

PNOE

Metabolic Blueprint & Nutrition Analysis

Longevity

nikos gazetas



Test Type:
Resting

Test Date: 02/23/2022

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Pillars of Longevity



Mental health

Mental health is a fundamental pillar of longevity since a healthy mind is a prerequisite for healthy choices and a healthy lifestyle. A well-functioning brain is tightly linked to effective breathing since our breath drives our brain's chemistry balance. On the contrary, poor breathing is linked to anxiety and lower cognitive capacity."



Heart health

A healthy heart is critical for overall health since cardiovascular disease (i.e., hypertension, coronary artery disease, and heart failure) is the second most likely cause of death and one of the most common threats to the quality of life. A healthy heart is effective in pumping oxygen-rich blood into your body.



Cellular health

Cellular health is a fundamental driver of longevity as it provides the most potent shield against metabolic disorders such as Type II Diabetes and obesity. Healthy cells absorb oxygen efficiently, a prerequisite for burning fat and maintaining a high metabolism.



Lung health

High lung fitness is critical for a long and healthy life as lung disease (i.e., COPD, asthma, infectious disease) has become the most common cause of death. Healthy lungs are effective in transferring oxygen from their surface into the bloodstream.



Posture

Lower back pain and musculoskeletal problems are the number one driver of lower quality of life since they are a source of chronic pain and physical inactivity. Good posture is inextricably related to our breath since the way we inhale is the most potent regulator of our core's stability.

Overview

0 0 4 2 1 0

Severe limitation ● Limitation ● Neutral ● Good ● Excellent ● Core Limitations

Metabolic fitness - 55% | Neutral



Resting metabolic rate - 58% | Neutral



Fat Burning Efficiency - 51% | Neutral



Heart fitness - 50% | Neutral



Lung Fitness - 89% | Excellent



Breathing & Cognition - 67% | Good



Breathing & Posture - 67% | Good



Metabolic Disease Risk



Core Metrics

The following metrics are the most important ones for longevity. Achieving a high score maximizes the likelihood of maintaining a good life quality.

Breathing & Cognition 67% | Good

Why it matters

A leading regulator of focus, mood, and mental health.

How to improve it

Meditation and breathwork are the most powerful tools for improving breathing for better brain function and mental health.

Metabolic Rate 58% | Neutral

Why it matters

Weight gain is the principal driver behind the conditions that are most likely to reduce your quality of life (diabetes, heart disease, mobility problems). A high metabolic rate is the strongest shield against weight gain.

How to improve it

Resistance training and optimal macronutrient intake are the foundations of a high metabolic rate.

Fat-Burning Efficiency 51% | Neutral

Why it matters

A leading indicator of cellular fitness, healthy weight long term health.

How to improve it

Zone 2 endurance training and intermittent fasting are the main tools for improving oxygen absorption by cells which equates to high fat-burning ability and cellular health.

Wellness & Health History

Medical History

Henry Phillips is a 56-year-old male with a three-year history of type 2 diabetes and hypertension. He is prescribed Glucophage (metformin), and his diabetes is well-controlled. He is also prescribed Lasix (Furosemide) and currently has normal blood pressure readings. He is a long-term smoker and has also put on 10 kg over the last year, which is why he has suffered sleep apnea over the past six months.

Training History

He used to play tennis and go for long rides until two years ago when he gave up everything due to an injury in his left knee. He never went into surgery because it was attributed to arthritis. Although he has no acute pain at the moment, he is still scared to take up any kind of physical activity. Furthermore, his job is deskbound, and he transports by car.

Nutrition History

His current weight is 94kg, and he is 180cm tall. Over the last year, he has put on around 10kg due to the COVID pandemic, which forced him to work from home. This is the maximum weight he has ever reached since the last time he had put on weight five years ago had gone up to 90kg. He lost the extra weight by himself, managing his portions a little bit better and doing more exercise during the week. The minimum weight of his adult life was 81kg, and that's his current weight goal.

Metabolic fitness - 55% | Neutral

Severe limitation

Limitation

Neutral

Good

Excellent

TOP 36%



What it is

It's a gauge of how well your body converts nutrients (e.g., fats and carbohydrates) into the energy it needs to move and sustain its vital functions (e.g., brain, heart, and lung function).

How it is measured

The metabolic fitness score is calculated by combining the resting metabolic rate and the fat-burning efficiency scores.

Recommendations to improve it

EXERCISE

Resistance

Strength and hypertrophy training are some of the most important modalities for increasing your metabolic rate. This is because they promote muscle mass development and reduce your movement economy, making your body burn more calories while moving.

Interval

High-intensity intervals (Zone 5) significantly improve mitochondrial density and fat-burning efficiency, the second factor affecting metabolic health. Interval types in lower intensities have a more moderate impact.

Endurance

Low-intensity steady-state training (i.e., Zone 2) is by far the most powerful mechanism for improving mitochondrial function and enhancing fat-burning efficiency.

NUTRITION

Flax seeds

Flaxseeds are rich in key micronutrients and fiber, which gets fermented in the gut and promotes gut health, aiding metabolic fitness and protecting against diabetes and obesity.

Lentils

Lentils are rich in dietary fiber, plant protein, and slow-digesting carbs, all essential nutrients that promote gut and metabolic health, protecting against metabolic syndrome.

Dark chocolate

Dark chocolate is rich in magnesium, a mineral that supports mitochondrial function (mitochondria have a central role in metabolism). It's also rich in polyphenols, namely antioxidants that may increase metabolic flexibility.

LIFESTYLE

Sleep

Getting enough (7-8 hours) and good quality sleep will keep your hormones and hence your metabolic health regulated. It will also help your muscles recover faster and function optimally, supporting your whole metabolic fitness.

Avoid overfeeding

Overfeeding may lead to hyperinsulinemia and subsequent fat storage, hence a state of metabolic inflexibility with reduced fat-burning efficiency and a tendency to gain weight.

Reduce stress

Implementing stress-relieving strategies, such as mindful breathing (meditation), can help better regulate your stress response, which, if not slowed down, can lead to compromised metabolic health.

Why it's important for your goal

A low Metabolic fitness score may indicate a low cardiovascular and metabolic disease, such as Type II diabetes risk. It is also a vital factor contributing to staying within a healthy weight range. Eventually, it's a potent index of a well-rested body and its ability to sustain high exercise volumes.

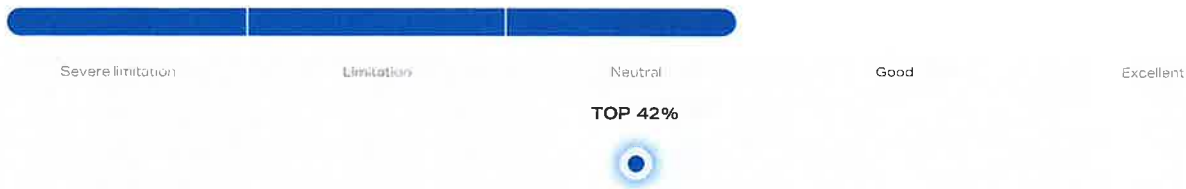


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- Galvani J.E. et al., Role of metabolic flexibility on metabolic health, Article number: 22
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Resting metabolic rate - 58% | Neutral



What it is

The resting metabolic rate score is a gauge of how fast or slow your metabolism is. In other words, whether your body is burning more or fewer calories than what's predicted based on your weight, gender, age, and height.

How it is measured

It's calculated by comparing the resting metabolic rate measured by the device with the estimated value generated by the Harris-Benedict equation. The Harris-Benedict RMR value is calculated based on the demographic data of the subject and is referred to as the "predicted" metabolic rate.

Recommendations to improve it

EXERCISE

Resistance

Strength and hypertrophy training are some of the most important modalities for increasing your metabolic rate. This is because they promote muscle mass development and reduce your movement economy, making your body burn more calories while moving.

Interval

High-Intensity interval training (Zone 4 and 5) positively impacts your metabolism by promoting muscle development (in untrained subjects) and enhancing muscle development through the increase of growth hormone and testosterone levels.

Endurance

Endurance training has little to no effect on enhancing metabolic rate. Moreover, significant amounts of endurance training can even reduce metabolic rate due to its effect of increasing movement economy.

NUTRITION

Eggs

Eggs are protein-rich foods that support muscle tissue development, thereby boosting your resting metabolic rate.

Brazil nuts

Brazil nuts are the richest source of selenium, a mineral especially important for the thyroid gland that regulates metabolic function.

Seaweed

Seaweed is rich in iodine, a mineral required for the production of thyroid hormones and the proper functioning of your thyroid gland that regulates metabolic function.

LIFESTYLE

Increased protein intake

A protein-rich diet can increase your muscle mass, one of the most metabolically active tissues, increasing your resting metabolic rate.

Avoid extreme dieting

Inadequately trying to lose weight quickly, creating huge calorie deficits, can have the exact opposite effect and slow your resting metabolic rate, hence your ability to lose weight.

Standing office work

Long periods of sitting due to desk jobs burn fewer calories compared to standing office work or standing up at regular 20-minute intervals, which can increase your resting metabolic rate.

Why it's important for your goal

A high Resting Metabolic Rate will protect you from weight gain as your body will burn more calories allowing you to eat more without gaining weight. It also facilitates weight loss, as burning more calories means that even a modest restriction in food intake will result in a significant calorie deficit and weight loss.

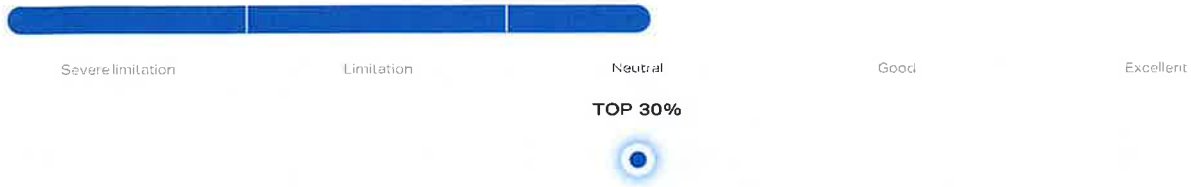


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- Delsoglio M. et al., Indirect calorimetry in clinical practice, Article number : 1387
- Jagim A.R. et al., Accuracy of resting metabolic rate prediction equations, 1875-1881

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Fat Burning Efficiency - 51% | Neutral



What it is

It represents your ability to “burn” fat predominantly as a fuel source at rest.

How it is measured

Resting RER values closer to 0.7 reflect a high-fat burning efficiency score, whereas resting RER values closer to 1.0 reflect a low-fat burning efficiency score.

Recommendations to improve it

EXERCISE

Resistance ^

While resistance training is critical for developing muscle mass and increasing metabolic rate, it has minimal effect on advancing mitochondrial density and fat-burning efficiency.

Interval ^

High-intensity intervals (Zone 5) significantly improve mitochondrial density and fat-burning efficiency. Interval types in lower intensities have a more moderate impact.

Endurance ^

Low-intensity steady-state training (i.e., Zone 2) is by far the most powerful mechanism for improving mitochondrial function and enhancing fat-burning efficiency.

NUTRITION

Fatty fish

Fatty fish, such as salmon, is rich in protein and omega-3 fatty acids, both of which can keep fat-burning efficiency at high levels.

Cacao

Cacao is full of antioxidants and may promote gene expression that stimulates fat burning.

Coffee

Caffeine has fat-burning efficiency properties, meaning drinking 2-3 cups of coffee daily can help you increase your fat-burning efficiency.

LIFESTYLE

Increased protein intake

A protein-rich diet can regulate your appetite and increase muscle mass, improving your fat-burning efficiency.

Cold exposure

Cold exposure, specifically the shivering reaction during this process, can increase fat-burning efficiency by 15%-37%.

Reduce stress

Implementing stress-relieving strategies, such as mindful breathing (meditation), can help regulate your stress hormone levels, boosting your metabolism and fat-burning efficiency.

Why it's important for your goal

The higher your Fat-burning Efficiency, the more your cells will rely on fat as a fuel source during rest. Fat-burning Efficiency is also one of the most vital indicators of cellular health



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Scientific sources

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- Miles-Chan J.L. et al., Fasting substrate oxidation assessed by indirect calorimetry, 1114-1117
- Marra M. et al., Fasting respiratory quotient as a predictor of weight changes, 189-192

Heart fitness - 50% | Neutral

Severe limitation

Limitation

Neutral

Good

Excellent

TOP 69%



What it is

The heart fitness score measures your cardiovascular system's fitness and is a risk factor for heart-related conditions

How it is measured

It's assessed by collectively analyzing breath biomarkers such as your breathing frequency at rest with the spectrum of your heart rate variability (i.e., Low & High-Frequency bands). It's calculated based on your heart rate variability in conjunction with your resting breathing frequency. For this score, the connection of a chest strap heart-rate monitor will be necessary.

Recommendations to improve it

EXERCISE

Resistance [^]

It can have a modest effect on improving cardiovascular fitness when it includes a high number of repetitions and results in a moderately elevated heart rate. Overall, it's not your go-to for improving this metric.

Interval ^{^^}

It's the most impactful modality for improving cardiovascular fitness, given its ability to enhance heart stroke volume and heart strength. High-intensity intervals (i.e., Zone 4) are also the most effective modality for improving VO2 max, a key driver of cardiovascular fitness.

Endurance ^{^^}

Although not as effective as interval training, endurance training can also increase stroke volume and thus improve cardiovascular fitness. Its efficacy is linearly related to the exercise intensity (i.e., Zone 2 - 4).

NUTRITION

Fruits

Consuming various fruits, more specifically bananas, melons, and berries rich in fiber and potassium, can improve heart health.

Vegetables

Consuming a variety of dark leafy vegetables, especially kale, mustard greens, and swiss chard, rich in fiber and vitamin K, can enhance heart health.

Fatty fish

Fatty fish, such as salmon, is rich in omega-3 fatty acids, the most cardioprotective nutrient that can prevent and even treat heart-related diseases such as hyperlipidemia and increased blood pressure.

LIFESTYLE

Smoking cessation

Tobacco smoking can damage the heart and blood vessels. It also reduces the oxygen in your blood, increasing your blood pressure and heart rate. Specifically, your heart needs to work harder to supply enough oxygen to the body and brain.

Diet

A healthy balanced diet packed with nutritious foods, rich in dietary fiber and antioxidants, can significantly improve your heart health.

Sauna

Sauna bathing can decrease blood pressure and improve overall cardiovascular function.

Why it's important for your goal

A high heart fitness score indicates improved parasympathetic nervous system activity, low heart rate variability, and the ability to recover from intense physical activity. If a person is chronically stressed or overloaded, physically or mentally, the natural interplay between the sympathetic and parasympathetic systems can be disrupted, resulting in a more dominant sympathetic nervous system.



Scientific sources

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- Kubota Y. et al., Heart rate variability and lifetime risk of cardiovascular disease, 619-625
- Shaffer F. et al., An overview of heart rate variability metrics and norms, Article number: 258
- Sammito S. et al., Reference values for heart rate variability measures, 1309-1316

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Lung Fitness - 89% | Excellent



What it is

It's a gauge of your lungs' condition and a risk factor for respiratory-related conditions.

How it is measured

The lung fitness score is calculated based on the resting tidal volume values while taking into consideration gender. Tidal volume, or VT, is the volume of air that is moved into or out of the lungs during normal breathing.

Recommendations to improve it

EXERCISE

Resistance ^

Specific types of resistance exercise can improve lung fitness by strengthening the respiratory muscles, including the diaphragm and muscles between the ribs that work together to power inhalation and exhalation.

Interval ^

Improves lungs fitness thanks to its ability to increase your total vital capacity (FVC). Zone 4 intervals are the most effective ones for improving this metric.

Endurance ^

Steady-state training can have varying levels of impact on lung fitness. Zone 2 training will induce a modest improvement, whereas Zone 3 and 4 will positively influence this metric. Exercise intensity is positively correlated with the positive influence on this metric.

NUTRITION

Pumpkin

Pumpkins are rich in carotenoids, such as zeaxanthin, lutein, and beta-carotene, which can slow down the deterioration of lung function and improve lung fitness.

Red cabbage

Red cabbage is rich in anthocyanin, an antioxidant that can slow down the deterioration of lung function and improve lung fitness.

Turmeric

Turmeric is a superfood with anti-inflammatory properties that can increase lung capacity and improve lung fitness.

LIFESTYLE

Smoking cessation

Smoking can cause a rapid decline in respiratory muscle blood supply and reduce your lung fitness through alterations in airflow and irritation of the airways.

Weight loss

Obesity causes mechanical compression of the diaphragm and lungs, leading to reduced lung fitness.

Active breathwork

The effort of actively guiding your breath to gradually increase your breathing rate and depth by following PNOE's breathing exercises can lead to increased lung fitness.

Why it's important for your goal

Oxygen is the most critical element for a long and healthy life as it constitutes the fundamental ingredient cells use to operate and thrive. The bigger your lungs, the more oxygen you can absorb and deliver to your cells.

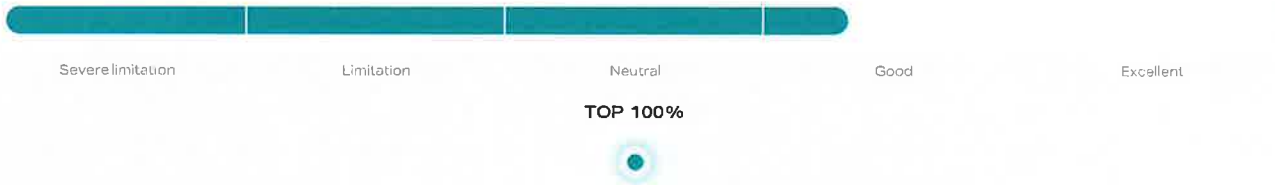


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- Elbehairy A.F et al., Pulmonary gas exchange abnormalities in mild COPD, 1384-1394
- Ferguson N.D. et al., Low tidal volumes for all?, 783-791

Breathing & Cognition - 67% | Good



What it is

It reflects how breathing affects a person's ability to think and perform cognitive tasks

How it is measured

The breathing and cognition score is calculated based on breathing frequency at rest and normalized based on the average BF.

Recommendations to improve it

EXERCISE

Resistance ^

Strength training induces benefits to cognitive performance, which derive from preventing degeneration in specific regions of the brain such as the hippocampus, a complex that plays a major role in learning and memory [https](#)

Interval ^

It has been demonstrated to produce benefits in cognitive capacity stemming from enhanced neuroplasticity (the ability of neurons to evolve) and the activation of certain brain regions by lactate produced from the working muscles. ([https](#)

Endurance ^

According to CDC, moderate exercise (i.e., Zone 2) promotes memory and cognition thanks to the secretion of growth factors, chemicals that support the growth of new blood vessels and cells in the brain.

NUTRITION

Swiss chard

Swiss chard is a leafy green vegetable packed with stress-fighting nutrients, such as magnesium.

Matcha

Matcha is a type of green tea with powerful stress-relieving properties due to its high content of the amino acid L-theanine.

Avocado

Avocados are rich in magnesium, a mineral that contributes to reducing levels of the stress hormone cortisol.

LIFESTYLE

Breathing training

Breathing training through yogic breathing (pranayama), for example, can help you better control your breathing and, thus, your cognitive function.

Diet

A healthy balanced diet packed with nutritious foods, which is also low in caffeine and alcohol, can significantly help reduce stress and hence slow your breathing rate throughout the day.

Cold exposure

Cold exposure can improve your cognitive function and mental focus on the everyday activities of your daily routine.

Why it's important for your goal

Hyperventilation is considered one of the most common but underdiagnosed conditions that severely impact the quality of life in our society. It's estimated that 15% of the population chronically hyperventilates, with only a handful knowing about it. Chronic hyperventilation at resting conditions reduces cognitive capacity at work, increases feelings of fatigue, and is associated with higher rates of anxiety and panic attacks.



Scientific sources

- Del Negro C.A. et al., Breathing matters, 351-367
- Allen M. et al., Respiratory rhythms of the predictive mind, 619-625
- Ma X. et al., The effect of diaphragmatic breathing on attention and stress, Article number : 874
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Breathing & Posture - 67% | Good



What it is

The breathing and posture score is a gauge of how your breathing affects posture, the likelihood of musculoskeletal injury, and lower back pain.

How it is measured

The breathing and posture score is calculated based on your resting breathing frequency.

Recommendations to improve it

NUTRITION

Broccoli

Broccoli is rich in magnesium which helps the mind and body relax, lowering your breathing rate.

Dark chocolate

Dark chocolate is packed with essential nutrients, such as magnesium, a mineral that contributes to reducing levels of the stress hormone cortisol.

Fermented foods

Fermented foods, such as kefir and kimchi, are rich in probiotics which promote gut health and thus reduce stress and breathing frequency.

LIFESTYLE

Meditation

Long-term meditation through breathing practices such as nasal breathing or box breathing can help you better control and slow your breathing rate.

Smoking cessation

Nicotine places more stress on your body by increasing physical arousal and, eventually, breathing rate, leading to decreased breathing posture.

Sunlight viewing

Looking at the sun with no sunglasses on first thing in the morning can significantly help you reduce stress through the stress hormone cortisol regulation, slowing your breathing rate and improving your breathing posture.

Why it's important for your goal

Abnormal breathing patterns are the most significant risk factor for musculoskeletal problems like lower back pain which is one of the most important factors reducing the quality of life. Correct breathing will vastly improve posture, feelings of musculoskeletal pain, and quality of life.



Scan to learn more

Scientific sources

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- Beeckmans N. et al., Respiratory disorders in individuals with low back pain, 77-86
- Fleming S. et al., Normal ranges of respiratory rate: A systematic review, 1011-1018

Metabolic Disease Risk



What it is

The metabolic disease risk score provides an indicator of the risk of developing metabolic diseases like diabetes.

How it is measured

It's calculated based on your ability to utilize fat at rest. The lower the RER, the higher your fat-burning efficiency and the lower your metabolic disease risk score.

Recommendations to improve it

EXERCISE

Resistance

Strength and hypertrophy training are some of the most important modalities for lowering the risk of diabetes and metabolic disease. This is because they increase your metabolic rate, and improve insulin sensitivity and glucose transport.

Interval

High-intensity intervals (Zone 5) significantly improve mitochondrial density and fat-burning efficiency, a core element affecting the risk of developing diabetes. Interval types in lower intensities have a more moderate impact.

Endurance

Low-intensity steady-state training (i.e., Zone 2) is by far the most powerful mechanism for improving mitochondrial function and enhancing fat-burning efficiency, a key factor affecting the risk of diabetes and metabolic syndrome.

NUTRITION

Oatmeal

Oats contain a good amount of dietary fiber, known as beta-glucans which can help better regulate your blood glucose levels throughout the day, avoiding fluctuations that may arise from consuming foods rich in processed carbohydrates.

Chia seeds

Chia seeds are packed with fiber, are low in carbohydrates and can help you improve your blood sugar control, hence decreasing your diabetes risk.

Cinnamon

Cinnamon has been shown to help regulate blood sugar levels, improve insulin sensitivity, and reduce HbA1c levels.

LIFESTYLE

Weight loss

Losing even a mere 7% of your total body weight can significantly decrease your risk of developing prediabetes.

Screen time turndown

For each additional hour spent watching television, an increase in prediabetes risk is observed.

Sleep

Getting enough (7-8 hours) and good quality sleep has been shown to significantly decrease type II diabetes risk by improving insulin sensitivity and glucose metabolism.

Why it's important for your goal

Type 2 diabetes is a clinical condition in which insulin secretion from the pancreas is compromised, and your blood glucose levels remain high. During chronic hyperinsulinemia, a state where the pancreas produces excessive insulin to compensate for the high blood glucose levels, fat burn is inhibited.



Scientific sources

- Pujia A. et al., Lipid oxidation predicts type 2 diabetes. Article number : 806
- Gilbertson N.M. et al., Glucose tolerance is linked to postprandial fuel use, 2058-2066
- Apostolopoulou M. et al., Metabolic flexibility associates with insulin sensitivity, 2203-2207

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Caloric Balance



You Burn

During days you don't work out

2596 kcal/day

During days you work out

3047 kcal/day

You should eat

During days you don't work out

2596 kcal/day

During days you work out

3047 kcal/day

Fuel Sources

Your body uses a mixture of carbs and fats to produce the energy needed to sustain life and power daily activities. High reliance on fat as a fuel source is one of the most reliable indicators of cellular health and is strongly associated with low likelihood of weight gain or weight regain.

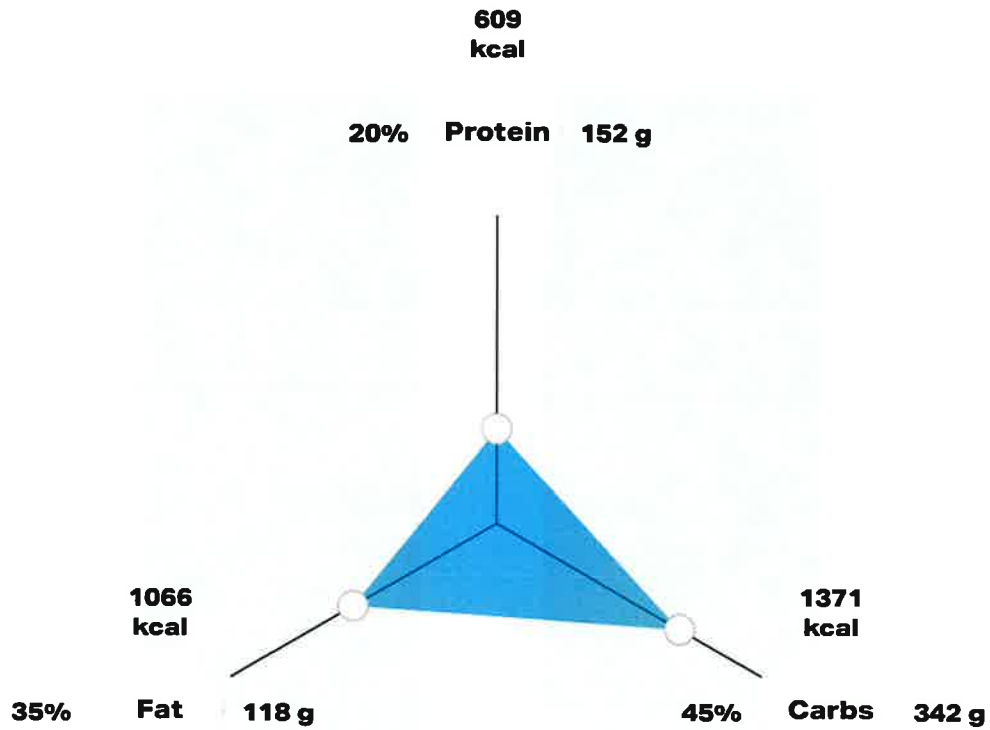
- Fats
- Carbohydrates

Your metabolism uses an energy mix of 51% fats and 48% carbohydrates to produce energy

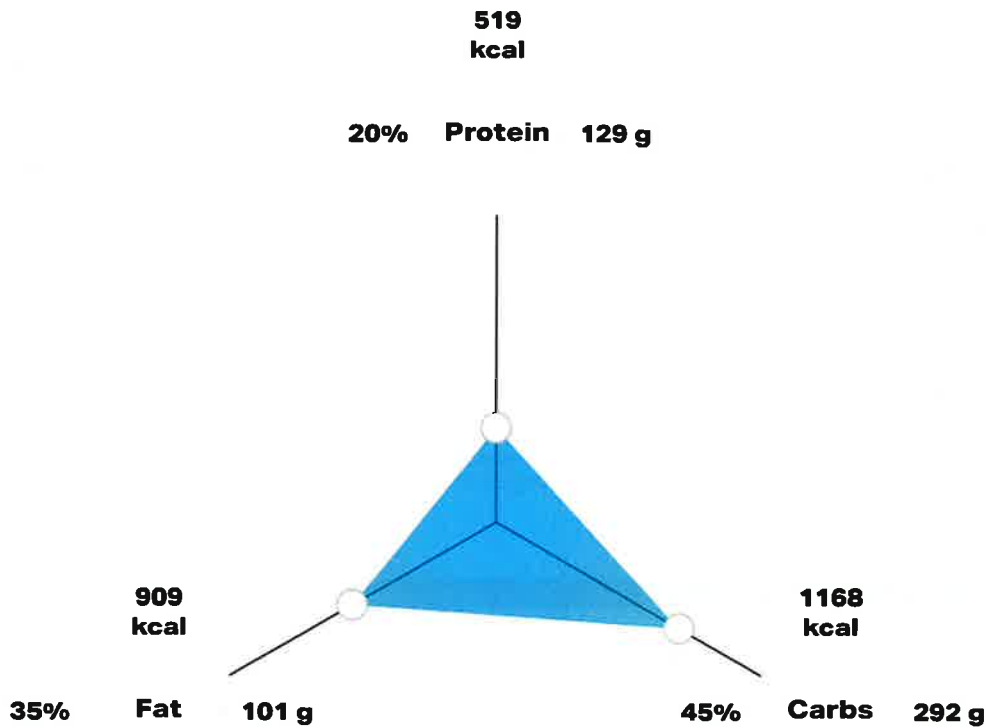


Macronutrient Balance

Workout days



Non-workout days



Testing Schedule



In the next exercise measurement, which is recommended to be scheduled 15 days from now, provided that he follows the appropriate exercise recommendations, he is expected to have improved his recovery capacity as well as his breathing and stability and breathing and cognition metrics. After that, he is recommended to repeat the VO₂max test in 3 months, when he is expected to have improved his VO₂peak, cardiovascular fitness, high-intensity performance, and fat-burning efficiency.

