# KLİNİK EPİGENETİK VE BİYOLOJİK YAŞ ANALİZ RAPORU

Fonksiyonel Tıp ve PNI Perspektifi ile Bütüncül Değerlendirme

## VAKA PROFİLİ

| | |
|---|---|
| **Cinsiyet** | Kadın |
| **Kronolojik Yaş** | 47 (Danışan beyanı) |
| **Ölçülen Biyolojik Yaş** | 47,34 |
| **Test Teknik Doğruluğu** | %98,36 (Triple Sequencing) |
| **Danışan Kodu / Secure ID** | HKA01001156-Rz86SA |
| **Analiz Kapsamı** | DNA metilasyon desenleri ve epigenetik yaşlanma |

Kısa not: Kronolojik yaş ile biyolojik yaş arasındaki fark 5 yılın altındaysa, rapor bu farkı istatistiksel olarak anlamsız kabul eder.

## INTEGRATIVA 4D BIODESIGN KLİNİK YORUMU

**1) Epigenetik eksen (metilasyon kapasitesi):** Metilasyon profili yaşla uyumlu görünmektedir; ancak oksidatif stres ve çevresel toksin yükü metilasyon havuzunu baskılayarak dengeyi kırabilir.

**2) Mikrobiyota ve enflamasyon ekseni (inflammaging):** Bariyer bütünlüğü ve mikrobiyota, metilasyon için gerekli mikronutrient döngülerini etkiler; bu nedenle flora modülasyonu ve bariyer onarımı önceliklendirilmiştir.

**3) PNI ve hormonal denge ekseni (psikonöroendokrinoloji):** HPA ekseni/kortizol ritmi ve perimenopozal geçiş, biyolojik yaş dinamiklerini belirgin etkiler; vagus tonusu ve adrenal regülasyon hedeflenmiştir.

**4) Biyokimyasal ve nutrigenetik yaklaşım:** Hedef “anti-aging” değil “healthy-aging”dir; metil donörleri (B12, 5-MTHF, betain), mitokondri kofaktörleri (CoQ10, PQQ) ve uyku-sirkadiyen düzenleme planlanmıştır.

## ÖNERİLEN İYİLEŞME PROTOKOLÜ ÖZETİ

• Eliminasyon: İnflamatuvar yükü azaltan, metilasyon dostu beslenme planı.
• Destek: Kişiye özel; DNA onarımını ve mitokondri fonksiyonunu destekleyici fitoterapötik ve ortomoleküler stratejiler.

• Yaşam tarzı: Stres yönetimi ve uyku kalitesini artırmaya yönelik PNI tabanlı davranışsal değişiklikler.

## TAKİP VE NOTLAR

• Bu testin ortalama mutlak sapması 2,8 yıldır; sonuçlar bir “trend takip” aracıdır.
• Akut enfeksiyon/aktif hastalık dönemlerinde test tekrarı önerilmez; gerekiyorsa birkaç ay sonra yeniden ölçüm planlanır.
• Anti-aging sınırları: genetik yatkınlıklar, çevresel kirlilik, kişisel koşullar ve ciddi hastalıklar.
• epiAge testi tıbbi muayene/teşhis/tedavi yerine geçmez; epigenetik yaşın değerlendirilmesi amaçlıdır.

**Rapor Tarihi:** 19 / 10 / 2025 **Hazırlayan:** Dr. Ecz. Fatma Kartal **İmza:** _____

# TEST EVALUATION

**Your secure ID Number:** *HKA01001156-*

**Date:**

## 1 MY TEST RESULTS

**Your biological age in years**

**47,34**

**To avoid any biases, we are unaware of your chronological age! Your biological age is calculated by confronting the methylation patterns on your DNA with the reference patterns of a particular age from a representative control group.**

***small molecules that dock onto your DNA in the course of your lifetime and can activate or deactivate specific genes.**

# 2 CONTEXTUALISING MY RESULT

If your result is above or below your chronological age within a range of 5 years, there is no reason to worry because this is considered statistically insignificant.

To ensure analytical consistency, we perform three separate tests on your saliva sample (so-called „triple sequencing“). A technical accuracy of almost 100 % means that the results of the individual test cycles were highly consistent.

**Technical accuracy for your result:**

**98,36%**

# 3 CHRONOLOGICAL VERSUS BIOLOGICAL AGE

| YOUR CHRONOLOGICAL AGE IS ... | VS | YOUR BIOLOGICAL AGE IS... |
|---|---|---|
| ...STANDARDISED<br><br>*Chronological age evolves in fixed and predictable units such as seconds, minute, hours, days, months and years.* | | ...INDIVIDUAL<br><br>*Biological age varies at different paces as people age due to genetic predispositions and external factors.* |
| ...LINEAR<br><br>*Chronological age progresses at a slow and continuous pace.* | | ...IS DYNAMIC<br><br>*Biological age changes at different rates depending on current life phases, e.g., during puberty, pregnancy, or menopause.* |
| ...PREDICTABLE<br><br>*Chronological age progresses independently of external influences.* | | ...RESPONSIVE<br><br>*Biological age is influenced by factors such as lifestyle, illnesses, environment, and personal circumstances – for better or worse.* |
| ...IRREVERSIBLE<br><br>*Chronological age progresses inexorably and in one direction only.* | | ...REVERSIBLE<br><br>*Biological age can be slowed down and potentially reversed through targeted lifestyle interventions.* |

# 4 INTERPRETING MY RESULT

**If your biological age is significantly lower than your chronological age, then congratulations!**
The result is the interaction between your genetic predisposition, your environment and, above all, your lifestyle. And YOU can influence your lifestyle! So why not use your result as an incentive to shed a few more years?

The epiAge test is there to support you on your longevity journey

**If your biological age is significantly higher than your chronological age, it could be a red flag.**
So, it might be time to review your lifestyle, as it can have a major impact on ageing. Too little sleep, processed food, lack of exercise, pollutants and/or stress have a major impact on health and longevity. We advise you to start with small improvements, as it is more likely you will be able to sustain the changes over a longer period.

**Please note: Various age-related diseases as well as infectious diseases such as Covid-19 or the flu can distort biological age (in both directions). Therefore, it may be advisable to repeat the epiAge test a few months later. As a rule we advise you to not take the test when you are sick.**

# 5 WHAT CAN I DO?

These are just examples of the fields you can personally influence. Remember that the individual effects of these measures are difficult to measure and are highly personal since your biology is also unique. You should consult with your physician to explore further avenues.

**SLEEP**

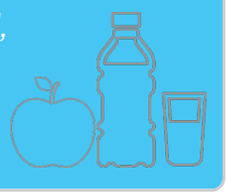
*Ensuring a good night's sleep and maybe even a regular nap are key factors of longevity. Sleep provides the space for regeneration during which the body to repair and restore itself. Check your sleep environment (appropriate mattress, insulation from light, sound and electronic devices) and review your daily pre-bedtime routines (avoiding e.g. heavy meals, disruptive entertainment, etc.) to ensure better sleep quality.*

**EXERCISE**

*Incorporating movement into your everyday life is key to achieving a long and healthy life. It doesn't mean you have to immediately train for a marathon or enroll in a fitness club. You can already improve your strength and stamina by e.g. walking, swimming or riding a bicycle regularly to offset the damage incurred through sedentary lifestyles.*

**NUTRITION**

*A balanced diet of freshly prepared seasonal foods, including plenty of vegetables and fruit is a good starting point. Paying attention to a sufficient fluid intake (mainly water and herbal teas) is also important. Conversely, it is helpful to limit processed foods as well as avoid fast food, sugar and alcohol.*



**STRESS MANAGEMENT**

*All the areas mentioned are very dependent on how you cope with pressure in your everyday life. Depending on your circumstances, it may not be possible to eliminate all sources of stress, but you can give yourself a break. Taking time out, experimenting with meditation, enjoying nature, cultivating interests and hobbies and making time for socialising are all important strategies to lead a balanced and healthy life.*

**SUPPLEMENTATION**

*Depending on your current state of health and your circumstances, it may be necessary to support your diet with specific supplements. However, we recommend consulting with a nutritionist to find out which supplements could be helpful to you.*

**For more ideas about how to make life-style changes, visit our epiAge blog.**

# 6 YES, IT PAYS OFF!

A recent study conducted by an American-based team of scientists demonstrated that the adoption of the following 8 habits could translate into decreased mortality (13% on average):

1. Avoid smoking
2. Be physically active
3. Do not binge-drink
4. Get good sleep
5. Eat a healthy diet
6. Minimise stress
7. Cultivate positive relationships
8. Avoid opioids

Life expectancy can even increase up to 23 years (for women) and 24 (for men) for forty-year-olds newly adopting all the habits but even late or partial adopters can enjoy a significant increase!
The study was conducted on a huge study cohort of over 700,000 U.S. Army veterans.

The results were presented at the Nutrition 2023 conference in Boston, MA; Publications are pending.

**If you fancy digging deeper into the science behind optimal lifestyle strategies, here are a few articles you can look up to get you started. But please bear in mind that there are countless resources to be tapped into and that new articles, which may expand or revise our current insights, are being published every day!**

*"Nutrition and the Hallmarks of Aging" (Giudici, K.V.. The Journal of Nutrition, Health and Aging. 25, 1039–1041 (2021). https://doi.org/10.1007/s12603-021-1686-3)*

*"Sleep and biological aging: A short review" (Judith E. Carroll, Aric A. Prather, Current Opinion in Endocrine and Metabolic Research, Volume 18, 2021, 159-164. https://doi. org/10.1016/j. coemr.2021.03.021)*

*"DNA methylation clock DNAmFitAge shows regular exercise is associated with slower aging and systemic adaptation". (Jokai, M., Torma, F., McGreevy, K.M. et al. GeroScien- ce (2023). https://doi.org/10.1007/s11357-023-00826-1)*

*"On the road to resilience: Epigenetic effects of meditation", (Verdone, Loredana, Caser- ta, Micaela, Ben-Soussan, Tal Dotan, Venditti, Sabrina. In: Gerald Litwack (Ed.), Vitamins and Hormones, Cambridge MA: Academic Press/Elsevier, Volume 122, 2023, 339-376)*

*"Dietary Intervention Modifies DNA Methylation Age Assessed by the Epigenetic Clock" (Sae-Lee C, Corsi S, Barrow TM, Kuhnle GGC, Bollati V, Mathers JC, Byun HM. Molecular Nutrition & Food Research. 2018 Dec;62(23):e1800092. doi: 10.1002/ mnfr.201800092)*

# 7 WHAT ARE THE CURRENT LIMITS OF ANTI-AGING

- **Your genetic predispositions**
- **Environmental pollution**
- **Personal circumstances**
- **Serious diseases**

# 8 SEEKING ADVICE AND SUPPORT

**If, however, you are very concerned about a significant negative discrepancy between your biological and your chronological age, we recommend talking to your GP, so s/he can help you assess the current state of your health and suggest strategies.**

**Over the years, epiAge has developed a great international network of highly competent longevity specialists who will be happy to assist you. Check out our website under “medical consultation” for contact details.**



Please note, however, that therapeutic advice and medical consultations are not included in the cost of the epiAge test.

# 9 THE SCIENCE BEHIND EPIAGE

**(EPI-)GENETICS**

*If we compare your body to the inner workings of a computer, DNA is the hardware, genetics is the operating system and epigenetics is the software. The latter programmes our cells to maintain the various physiological functions necessary for a healthy life.*

*You have inherited the DNA „hardware“ as well as the genetic „operating system“ from your ancestors. Both have evolved very slowly and there is usually little you can do to change them. However, as far as health and longevity are concerned, these predispositions only represent a potentiality. Epigenetics as „software“ is much more decisive because it controls the activation (so-called „expression“ ) or deactivation (so-called „silencing“) of your genes. These processes are significantly determined by lifestyle, disease, environment and personal circumstances and contribute to the speed of ageing. Lifestyle is the realm in which you can actively and most effectively intervene and thus influence ageing through your everyday habits (e.g. the foods that you eat).*

*An important component of epigenetics is the methylation* of your DNA. The increase in methylation at selected sites correlates particularly significantly with chronological age and it changes over time. This is where the epiAge test comes into the picture: it examines the methylation levels of your DNA to provide you with a snapshot of your biological age.*

*However, biological age, is not set in stone: rather than evolving in a linear way, it is dynamic, individual, responsive and potentially reversible. This means that you hold the key to slowing down and perhaps even reversing your biological age. And that is the wonderful news: we are not completely at the mercy of our genetics but can actively steer our longevity journey!*

** Molecules that attach to the DNA throughout your lifespan and can cause the expression or silencing of your genes.*

*Our laboratory fulfils the highest certification standards worldwide:*
*- CAP (College of American Pathologists) certification*
*- CLIA registered.*
*The tests are carried out using NGS (Next Generation Sequencing) from Illumina.*
*The mean absolute deviation is 2.8 years.*

# 10 PLEASE NOTE !

**DISCLAIMER: The epiAge test is not a medical health analysis and should not be construed as a medical examination, diagnosis, treatment, preventative measure or risk assessment of disease.**

**The epiAge test is solely intended to determine epigenetic age and is based on the analysis of the DNA methylations around your DNA. We do not collect genetic data.**

**If you are under 21, the test can prove unreliable as individual growth/development is non-linear and tends to interfere with the biological ageing process.**

**Should you want to have a child or a young adult tested, please reach out to us as, in this case, we would apply another mathematical model to interpret the test.**