

Biological Age & Performance Analysis

Weight Loss

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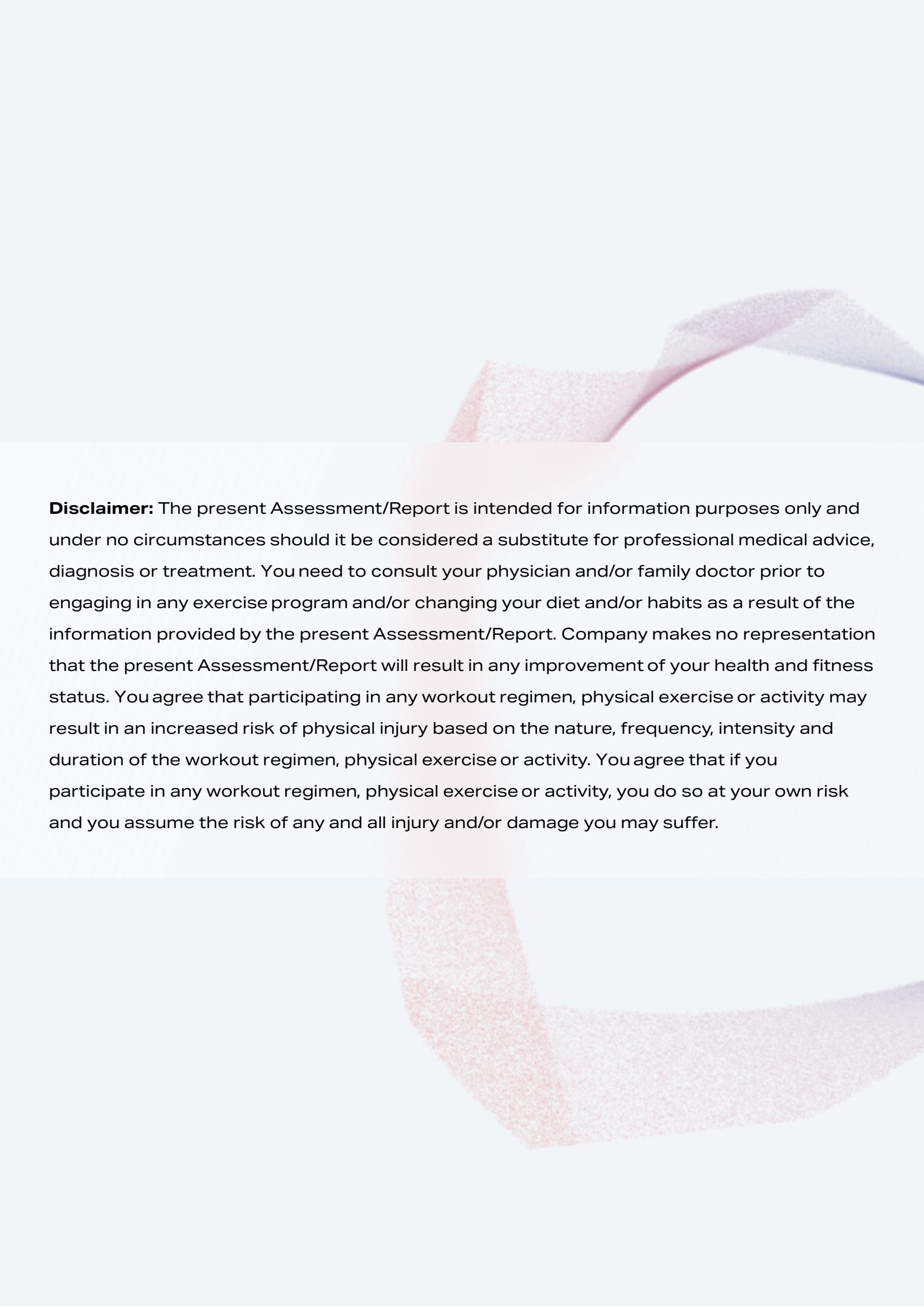


Test Type:
Exercise Ramp

Test Date:

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Momentum BioAnalytics LLC
Marc DeVito



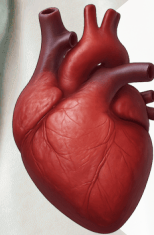
Disclaimer: The present Assessment/Report is intended for information purposes only and under no circumstances should it be considered a substitute for professional medical advice, diagnosis or treatment. You need to consult your physician and/or family doctor prior to engaging in any exercise program and/or changing your diet and/or habits as a result of the information provided by the present Assessment/Report. Company makes no representation that the present Assessment/Report will result in any improvement of your health and fitness status. You agree that participating in any workout regimen, physical exercise or activity may result in an increased risk of physical injury based on the nature, frequency, intensity and duration of the workout regimen, physical exercise or activity. You agree that if you participate in any workout regimen, physical exercise or activity, you do so at your own risk and you assume the risk of any and all injury and/or damage you may suffer.

Pillars of Weight Loss



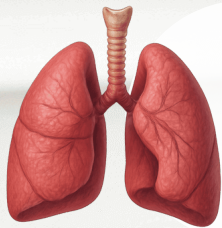
Mental status

Mental status is a fundamental pillar of wellness 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 fitness

A healthy heart is critical for overall wellness since cardiovascular dysfunction is the second most likely cause of mortality 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.



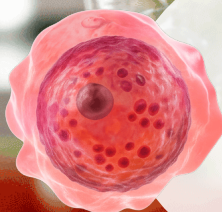
Lung fitness

High lung fitness is critical for a long and healthy life as lung dysfunction has become one of the most common causes of mortality. Healthy lungs are effective in transferring oxygen from their surface into the bloodstream.



Posture

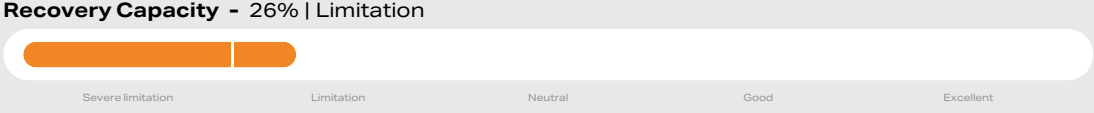
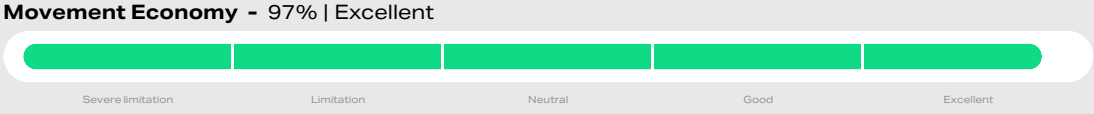
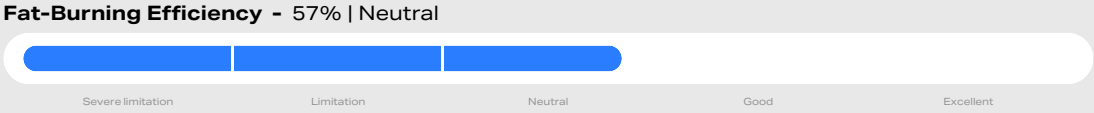
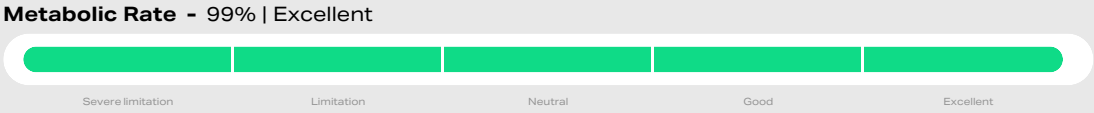
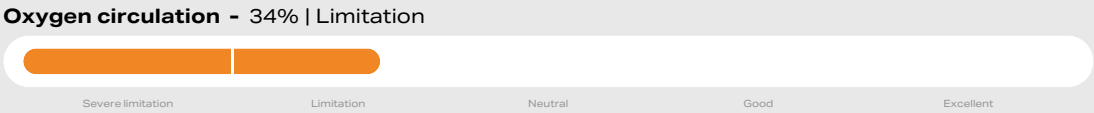
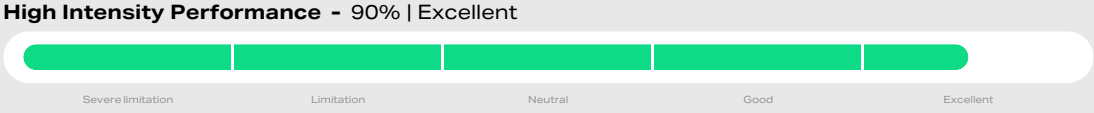
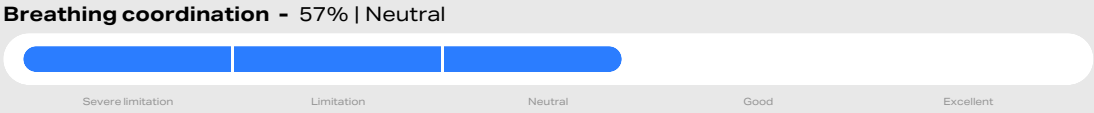
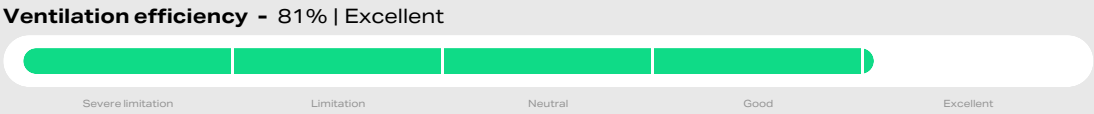
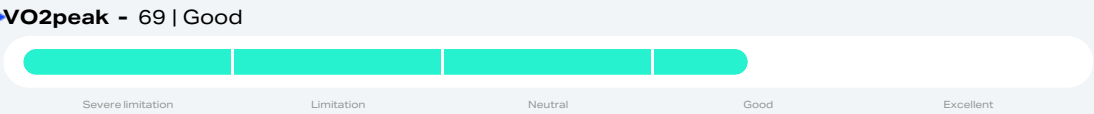
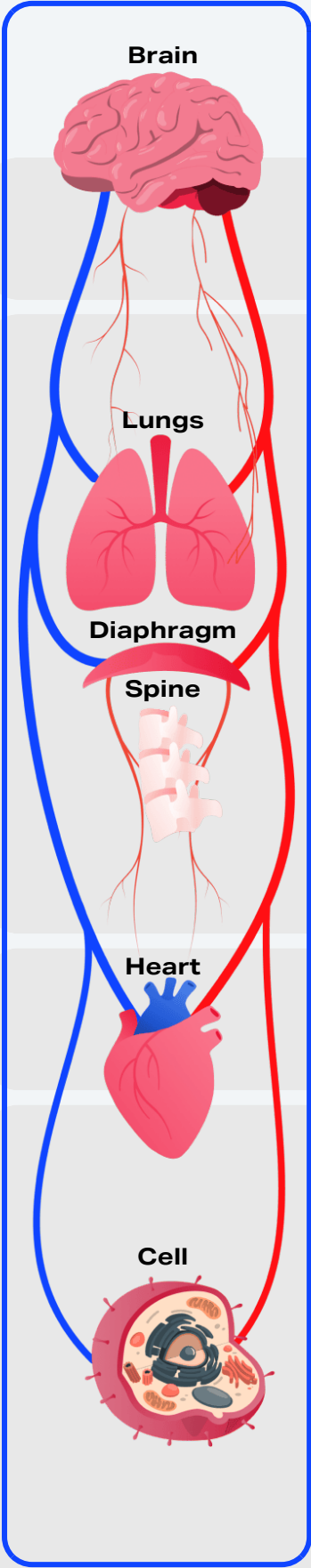
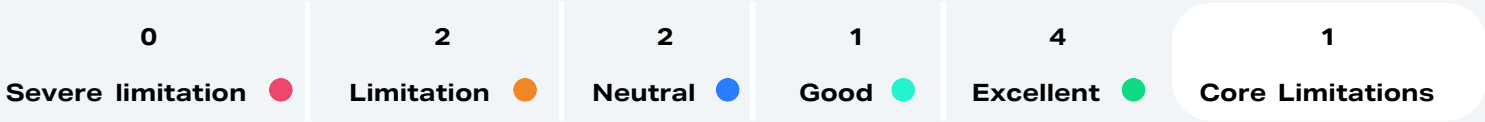
Lower back pain and musculoskeletal problems are the number one driver of lower quality of life since they are a source of chronic pain and physical inactivity. Good posture is inextricably related to our breath since the way we inhale is one of the most potent regulators of our core's stability.



Cellular performance

Cellular performance is a fundamental driver of wellness as it provides one of the most potent shields against metabolic dysfunction and obesity. Healthy cells absorb oxygen efficiently, a prerequisite for burning fat and maintaining a high metabolism.

Overview



Core Metrics

The following metrics are the most important for weight loss. Achieving a high score maximizes the likelihood of sustainable weight loss.

Oxygen circulation 34% | Limitation

Why it matters

A leading indicator of your heart, vessel, and blood condition .

How to improve it

All forms of interval and cardio training have a significant impact on your Oxygen circulation , with zone 4 and 5 training being the most impactful forms of exercise

Fat-Burning Efficiency 57% | Neutral

Why it matters

A leading indicator of cellular fitness likelihood of weight gain or regain.

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 reduces the likelihood of weight gain or regain.

Metabolic Rate 99% | Excellent

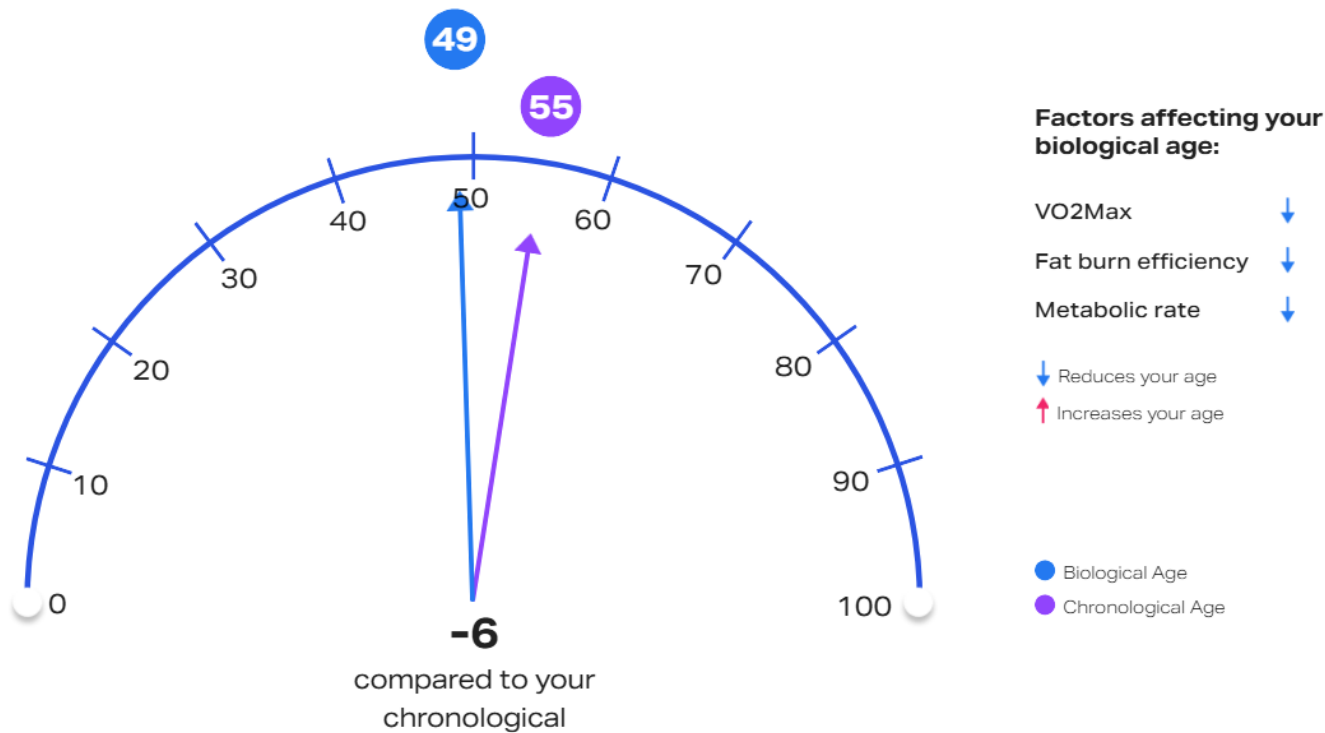
Why it matters

One of the most potent protection against weight gain.

How to improve it

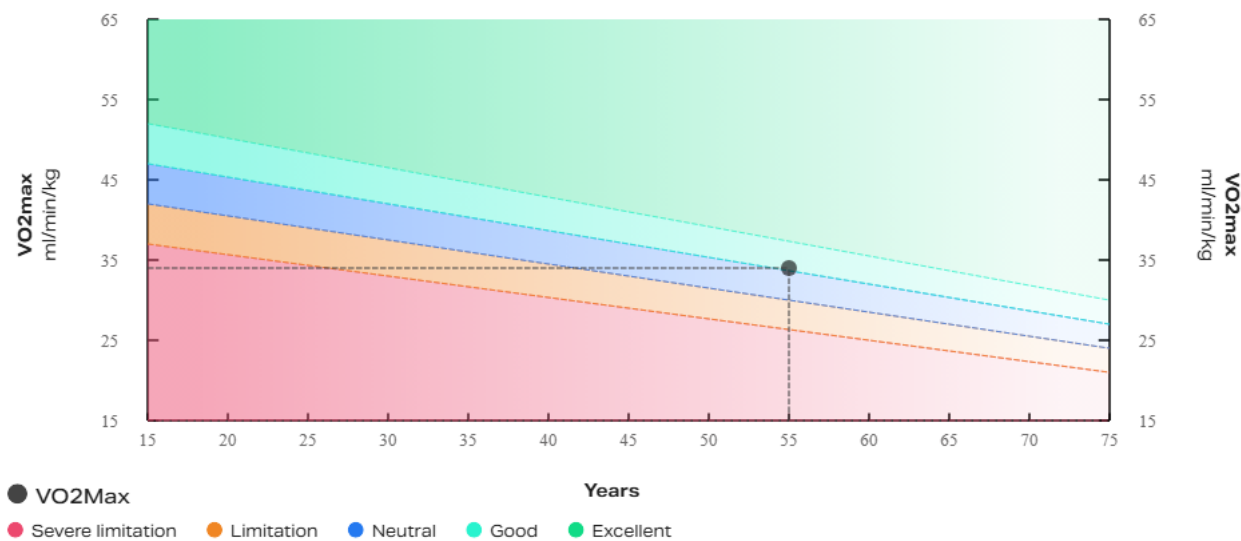
Resistance training and optimal macronutrient intake are the foundations of a high metabolic rate.

Biological Age

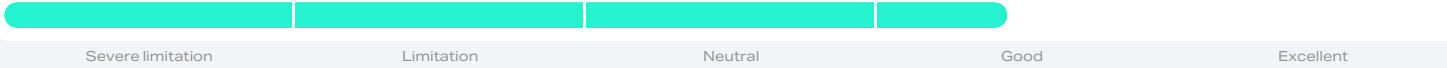


We estimate your biological age based on your VO2 max, fat-burning efficiency, and metabolic rate. According to the American Heart Association, your cardio-respiratory fitness (VO2 max), is the best predictor of how long and well you will live. High fat-burning efficiency is equivalent to high cellular fitness, essential for preventing metabolic dysfunction and weight gain. Lastly, a high metabolic rate is crucial for long-term wellness as it is the most effective shield against weight gain, the number one driver behind the most dangerous health related issues.

VO2max & Wellness prediction



This black dot shows your measured VO2 peak. The dotted lines depict the different categories of your Aerobic Capacity score, i.e. whether your score is excellent or very poor based on your VO2 peak.



What it shows

VO2peak shows the maximum amount of oxygen your body can absorb. It's an umbrella metric of your overall fitness as it represents the combined ability of your heart, lungs, and cells to funnel and consume oxygen.

Why it's important to track

VO2peak is important to track because it is one of the best predictors of overall health, longevity, and athletic performance. The higher the VO2peak, the fitter your cardiorespiratory system is, the lower the risk of developing chronic disease, and the higher the likelihood of longevity. Factors that can positively affect VO2peak are regular cardio and/or interval training, adequate sleep, and a correct diet for your metabolic type. Conversely, negative factors include cardiovascular disease, respiratory disease, uncontrolled stress, smoking, and alcohol.

Recommendations to improve it

EXERCISE

Resistance ^

Strength and hypertrophy training increase muscle mass, which in turn leads to greater oxygen uptake as muscles have high oxygen requirements.

Interval ^

High-intensity interval training (Zone 4 and 5) improves heart function (more oxygen-rich blood pumped), lung function (more oxygen absorption), and thus overall oxygen uptake.

Endurance ^

Zone 2 endurance training improves your cells' ability to absorb oxygen, resulting in greater oxygen uptake across the entire body.

NUTRITION

Beetroots and beetroot juice

Consuming beetroots and beetroot juice rich in nitrates can boost oxygen uptake levels during exercise by dilating blood vessels and thus increasing your VO2peak.

Red meat

Consuming sufficient amounts of red meat rich in heme-iron is essential for maintaining healthy hemoglobin and red blood cell levels necessary for oxygen transport, and therefore increased VO2peak.

Capers

Capers have the highest natural concentration of quercetin. Quercetin is a natural polyphenolic flavonoid substance whose consumption can modestly increase VO2peak, possibly through its effect on mitochondrial biogenesis.

LIFESTYLE

Exercise timing

Completing endurance or interval training in the afternoon can positively affect your VO2peak.

Sleep

Getting sufficient (7-8 hours) and high-quality sleep will improve physical recovery and thus facilitate the improvement of your VO2peak.

Weight loss

Being overweight or obese will negatively impact your VO2peak, whereas reducing just 5% of your current weight can significantly increase your VO2peak.



Scan to learn more

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Ventilation efficiency - 81% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Ventilation efficiency indicates your lungs' ability to absorb oxygen and clear carbon dioxide. It is calculated by the ratio of the total amount of air exchange between your lungs and the environment (VE) over the exhaled carbon dioxide volume (VCO₂).

Why it's important to track

Ventilation efficiency is important to track as it can monitor the efficiency with which your lungs exchange oxygen and carbon dioxide with the environment. A high score may indicate normal lung function, whereas a low score may indicate the presence of internal lung inflammation that is blocking normal oxygen and carbon dioxide exchange. Factors that can positively affect it include regular cardio training, breathwork, and a healthy body weight. Negative factors include a cold, toxic infection, or lung disease such as COPD, asthma, or sleep apnea.

Recommendations to improve it

EXERCISE

Resistance ^

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

Interval ^

Zone 4 interval training is the most effective for improving ventilation efficiency thanks to its ability to increase tidal volume, which is one of the two factors determining minute ventilation (VE).

Endurance ^

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

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 ventilation efficiency.

Red cabbage

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

Turmeric

Turmeric is a superfood with anti-inflammatory properties that can improve lung capacity, an essential driver of minute ventilation (VE), and, thus, ventilation efficiency.

LIFESTYLE

Smoking cessation

Smoking can cause a rapid decline in lung blood supply and reduce your airflow, thus decreasing ventilation efficiency.

Weight loss

Obesity causes mechanical compression of the diaphragm and lungs, leading to reduced tidal volume (VT) and, therefore, ventilation efficiency, given VT is one of the two factors determining minute ventilation (VE).

Breathwork

Breathwork through various breathing techniques, either unassisted (i.e., tummo breathing) or supported by a breathing resistance device, can help you increase your tidal volume, thus increasing your ventilation efficiency given VT is one of the two factors determining minute ventilation (VE).



Scan to learn more

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Breathing coordination - 57% | Neutral

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Breathing coordination shows your ability to maintain regular and efficient breathing across the entire spectrum of exercise intensities. It is a measure of how efficiently you can coordinate your respiratory muscles and diaphragm.

Why it's important to track

Breathing coordination is important to track as it can regulate your nervous system activation and oxygenation levels across the entire body. How fast and deep you breathe can profoundly regulate the activation of your sympathetic and parasympathetic nervous system as well as the levels of carbon dioxide in your blood. Rapid, shallow, and erratic breathing triggers the activation of the sympathetic nervous system and lowers carbon dioxide levels in the blood, which in turn lowers whole-body oxygenation. Slower, steady, and regular breathing has the opposite effect. Factors that can positively affect breathing coordination are regular exercise and breathwork, such as learning to do diaphragmatic breathing. Conversely, negative factors include poor ventilation efficiency, mental health disorders, or stress.

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 significant role in learning and memory.

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 specific brain regions by lactate produced from the working muscles.

Endurance ^

According to the CDC, moderate exercise (i.e., Zone 2) promotes memory and cognition by secreting 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. Relieving stress can also help better control your breathing rate, thus improving breathing coordination.

Matcha

Matcha is a type of green tea with powerful stress-relieving properties due to its high content of the amino acid L-theanine. Relieving stress can also help better control your breathing rate, thus improving breathing coordination.

Avocado

Avocados are rich in magnesium, a mineral that contributes to reducing levels of the stress hormone cortisol. Relieving stress can also help better control your breathing rate, thus improving breathing coordination.

LIFESTYLE

Breathwork

Breathwork through yogic breathing (pranayama) or box breathing, can help you better control your breathing rate, thus improving breathing coordination.

Reduce stress at work

Since work occupies a big part of your everyday life, working in a hostile environment, long hours, and job insecurity can make you chronically stressed and thus hyperventilate. Regulating these factors can help you better manage your stress and, therefore, your breathing rate and breathing coordination.

Cold exposure

Cold exposure can help you wind down and lower your breathing rate by taking deep, long breaths, thus improving breathing coordination.



Scan to learn more

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High Intensity Performance - 90% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

High-intensity Performance is calculated by assessing how well the lungs supply oxygen and how well the heart pumps it into the body across all exercise intensities during a VO2 max test. This is reflected by two metrics, namely, O2pulse, a metric reflecting the oxygen pumped in every heartbeat, and VO2/BF, a metric reflecting the oxygen absorbed per breath cycle.

Why it's important to track

A high-intensity performance is important for your wellness and performance because having a high and continuously increasing O2 Pulse, and VO2/BF throughout high exercise intensities will ensure sufficient oxygen delivery to your working muscles. This will, in turn, provide your body remains predominantly in the aerobic state when exercising at high intensities, thus allowing you to train at intensities where you can increase your VO2 max and burn many calories while minimizing fatigue buildup.

Recommendations to improve it

EXERCISE

Resistance

Since high-intensity performance relies on your respiratory and cardiovascular systems, resistance training will have little to no effect on it.

Interval

Zone 3 and 4 intervals are the most effective modalities for improving respiratory and cardiovascular performance during medium and higher training intensities and are thus the most effective tools for improving high-intensity performance.

Endurance

Similar to interval training, heavy endurance training (Zone 4) trains your lungs and heart to operate effectively during high-intensity training states.

NUTRITION

Iron-rich foods

Consuming foods rich in iron, such as red meat, red kidney beans, and dried apricots, is key to increasing oxygen supply throughout your body and thus being able to train at high exercise intensities.

Beetroot

Beetroots are rich in nitrates which help dilate blood vessels, increase oxygenated blood flow to working muscles and thereby improve high-intensity performance.

Pomegranate

Pomegranates can improve blood flow by increasing nitric oxide bioavailability, enabling improved blood flow and oxygen delivery to the working muscles.

LIFESTYLE

Breathing training

Breathing training (either unassisted or by using a breathing resistance device) that increases lung capacity and function can significantly increase oxygen uptake and ventilation during high exercise intensities.

Hydration

Drinking enough water (2-3L/day) can help keep your lungs adequately hydrated and improve their ability to oxygenate your blood, a prerequisite for maintaining high-intensity exercise levels.

Spend time in the prone position

Lying down in the prone position improves ventilation in your lungs, thereby increasing the oxygen levels in your body and improving high-intensity performance.



Scan to learn more

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- Shruti P.R. et al., Comparison of effects of meditation on cardiorespiratory parameters, 6-12
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Oxygen circulation - 34% | Limitation

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Oxygen circulation indicates your heart's ability to pump oxygen-rich blood into your body. It is calculated based on O2pulse, a metric derived by dividing your overall oxygen consumption (VO2) by heart rate (HR). When your heart functions normally, your overall oxygen uptake increases proportionally to your heart rate.

Why it's important to track

Oxygen circulation is important to track because it may indicate the presence of cardiovascular deconditioning and your heart's inability to pump oxygen-rich blood through the body. A plateauing or decline in O2pulse as exercise intensity increases indicates that your heart is beating more inefficiently and thus needs to complete more cycles to pump the oxygen your body needs. This may indicate the presence of cardiovascular disease and should be evaluated by a medical professional. Factors that can positively affect oxygen circulation are regular cardio training, a healthy diet, and maintaining a healthy body weight. Conversely, factors that negatively affect oxygen circulation are cardiovascular disease, respiratory disease, and smoking.

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 cardiovascular fitness.

Vegetables

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

Seeds

Adding seeds to your diet, such as flaxseeds, pumpkin seeds, and sunflower seeds, rich in vital minerals such as magnesium, can boost your cardiovascular fitness.

LIFESTYLE

Sauna

Sauna bathing can decrease blood pressure and improve overall cardiovascular function. Its effects are enhanced when physical activity is performed prior to the session.

Meditation

Long-term meditation can significantly lower diastolic blood pressure and heart rate, thus increasing your cardiovascular fitness.

Smoking cessation

Smoking distinctly decreases tissue blood flow and, hence, oxygen circulation. As a result, cutting out smoking can help improve your oxygen circulation.



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Metabolic Rate - 99% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Metabolic Rate shows how fast or slow your metabolism is during light movement. In other words, it shows whether your body is burning more or fewer calories than predicted based on your weight, gender, age, and height during regular movements. The greater the number of calories burnt, the higher the metabolic rate score.

Why it's important to track

Metabolic rate is important to track as it indicates your predisposition for weight loss or weight gain. A high metabolic rate during regular movement is essential for weight loss and maintaining a healthy weight, as it ensures you burn enough calories to cover a normal calorie intake. On the contrary, when your metabolic rate drops, your body burns fewer calories, making it more likely to gain weight if you continue to eat as you did before. Factors that can positively affect metabolic rate are resistance exercise, adequate sleep, and sufficient dietary protein intake. Conversely, negative factors include yo-yo dieting, hormonal dysregulation, extreme dieting, and excessive cardio training.

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

Lean protein

High-quality protein sources, such as fatty fish, eggs, lean red meat, and/or skinless chicken/turkey, can help you maintain and/or increase your muscle mass and, thus, boost your metabolic rate.

High-fiber foods

Eating high-fiber foods, such as fruits, vegetables, legumes, and nuts, can boost your metabolic rate by increasing diet-induced thermogenesis and decreasing body inflammation.

Coffee

Consuming moderate amounts of coffee (2-3 cups per day) can slightly increase your metabolic rate and improve your athletic performance.

LIFESTYLE

Increased protein intake

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

Proprioception

By enhancing the sense of self-movement, force exertion, and body position during exercise, you can support muscle mass development and thus improve your metabolic rate.

Standing office work

Adopting a standing office significantly increases calorie burn throughout the day compared to a regular sitting workstation, thus elevating your metabolic rate.

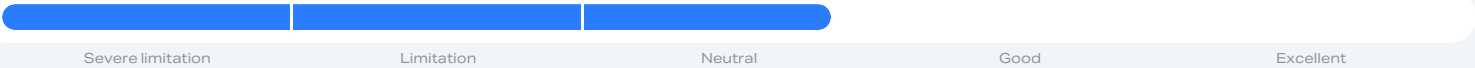


Scan to learn more

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Fat-Burning Efficiency - 57% | Neutral



What it shows

Fat-burning Efficiency shows your cells' ability to use fat as a fuel source and is a hallmark of mitochondria and cellular function. As exercise intensity increases, cells transition from burning predominantly fats to burning predominantly carbs. The later this transition happens, the more fat-adapted you are and the fitter your mitochondria and cells are. High reliance on fat as a fuel source is also an indication of metabolic flexibility, that is, your ability to rapidly switch between fat and carbohydrate burn based on the metabolic demand (e.g., low-intensity rest vs. high-intensity exercise, etc.). High metabolic flexibility ensures you can convert your food into useful energy instead of storing it as fat.

Why it's important to track

Fat-burning Efficiency is important to track since the more your cells rely on fat as a fuel source during exercise, the longer you can remain in the aerobic state before you hit metabolic fatigue. Moreover, fat-burning efficiency is one of the most powerful indicators of cellular and mitochondria fitness and strongly correlates with longevity and overall health. Sufficient low-intensity cardio training is essential for maintaining high fat-burning efficiency. Conversely, factors that negatively affect fat-burning efficiency are lack of training, overtraining, and consumption of processed foods.

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, which can maintain high fat-burning efficiency levels.

Greek yogurt

Greek yogurt is rich in protein which can help you increase your muscle mass and, thus, your fat-burning efficiency.

Coffee

Caffeine contains fat-burning efficiency properties and can lead to increased fat burn when consumed prior to a workout.

LIFESTYLE

Meal timing

Scheduling most of your caloric and carbohydrate intake earlier in the day while fasting for at least 3 hours prior to sleep significantly improves fat-burning throughout the day.

Cold exposure

Cold exposure improves mitochondrial condition and thus increases fat-burning efficiency.

Reduce stress

Implementing stress-relieving strategies, such as mindful breathing, can help regulate stress-hormone levels and thus boost your metabolism and fat-burning efficiency.



Scan to learn more

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Movement Economy - 97% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Movement Economy shows how many calories you burn when moving. The fewer calories you burn, the more economical you are, which may indicate a metabolic slowdown or the result of sustained cardio training

Why it's important to track

Movement Economy is important to track for both weight loss and performance optimization. A high movement economy indicates you burn fewer calories when moving, which may indicate a metabolic slowdown, thus preventing successful weight loss. On the contrary, it is desirable if you're aiming to compete in an endurance event where being economical equates to less fatigue buildup and better performance. For regular people, a reduction in movement economy may indicate an increase in metabolism, which is favorable for weight loss. For athletes undergoing training, it may reflect the effects of overtraining and should be seen as a sign to reduce training loads.

Recommendations to improve it

EXERCISE

Resistance ^

Although strength endurance training can increase movement economy by training your neuromuscular system to activate fewer muscle fibers, strength and hypertrophy training will have the exact opposite effect.

Interval ^

HIIT assists movement economy by enhancing the muscle oxygen consumption efficiency

Endurance ^

Low-intensity endurance training (i.e., Zone 2) is the most effective modality for promoting movement economy. This is because it exposes the working muscle to a state of high energy demand and thus trains it to become as economical as possible.

LIFESTYLE

Proprioception

By enhancing the sense of self-movement, force exertion, and body position during exercise, you can improve your movement economy.

Accessory work

Exercising auxiliary muscles that support the primary muscle groups critical to your movement of interest (e.g. quads for running) can reduce imbalances and thus improve movement economy.

Breathing training

Breathing training (either unassisted or by using a breathing resistance device) that lowers breathing rate can significantly improve your movement economy.



Scan to learn more

Scientific sources

- Barnes KR, Kilding AE. Running economy: measurement, norms, and determining factors. Sports Med Open. 2015-1:8. DOI: 10.1186/s40798-015-0007-y
- Shaharudin S, Agrawal S. Muscle synergies during incremental rowing VO2max test of collegiate rowers and untrained subjects. J Sports Med Phys Fitness. 2016-56(9):980-989. DOI: 25732319
- Swinnen W, Kipp S, Kram R. Comparison of running and cycling economy in runners, cyclists, and triathletes. Eur J Appl Physiol. 2018-118(7):1331-1338. DOI: 10.1007/s00421-018-3865-4

Recovery Capacity - 26% | Limitation

Severe limitation

Limitation

Neutral

Good

Excellent

What it shows

Recovery capacity shows your ability to recover efficiently from physical exercise. The faster the heart rate and carbon dioxide volume levels (VCO₂) return to resting values during the first two minutes following the peak intensity of the test, the higher your ability to recover fast between exercise sessions.

Why it's important to track

Recovery Capacity is important to track because it can predict chronic fatigue and overtraining syndrome that can compromise exercise gains and overall health. The higher your recovery capacity, the greater your body's ability to recover between workout sessions, as well as the longer and more efficiently you can exercise, maximizing the output of your workouts and limiting injury risk. Factors that can positively affect recovery capacity are zone 2 training, adequate sleep, and sufficient dietary protein intake. Conversely, negative factors include chronic health conditions, decreased hemoglobin, excessive tissue acidosis, decreased mitochondrial efficiency, extreme dieting, or excessive training.

Recommendations to improve it

EXERCISE

Resistance

Since recovery capacity is primarily influenced by mitochondrial density and fat-burning efficiency, resistance training has little to no effect on enhancing this metric.

Interval

High-intensity intervals (i.e. Zone 5) are the most effective ones in enhancing mitochondrial density, fat-burning efficiency, and thus recovery capacity.

Endurance

Since low-intensity endurance training (i.e., Zone 2) is the most effective modality for improving fat-burning efficiency, it is also the most potent tool for improving this metric.

NUTRITION

Lean protein

High-quality protein sources, such as fatty fish, eggs, lean red meat, and/or skinless chicken/turkey, can boost muscle recovery after a demanding training session.

Tart cherry juice

Tart cherry juice may facilitate muscle recovery and mitigate delayed-onset muscle soreness (DOMS).

High-quality carbs

High-quality carbohydrate sources, such as quinoa, brown rice, or sweet potatoes, can help replenish muscle glycogen and thus accelerate whole-body recovery.

LIFESTYLE

Hydration

Drinking enough water is essential for the effective and prompt recovery of your body, especially after an intensive workout.

Sleep

Getting sufficient (7-8 hours) and good quality sleep is one of the most important factors for your physical recovery.

Stretching

Devoting adequate time to stretch your muscles after a workout can accelerate recovery and teach your body to efficiently tone down after intense training.



Scan to learn more

Scientific sources

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Metabolic flexibility

Low

High

What it shows

Metabolic flexibility indicates your ability to rapidly switch between fat and carbohydrate metabolism based on metabolic demand. The body may need to switch from burning predominantly fats to carbohydrates or vice versa for several reasons, including transitioning between exercise intensities or going from a fast to a fed state. The faster and more efficient this transition between fuel sources, the more metabolically flexible you are.

Why it's important to track

Metabolic flexibility is an indicator of mitochondrial function as it relates to the food you consume. The more metabolically flexible you are, the better you can transition between fats and carbohydrates as fuel sources, and the better you can convert the food into energy instead of storing it as fat. Therefore, metabolic flexibility is a key protector against fat accumulation and metabolic syndrome. Factors that can positively affect metabolic flexibility are genetics, aerobic fitness, intermittent fasting, resistance training, a healthy body weight, adequate sleep, and sunlight exposure. Conversely, negative factors include genetics, the consumption of carbohydrates, particularly processed carbohydrates, overeating and a lack of aerobic fitness.

Recommendations to improve it

EXERCISE

Resistance ⤴

Strength and hypertrophy training are some of the most important modalities for increasing metabolic flexibility. 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, thus metabolic flexibility. These are core elements 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 metabolic flexibility and enhancing fat-burning efficiency, which are key factors 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 increasing your metabolic flexibility.

Cinnamon

Cinnamon has been shown to help regulate blood sugar levels, improve insulin sensitivity, and reduce HbA1c levels, all parameters associated with a metabolically flexible state.

LIFESTYLE

Weight loss

Losing even a mere 7% of your total body weight can significantly decrease your risk of developing prediabetes, a metabolic dysregulation that coincides with a metabolically inflexible state.

Screen time turndown

For each additional hour spent watching television, an increase in prediabetes risk is observed, a metabolic dysregulation that coincides with a metabolically inflexible state.

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, parameters associated with a metabolically flexible state.

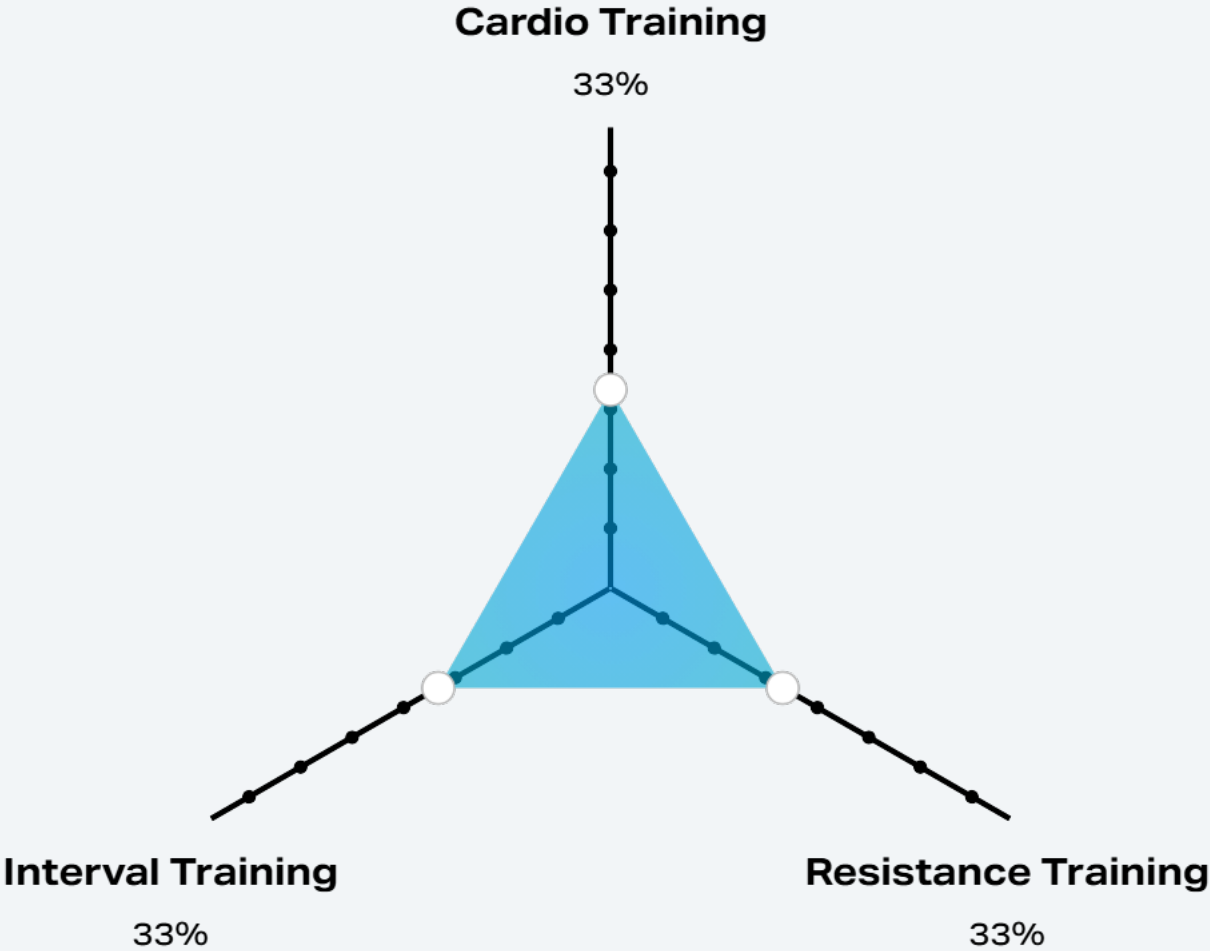


Scan to learn more

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Training Program



Training Program

Resistance Training - 1x per week

Type	Sessions	Sets	Work time Zone	Effort
Hypertrophy	1	18	36 n/a	9

Interval Training - 1x per week

Type	Sessions	Sets	Work time Zone	Recovery time
Interval Zone 4	1	3	30 Zone 4	5

Cardio Training - 1x per week

Type	Sessions	Sets	Work time Zone	Recovery time
n/a	1	0	40 Zone 2	10

Workout description

Intervals

Short

They are very fast bouts of intense physical activity where your goal for every set is to get and stay in the highest end of zone 5 for approximately 30 seconds and then recover in zone 1 for 60 seconds. Your work and recovery time begin when you enter zone 5 and 1, respectively.

Medium

They are short bouts of intense physical activity where your goal for every set is to get and stay in the lower end of zone 5 for 1 to 4 minutes, depending on your fitness level, and then recover in zone 1 for the same time as your work duration. Your work and recovery time begin when you enter zone 4 and 1, respectively.

Long

They are long bouts of medium intensity where the goal for every set is to get and stay in zone 4 for approximately 10 minutes and then recover in zone 1 for about 5 minutes. Your work and recovery time begin when you enter zone 4 and 1, respectively.

Cardio

Base

It's a steady-state bout of physical activity that should last at least 45 minutes and take place in zone 2.

Moderate

It's a steady-state bout of physical activity that should last between 45 and 60 minutes and take place in zone 3.

Hard

It's a steady-state bout of physical activity that should last between 20 and 40 minutes and take place in zone 4.

Resistance Training

Hypertrophy

Resistance training with the intent to increase muscle size and total muscle mass. It's widely used by athletes and everyday people who look to increase muscle mass and prevent injuries.

Strength

Resistance training with the intent to increase one's maximal strength level. Increasing maximal strength greatly benefits every element of your physical performance, from carrying groceries to breaking athletic records.

Strength endurance

Resistance training with the intent to increase muscular endurance. It trains your ability to perform more repetitions against resistance for prolonged periods.

Training Program

Training Zones

Zone	Heart Rate (bpm)	Watts	Speed (ML/H)	Benefits	Feels like	When to use
Zone 5	143-151	175-190	0-0	Improves VO2max, Enhances fat-burning efficiency and good cellular condition , Increases fatigue threshold	Feels impossible to continue , completely out of breath, unable to talk	Short intervals
Zone 4	130-143	160-175	0-0	Increases fatigue threshold , Increases anaerobic threshold , Improves VO2max	Difficult to maintain exercise intensity, hard to speak more than a single word	Medium intervals , Heavy endurance
Zone 3	101-130	100-160	0-0	Improves heart fitness	On the verge of becoming uncomfortable , short of breath, can speak a sentence	Long intervals , Medium endurance
Zone 2	86-101	100-100	0-0	Enhances fat burning efficiency and good cellular condition , Improves recovery capacity	Feel like you can exercise for long periods of time, able to to talk and hold short conversations	Base
Zone 1	76-86	100-100	0-0	Recovery	Feels like you can maintain this intensity for hours, easy to breath and carry on a conversation	Recovery

Energy consumption & fueling

Zone	Fat burn (%)	Carb burn (%)	Average	Lower end	Upper end
Zone 5	0 %	100 %	13 kcal/min	10 kcal/min	16 kcal/min
Zone 4	3 %	97 %	12 kcal/min	9 kcal/min	14 kcal/min
Zone 3	17 %	83 %	9 kcal/min	3 kcal/min	15 kcal/min
Zone 2	69 %	31 %	7 kcal/min	4 kcal/min	11 kcal/min
Zone 1	88 %	12 %	3 kcal/min	1 kcal/min	8 kcal/min

Thresholds

	Units	16/04/2026
Fat-Max	at BPM	86
Ventilatory Threshold 1 (VT1)	at BPM	87
Ventilatory Threshold 2 (VT2) or anaerobic threshold)	at BPM	140
VO2 Peak	ml/min/kg	34
Heart rate max	at BPM	151

Fat-Max	Ventilatory Threshold 1 (VT1)	VO2 Peak	Ventilatory Threshold 2 (VT2) or anaerobic threshold)
The exercise intensity where a person burns the most amount of fat.	The exercise intensity at which physical activity starts to be considered a workout.	The maximum oxygen consumption in milliliters per kilogram per minute (ml/min/kg) of body weight achieved during the test.	The exercise intensity at which the body transitions into Zone 5 where anaerobic metabolism becomes a large part of the body's energy generation.

Testing Schedule

