Biomarkers of Aging

PhysioAge–The Next Generation Physical Exam

1- Determines your rate of aging

2- Detects sub–clinical disease states

3- Enables advanced risk assessment

4- Helps direct age management interventions

The information we gather will enable you to take control of the future of your health. you will only know how will a particular intervention is working (hormone replacement therapy, supplements, exercising, nutrition) by measuring your biomarkers of physiological function. in this way, you can be sure that your efforts are working to improve your health and slow down the aging process.

We believe it's important to measure the arteries, brain, bones, skin, muscle, eyes and adjust therapy to optimize each systems function. This is the crux of the difference between our approach to managing aging and that of most other practices. The PhysioAge Composite is able to explain 84% of the variants of the aging process. No other system approach has this benchmark in measuring the physiological age of important organ systems. With this technology we are better able to manage our patients' health and measure the effectiveness of their treatment.

These biomarkers of aging can be improved through the proper use of age management therapies and our patients can potentially watch their physiological age stabilize or even decrease over time. Our Biomarkers of Aging include Cardioage, Pulmoage, Neuroage, Cutoage and Physioage.

Our Health Status Indicators include, but are not limited to, vital signs, arterial stiffness, lung function, bone density, cognitive (brain) function, skin elasticity, hand grip strength, body composition, and retinal eye exam, which is something only performed by Dr Mahl. The retina is the window to the body and often times, we can detect many different signs of disease before symptoms are showing, just by examining the retina. Signs of metabolic syndrome such as hypertension, cholesterol and diabetes can be seen in the retina very early on. Diseases of the optic nerve such as Multiple Sclerosis (MS) can be visualized too before the need for advanced MRI's or CT Scans.

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We also include Comprehensive Blood Panels for men and women, Gastro-Intestinal Microbiome Analysis, Food Sensitivity and Allergy Testing, Heavy Metal and Toxins Profile, Hormonal Analysis, Cancer and Genetic Screenings. Carotid Artery and Vascular Analysis (Carotid IMT) is performed by ultrasonography. Head to toe ultrasound is available and utilized to screen and diagnose when indicated too. Electrocardiograms (ECG's) are performed to evaluate heart status.

CardioAge

CardioAge measures arterial stiffness which determines the suppleness of your arteries using pulse-wave analysis to measure central blood pressure. Cardioage testing will tell you how well your arteries are aging. It reflects the pressure in your brain, kidneys, and heart and therefore better predicts disease of these organs as compared to arm blood pressure. It can tell you better than arm blood pressure if you need to be on anti-hypersensitive medication, or, if you are on therapy, how well it is working.

PulmoAge

PulmoAge measures pulmonary function by measuring the forced expiratory volume (FEV1/MCV) using spirometry, which is highly correlated with age. Our pulmonary function testing predicts all–cause mortality, not just from pulmonary disease. Respiratory function over time reflects how well the body as a whole is aging. Spirometry is one of the most valuable biomarkers of aging. Pulmoage testing screens for pulmonary.

If your FEV1/FVC ›.72, you could have obstructive pulmonary disease. There is a correlation between these biomarkers and mortality.

Taking a baseline Pulmoage test and repeating it annually is an effective way to see how well your anti aging efforts are working. If there is no significant increase over time, you are doing something right. If your find you are at risk for lung disease, you can start to do something about it. a smoker can quit.

NeuroAge

NeuroAge measures cognitive assessment using an online battery of tests that measure the most highly age–sensitive aspects of cognitive function such as visual and verbal and composite memory, psychomotor speed, reaction time, cognitive flexibility, complex attention, processing speed and executive functioning. These tests function as an effective screen for mild cognitive impairment and Alzheimer's disease. The brain ages like the rest of the body and can be experienced as a decreased ability to react and process information and "brain fog", that feeling that you just are not thinking up to par. A NeuroAge significantly higher than your age may mean that your brain is aging more rapidly than it should and could be indicative of an adverse effect of a medication you are taking or early brain disease. This can occur even when your memory is unaffected. Mild concussions can transitively raise your NeuroAge, as can moderate to severe depression. Sleep deprivation and alcohol can also affect brain function. Using CNS Vital signs, we measure memory, psychomotor speed, reaction time, complex attention, and cognitive flexibility. Verbal memory, visual memory, finger tapping, symbol digit coding, shifting attention testing, motor speed and executive function. The results of these tests guide us in determining effective treatments and stabilizing progression of a problem over time.

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CutoAge

CutoAge measures skin elasticity with the use of a Cutometer, the same instrument used in numerous clinical trials of OTC and pharmaceutical skin care products. By measuring elasticity, firmness, and resistance to stress we are able to determine your propensity to develop wrinkles. Skin elasticity has been correlated with bone density and improved by BIMRT in women and men.

ImmunoAge

ImmunoAge measures the cells of the immune system using proprietary algorithms of standard immune subsets via the blood. This immune function testing utilizes cutting edge molecular markers for senescent and naïve T–cells.

TelomerAge

TelomerAge measures the length of the telomeres, the caps at the ends of the chromosomes that act as a molecular clock by shortening with each cell division. Telomere shortening is highly correlated in numerous studies with aging and many disease states.We test for telomere length by measuring the DNA, meaning the telomere length of your lymphocytes and granulocytes and compare these results to normal.

Body Composition

The relative proportion of muscle to fat in your body is a most important determinant of your health.

Body mass index: The normal BMI is 18.5-2.5 kg/m2. Using this range, we can find if you are underweight and need to add muscle, or normal, or overweight.

- Lean body mass
- Fat mass
- Percent body fat.

Handgrip Strength Testing

A powerful handgrip is an indicator of physical vigor. Standardized handgrip strength, as measured by a dynamometer, is a powerful biomarker of aging after the age of 40. It not only measures handgrip strength and grip (muscular strength of the hand and forearm) but also by the degree of degenerative joint disease and the ability of the central neurons system to exert force.

Additional Biomarkers of Aging:

1. Muscle Mass
2. Strength
3. Basal Metabolic Rate
4. Fat Mass
5. Aerobic Capacity
6. Blood Sugar Tolerance
7. Cholesterol HDL Ratio
8. Blood Pressure
9. Bone Density
10. Temperature Regulation

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