fur color changes of the arctic fox, or sequentially, as in the growth and development of flora and fauna, or by arousal, as with muscle hypertrophy, with never a sign of any "evolution." The fanciful manipulation of those expressions of latent genetic morphological reserves by alleging untold generations to change what obviously occurs countless times in each individual's lifetime, in order to conjure a mythical "evolution," is crass superstitious propaganda, not science. To mandate monopolistic, monolithic, "evolution education," as California public schools presently do, is to dictatorially protect what is scientifically indefensible. To require students to learn that "evolution" had any role whatsoever in the origin of life or in the structural modifications aroused from latent genetic morphological reserves, is to indoctrinate with occult propaganda, which is irresponsible anti-science (California Department of Education, 1990). "Evolution" and the "origin of life by chance" are "impossible in probability in the same way that a perpetual motion machine is impossible in probability (Yockey, 1992)." The reasonable conclusion from science is that muscle and all other living tissues were designed.

These experiments have brought to the fore the fact that "evolution" is the central most disorganizing, anti-intellectual, anti-science principle that biologists have ever been dictatorially forced to learn to understand the world. In the opinion of this author, it stands as the greatest scandal in science of the last 140 years.

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Creation, Time, and Dr. Hugh Ross by Bolton Davidheiser
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Many readers of the *CRSQ* are familiar with the book on Hugh Ross by Taylor and van Bebber (1994). In that book the authors document Ross's many theological problems. While Davidheiser discusses some of these issues in his book, he goes beyond the arguments of that earlier work to expose some of the scientific blunders of Ross. The author obviously has spent much time examining Ross's audiotapes and pamphlets, for much of the material is drawn from those sources. Judging by the blunders that Davidheiser exposes, Ross is far less cautious in his statements in his live presentations than he is in his books.

Davidheiser has been tracking Hugh Ross's ministry for some time, a fact that has not gone unnoticed by Ross. He recounts that Ross met with him recently in an attempt to win him over. The author states that the meeting was cordial, but that Ross did most of the talking, and Davidheiser opines that Ross seems to believe that winning one over by friendship will dissuade public criticism. Ross also has told Davidheiser that his blunders are a thing of the past, which basically admits that there have been blunders. Unfortunately, some of the audiotapes and pamphlets that contain the blunders are still available. When Davidheiser requested newer tapes from Ross's latest course at Simon Greenleaf University, he was denied further access to those tapes. A letter from Ross stated that after consultation with his board, this decision was made. Ross's letter said, in part, your "reason for wanting the tapes is not to learn more about the latest discoveries proving the existence of the God of the Bible and the accuracy of the words of the Bible, but rather to discover new errors and mistakes (he) might have made while speaking." This is outrageous! These tapes are for general sale. Does this mean that the people who handle orders have a black list of who is forbidden to purchase? Secret organizations have a vested interest in this sort of restriction, but for an organization that supposedly desires to publicize its message this makes no sense. This sounds like paranoia.

What kind of blunders does Davidheiser discuss? One repeated more than once is that DNA is either made of proteins or is itself a protein. Another is the complete botch of