thereafter costs $6,000. Payne says, "Most major changes are seen during the first 180 days following treatment. They plateau and then diminish over time, although some patients report seeing benefits cropping up more than 1 year following a single treatment." Payne, Anthony G., PhD, The Steenblock Research Institute Patient’s Handbook on Umbilical Cord Stem Cell Therapy. Schepick, Julia. Umbilical Cord Stem Cell Therapy: Q & A with Anthony G. Payne, PhD, of the Steenblock Research Institute. Alternative & Complementary Therapies Journal May 2005

Psychological Stress & Disease

A University of California-San Francisco research team, led by health psychologist Elissa Epel, PhD, has found evidence that prolonged, psychological stress contributes to cellular aging. Fifty-eight healthy mothers, ages 20-50, took part in the study; 39 of them care for a chronically-ill child and the other 19 have a healthy child. The researchers measured telomere length, telomerase activity, oxidative stress levels in peripheral blood mononuclear cells (immune system cells), and the women’s perceptions of their own stress level (using a standardized, 10-item questionnaire).

Telomeres protect the ends of chromosomes, much like the plastic tips found on shoelaces. Each time a chromosome divides, its telomeres shorten. A cell will stop dividing when it lacks sufficient telomere length to ensure genetic stability; it will then die soon after. The health and lifespan of cells and the tissues they form can be gauged by telomere length. The enzyme telomerase rebuilds some of the lost telomere protein after each cell division. Oxidative stress, the third biological factor in this study, is known to speed up telomere loss in cultured cells.

As a group, the three biological markers of the women with chronically-ill children did not differ much from the controls. Caregiving, in itself, does not promote cellular aging. The researchers, however, did find a correlation between the duration of caregiving and the biological markers: “The more years of care giving, the shorter the length of the telomeres, the lower the telomerase activity, and the greater the oxidative stress.” The perception of being stressed was also significant: “…the telomeres of women with the highest perceived psychological stress – across both groups – had undergone the equivalent of approximately 10 years of additional aging, compared with the women across both groups who had the lowest perception of being stressed. The highest-stress group also had significantly decreased telomerase activity and higher oxidative stress than the lowest-stress group.”

While this study looks at cellular stress among premenopausal women, Epel believes that the impact of psychological stress on cellular aging will hold true for postmenopausal women and men as well. Postmenopausal women have less estrogen. The hormone appears to increase telomerase activity and, thereby, telomere length. Epel says that “…men have shorter telomeres than women to start with, so their telomeres might be even more vulnerable to the effects of stress than women’s.” Her team is now conducting a study that will monitor telomere length over a period of time in order to see if stress perception correlates with an increased rate of telomere decline. They also hope to conduct trials that will test whether stress reduction techniques (e.g., meditation, yoga, cognitive-behavioral therapy) affect telomerase activity and the rate of telomere shortening.

American Federation for Aging Research. Research links stress to biological aging for the first time (Interview with Elissa Epel, PhD) (Accessed www.infoming.org at 7 September 2005)

Psychological stress and disease; UCSF-led study suggests connection (University of California – San Francisco press release) 29 November 2004 (Accessed 7 September 2005 at www.eurekalert.org)

Tai chi & the Elderly

A 2001 British Journal of Sports Medicine article reviews 31 controlled and clinical studies, involving 2216 men and women, that evaluate the physiological effects of practicing the Chinese exercise Tai Chi Chuan (TCC). TCC integrates slow, deep breathing with a set of movements that flow from one upright posture into the next. It began centuries ago as a combination of exercise and martial art. In 1956, the Chinese National Council of Sports and Physical Education convened a meeting of Tai Chi masters, who followed differing schools of practice, and asked them to develop a 'combined' style. The resulting 24-movement form is easy to learn and takes less time to practice than longer, more demanding forms. The Chinese government, health agencies, schools, and sports-related bodies have heavily promoted this simplified form. TCC has become one of China’s most popular exercises, particularly among the elderly. Studies show that this moderate-intensity exercise improves cardiorespiratory function and may increase immune capacity in the elderly. It also improves muscle strength, balance, flexibility, and range of motion in the arms – even among those with osteoarthritis and rheumatoid arthritis.

Review authors J X Li, Y Hong, and K M Chan explain, “Performing TCC depends on either double stance weight-bearing or single stance weight-bearing manoeuvres, which further require the pivoting of the whole body or the twisting of the trunk. In performing TCC, the roles of the muscles continually change between those of stabilizers and movers, weight-bearers and non-weight-bearers, and between contraction and relaxation.” These movements are performed slowly in combination with deep breathing. For reasons not yet understood, TCC practice reduces the risk of falls among the elderly. In addition to its many physiological benefits, Tai Chi exercise is known to reduce stress. In a study by P Jin, participants reported less tension, depression, anger, fatigue, confusion, and anxiety, when compared to their baseline levels. Jin also found that TCC practice raised heart rate, increased noradrenaline (norepinephrine) excretion in urine, and decreased salivary cortisol concentration.

In their Summary, the review’s authors state: “…TCC exercise has great potential for health promotion and rehabilitation, particularly for the maintenance of good mental and physical condition in the elderly. However, the effects of TCC exercise on other age groups should be further examined with well controlled experimental design studies.” Li JX, Hong Y, Chan KM. Tai chi: physiological characteristics and beneficial effects on health. British Journal of Sports Medicine 2001;35:148-156

Happy Holiday Season