Dynamic Chiropractic

The Beauty of Biohacking

Jeffrey Tucker, DC, DACRB

Biohacking is better living through science and "ancient ways." Biohackers approach health, wellness and longevity head on – not only rethinking, but also implementing by trial and error self-care in areas such as cardiovascular health, epigenetics, digestion, sleep and brain health. Biohacking aims to improve performance by applying recent bioneuroscience discoveries and advanced technologies to help people reach their full potential by optimizing how the body and brain function and perform.

Chiropractic and Biohacking: Brain Health & the Nervous System

I believe chiropractic care should play a big role in biohacking. We have always been at the forefront of education and interventions to help optimize our patients' performance (posture, movement, nervous system function, brain function, etc.). The nervous system's (brain's) executive function includes planning and decision-making, processing information, mental flexibility, switching easily from one task to the next and focusing attention. The science behind chiropractic and the nervous system should be a "hack" strategy. Who among us has not seen patients helped after adjustments with improved focus, thinking more clearly and quickly, being more creative, sleeping better, feeling more energized, etc.?

What if it's entirely possible that in the next five to 10 years, we will have a treatment that will stop the progression of neurodegenerative diseases? Take Parkinson's disease. Currently, there's no definitive test for Parkinson's. Doctors rely on a combination of tests like PET and SPECT scans, which use radioactive tracers to generate 3-D images; and observation of symptoms such as shuffling gait.

These patients' brains produce too little dopamine, the chemical that controls movement. What if we could excite the nerve cells that produce dopamine in the brain without the use of drugs? Scientists are also looking at a type of protein found in the brain called alpha-synuclein. This protein may clump together in Parkinson's patients, damaging cells. These deposits are called Lewy bodies, and they're also linked to some dementias. Could you include in your chiropractic care a way to help patients create improved thought patterns, teach them visualization, and improve their environment to ignite reversal of clumped Lewy bodies?

Borzage and Bluml (CHLA.org/BorzageResearch) are discovering new, noninvasive imaging techniques to provide a better view into brains. Clearer imaging called Time STAMP (Static Tagging And Mono-contrast Preservation) is an innovative protocol used with existing MRI machines. It improves signal-to-noise ratios – resulting in an image that is 50 percent clearer and brighter than what current scanning methods produce. Imagine what this could do for disc patients, especially when coupled with AI.

Biohacks to Improve Focus, Memory, Creativity, Productivity, Performance

Manipulation: I've been a little upset with the biohacking community thought leaders because they don't mention chiropractic as a hack. Manipulation is a leading biohack in the practice of brain-

body health care. We have a dramatic impact on improving range of motion, preventing falls and upgrading the nervous system.

Current research suggests manipulation improves proper brain nourishment and turns on spinal sensors through the multifidus muscles. This can impact the quality of our lives now and for the future. Manipulation should be considered a top hack.

Practical Exercise Recommendations: Exercise improves everything! In addition to assisting in weight loss, increasing strength can help improve these factors: blood pressure, cholesterol levels, insulin sensitivity, lipid profiles, cardiovascular function and body composition (resistance exercise increases your resting metabolic rate – the calories you burn at rest).

Resistance training programs typically boost muscle mass by a minimum of 2.2-4.4 pounds. Many studies show that weight training programs also reduce visceral fat; the fat associated with the development of abnormal cholesterol levels, hypertension, insulin resistance, type 2 diabetes, inflammation, and cardiovascular disease (Strasser & Schobersberger, 2011).

Muscle mass for healthy aging: Volume – the number of sets x repetitions x load (amount of weight) – is a critical factor in improving muscle mass (Schoenfeld, Ogborn & Krieger, 2017). These authors found a clear relationship between the number of sets you do and muscle hypertrophy. In counting weekly sets per muscle group, the researchers found significant muscle growth occurred with the following: <5 sets (+5.4 percent); 5-9 sets (+6.5 percent); and >10 sets (+9.6 percent).

Other current thinking is that high-intensity interval training (HITT) needs to be worked into your exercise schedule. I heard one exercise physiologist say that within a 7-9 minute walk or cycle session, you need to go "all out" for two 20-30 second bouts, which can boost your cardio and hormones as much as a long, slow cardio session. Biohackers want to know this because if you can be as productive in seven minutes, why work out for 30-60 minutes? You just bought yourself more time for family, hobbies, etc.

Exercise can improve the thinking process, too. Activities like *tai chi* or surfing promote skill learning. Activities that require adjusting to changing environments are important. The idea is to create a cognitive load or challenge the brain to manage a physical skill and new environment at the same time.

Sleep Optimization: Good sleep is a top-priority hack. Important considerations are the total time you sleep. Most adults need 7-9 hours to perform well and stay healthy. I monitor my total sleep, which refers to the total amount of time spent in light, REM and deep sleep. Sleep quality is the percentage of time you actually spend asleep after going to bed; it should not take more than 20 minutes to fall asleep once in bed. Problems with sleep are related to stress, anxiousness, difficulty with focus and concentration, and moodiness.

Deep sleep (around 10-20 percent of total sleep) is the most restorative and rejuvenating sleep stage, enabling muscle growth and repair. Blood pressure drops, heart and breathing rates are regular, arm and leg muscles are relaxed and you're difficult to awaken.

Keep your sleep schedule consistent, exercise regularly (but don't do it 1-2 hours before bedtime), and avoid heavy meals, stimulants and bright screens 1-2 hours before bed to improve your chances of getting more deep sleep.

Optimize your sleep environment by making sure the mattress is comfortable and the bedroom is cool (approx. 65 degrees F), quiet and dark. Avoid spicy foods, heavy meals and alcohol close to bedtime, and caffeine in the afternoon and evening. Exercise can make your sleep more restful, but

as mentioned, try to complete exercise at least 1-2 hours before bedtime. Foam rolling before bedtime may be helpful.

JUNE 2020