## The Future of Exercise (1997 and Beyond)

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## The Importance of Exercise

Most people have opinions on the subject of exercise; many of which opinions are wrong, some of which are counterproductive, and quite a few that are dangerous. Controversy on the subject of exercise is seemingly endless, and supposedly scientific research results can be found that appear to prove almost any opinion you can find. Unfortunately, until about ten years ago (1987), all of these research projects were, at best, totally wasted efforts leading to faulty conclusions. Primarily, I believe, because it was simply impossible prior to 1987 to meaningfully and accurately measure the physiological changes stimulated by proper exercise. The tools required for accurate measurement of human functional abilities, strength of the involved muscles, muscular endurance and ranges of joint movement, did not exist prior to 1987, and the tools that were used during all earlier research projects were incapable of performing any of their intended functions. Such tools were worse than worthless, worse because they produced misleading results.

Meaningful tests of strength, for example, demand the consideration of several basic requirements; all of which requirements were simply ignored prior to 1987, and are still being ignored by everybody except MedX Corporation. Testing machines now being marketed by MedX Corporation are not "the best tools for such purposes," but are, literally, "the only tools capable of providing meaningful test results." Given these relatively new machines, it is now possible to accurately measure the actual physiological changes stimulated by proper exercise.

During the fifty-eight years in which I have been seriously interested in, and directly involved with, the field of exercise, there have been literally millions of words published on the subject; and while I cannot claim to have read them all, I have read quite a few, including, I believe, all of them that made any sense, together with a lot more that were nothing more than nonsense, or worse. This book represents an attempt on my part to separate the sense from the nonsense.

It used to be a common practice, and may still be, to tell a starting class of medical students that 90% of what they would be taught during the next four years was not true . . . the problem being, they said, that they did not know which 90% was wrong. I believe that my odds are far better than that, but cannot guarantee that 100% of what follows will be right. Right for me, perhaps, but wrong for you. Personal experience, properly observed and carefully evaluated, is by far the best teacher, so the most I can even reasonably hope to do is to point you in the direction of intelligent experience and away from things that offer noting apart from problems.

Since the needs for things like air, water and food are obvious to most people, there are relatively few controversies on those subjects, but it is still not generally recognized that at least two additional requirements for life exist: gravity and exercise. Gravity is well known even if perhaps not totally understood, and lack of gravity like that experienced in the weight-free environment of outer space quickly produces a loss of bone mass. A total lack of exercise produces similar results with soft tissues, muscles, tendons and ligaments; soft tissue atrophy that will occur very rapidly if exercise is not provided, but that will recover very slowly even when exercise is resumed.

But we must clearly define our terms: exercise is provided only when there is movement produced by, or resisted by, the force of muscular contraction. Without force of muscular contraction and resistance opposing that force, there is no exercise. It must also be clearly understood that exercise does not "produce" physiological changes; instead, exercise properly performed with the right tools "stimulates" physiological changes. The only thing that exercise can actually produce are things that you do not want, things like broken bones, torn muscles or other soft tissues or a fairly long list of other injuries. Properly performed exercise should never produce an injury of any kind, will, instead, go a long way in the direction of preventing injuries, but improperly performed exercise can produce very serious injuries.

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Apart from overuse atrophy resulting from too much exercise, injuries produced by exercise are a result of the relationship of only two factors: when a force that exceeds the structural integrity of some part of the body is imposed, then an injury will result. So, while a reasonable level of resistance is required for exercise, you must understand that too much resistance will almost invariably produce an injury.

You should also remember that if "some is good," it does not follow that "more is better." As somebody pointed out about forty years ago . . . "Instead of trying to determine just how much exercise we can tolerate, we should, instead, be trying to find out how little exercise we actually require." Nevertheless, the widespread belief that more is better still persists, and perhaps the most common mistake being made by people who are exercising is overtraining, performing far too much exercise. Some few individuals may be able to tolerate an enormous amount of exercise, but there is nothing in the way of proof that anybody actually requires such a training schedule. The best-possible results stimulated by exercise can be produced by a training schedule that does not exceed one hour of weekly exercise. And while I told people for about forty years that three weekly workouts were required to produce the best results, I now realize that even better results will be produced by only two weekly workouts in most cases. The final level of results may be the same in both cases with some subjects, but two weekly workouts are better than three because the maximum level of results will be produced more rapidly with the briefer training schedule.