

ANOTHER REASON TO EXERCISE

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What would you think if you were offered a free method of improving your life span, your health, your general well-being, and your appearance? So often now every magazine, newspaper, and TV special on health offers new ways to improve aging, but they are almost always associated with a price tag which is seemingly very high. There are two known ways to improve your lifespan, your well-being, and the ability of your body to regenerate new cells. One is by improving the number of stem cells available in your body for use throughout the organ systems in rejuvenation. The other is to improve or maintain your chromosomes' telomere lengths, which adds an ability of your cells to live longer and reproduce better.

In articles in the past, common denominators have been noted for improvement of mental function, coronary function, body-to-organ system function, immune system mechanisms, and other bodily processes that are important in our health. These common denominators are exercise, careful intake of foods and antioxidant substances, careful selection of supplements, removal of stress from your life as much as possible, and good medical care. Other things which mitigate against good health including suppression of telomere function and increasing availability of stem cells are diabetes, smoking, drinking, overweight, and no exercise.

Stem cells are the focus of this discussion again (see my article in the April 2010 issue of Tidewater Women and you will note some general information about stem cells). However, it should be mentioned that there are many types of stem cells, and many are undifferentiated. Whenever cells in the body in almost any organ die or undergo injury, stem cells from bone marrow, circulating blood, or other tissues come to help and repair these. For example, if someone has a stroke, it has been clearly demonstrated that proper nutrients, medications, and an exercise routine can improve recovery, sometimes dramatically. Most stem cells are non-committed until such an injury occurs. When this happens, these cells become differentiated into the ones necessary for repair.

Since we know that aging is related to the renewal of cells in the organ systems as well as repair of damaged tissue, it would be helpful for us to follow guidelines which improve the aging process. Stem cell generation is high on that list and can be clearly influenced by your actions. In particular, new information has been forthcoming about the generation of stem cells by exercise. After a tissue injury, exercise creates a greater number of available circulating stem cells to aid in tissue repair. Some stem cells are multi-potent and some are uni-potent, and so they can help in multiple organ system areas. For example, if you want your liver to function better, your brain to work better, and your skin to look better, what better way to do this than with an infusion of stem cells?

The "Four Horses" of life extension include good modern medical care, good nutrition, good exercise, and good pharmacology. Pharmacology includes medications for treatment of disease as well as supplements to aid in maintaining health. Good nutrition includes ingesting foods that help in lengthening telomeres; such as blueberries, almonds, avocado,

veggies, beets, tomato, salmon, garlic, and broccoli. Interestingly, we can now measure telomere length as a laboratory study. In addition to foods which lengthen telomeres and improve stem cell production, CoQ10, vitamins C, E, D, A, B-complex, and zinc, selenium, omega-3's, and acetyl cysteine are all good. A new book, *The Immortality Edge*, outlines the pathway to lengthening your telomeres which also improves your stem cells. What is the best exercise? Endurance exercises seem to be best, such as working 20 minutes a day on a treadmill. Rowing is an excellent exercise because the arms, legs, and back muscles are used. Because exercise improves stroke by way of stem cells, it is good to get on a pathway such as this to prevent stroke. Currently, medications are becoming available to stimulate stem cell production. One of these is granulocyte colony-stimulating factor: which mobilizes stem cells from the blood and bone marrow and has a direct tropic effect on the tissues.

There are multiple web sites available for reading about stem cells which would help you build your knowledge base in addition to what is being written here. Simply pull up "stem cells and relation to exercise" on Google and you will come up with a lot of good basic information. One is that the host tissue matters a lot with stem cell therapy. If the host tissue is receptive because it is healthy (even if it has undergone some tissue damage), it can recover more quickly if the biological strata has been carefully laid in place by your lifestyle. Genomic, cellular, and structural damage can occur with reactive oxygen species (free radicals), and this compounds' level increases with advancing age. It is best to nurture your own stem cell production capacity because even though we are now able to culture stem cells and inject them, there is probably a significant loss of stem cells after they are injected into a person.

Brain cell neurons may develop in areas damaged from stroke or circulating free radicals. It has been clearly shown in lab animals and humans that exercise improves the number of brain cells. This also can occur in greater proportion with human growth hormone and gonadal hormones such as testosterone and estrogen. This neuroplasticity can influence recovery of function as well in states such as depression. Exercise after traumatic brain injury allows increased neural production which increases the capacity for central nervous system repair. This of course is aided by nutrition such as omega-3 and other "good" oils which are ingested. Cognition, vision, body navigation, and motor function can all be improved. Interestingly, as men age we lose the testosterone effect. Anabolic steroids such as testosterone can increase protein synthesis and muscle mass which increases the available base for stem cells. It can also improve bone growth and increase the stimulation to bone marrow production. Stem cells can be injected into muscle and skin and not leave that area. I use stem cell therapy almost every day with injection of fat grafts which are a strong source of these cells. By placing these grafts closely under the dermis of the skin, rejuvenation of the skin itself can occur, and I have seen this happen on many occasions in a large number of patients.

We all know that the aging process is associated with a reduced level of activity, and if we can maintain good exercise habits during our later years, we have more of a possibility of retaining the components of youth that we desire. In addition, it is beneficial to increase the production of stem cells being produced in our body. We also need to have the body ready to receive and process these stem cells for organ proliferation and regeneration. This has a direct influence on aging and wellness. By not being interested in improving these functions,

you may succumb to a degenerative disease. Read carefully the lines written above because they contain the essence of a long and healthy life.