

PNOÉ

Biological Age & Performance Analysis

Performance

Michael Anderson



Test Type:
Exercise Ramp

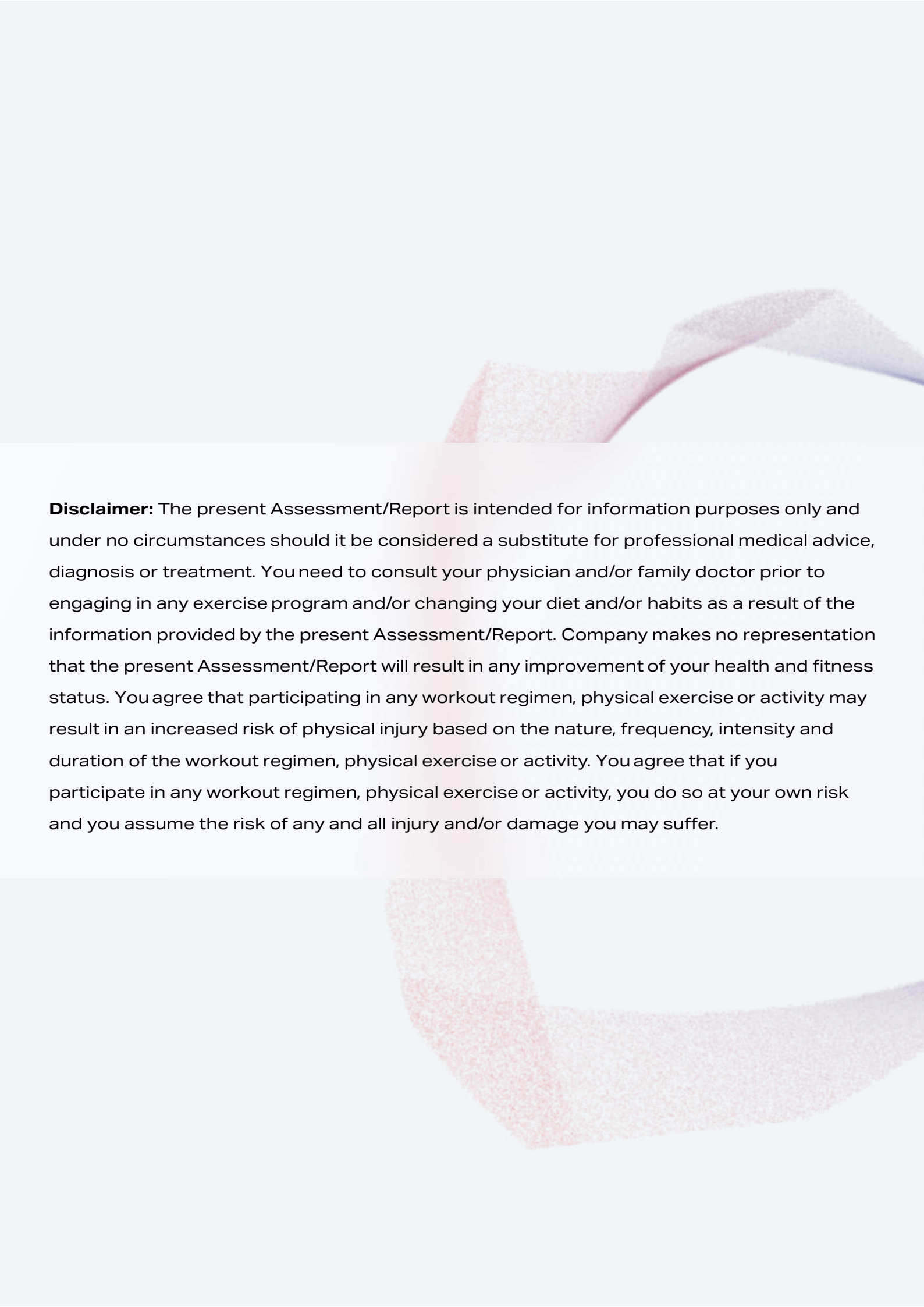
Test Date: 07/03/2023

www.pnoe.com



PEAKMYBODY
mike@peakmybody.com

 **pnoe_analytics**



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 Performance



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.



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.



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.



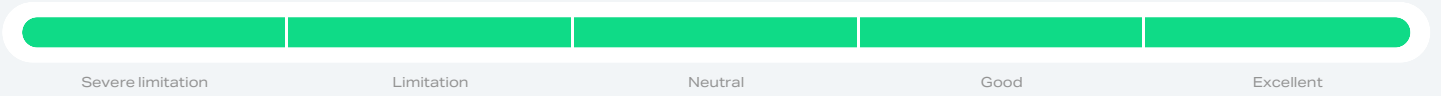
Gut microbiota

A healthy gut is key to athletic performance since our gut microbiome can positively or negatively affect mood, digestion, and metabolism. Adequate oxygen flow throughout the entire oxygen chain (i.e., heart, lungs, cells) can mitigate the impact of an unhealthy gut.

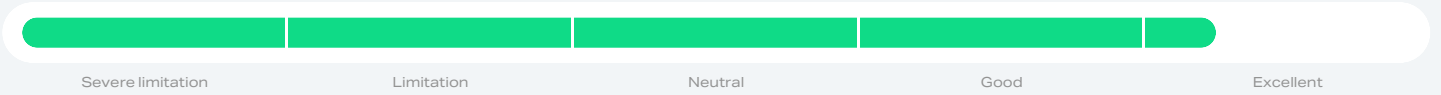
Overview



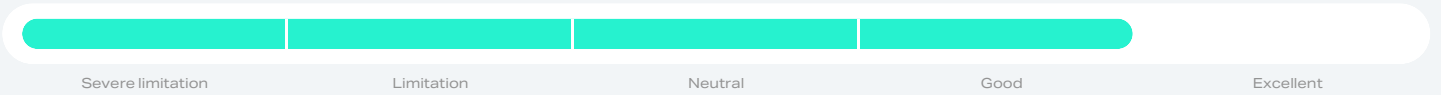
Aerobic Capacity - 100% | Excellent



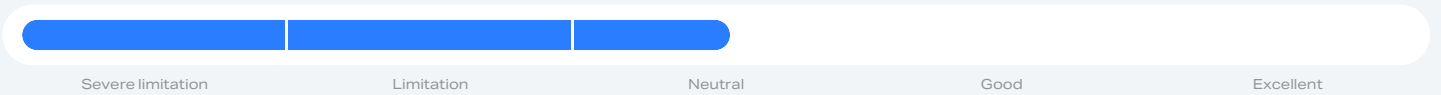
Cardiovascular Fitness - 86% | Excellent



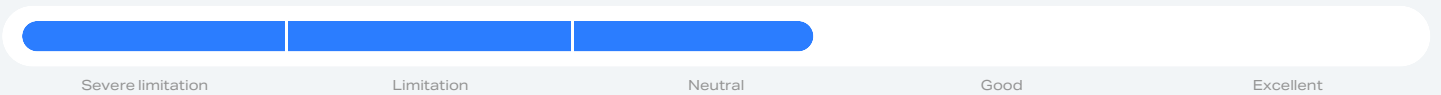
High Intensity Performance - 80% | Excellent



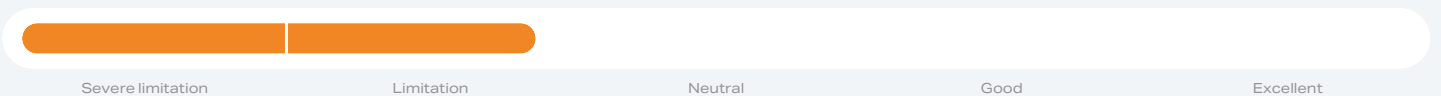
Recovery Capacity - 51% | Neutral



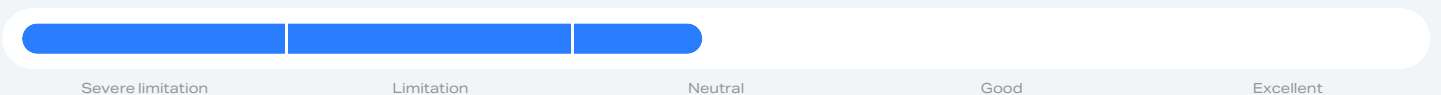
Fat Burning Efficiency - 57% | Neutral



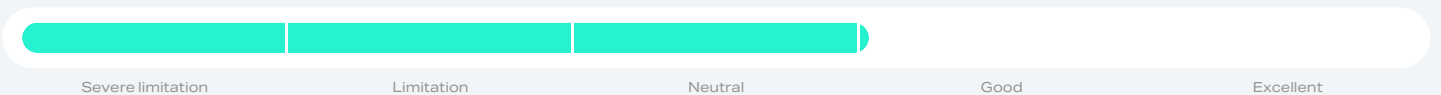
Movement Economy - 37% | Limitation



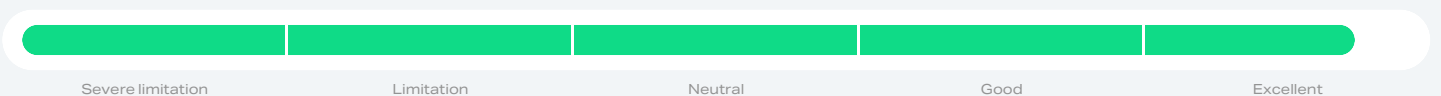
Metabolic Rate - 49% | Neutral



Breathing & Cognition - 61% | Good



Breathing & Stability - 96% | Excellent



Core Metrics

The following metrics are the most important for performance. Achieving a high score maximizes the likelihood of high athletic performance.

Fat-Burning Efficiency 57% | Neutral

Why it matters

One of the most reliable indicator of recovery capacity and fuel efficiency.

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, recovery and fuel efficiency.

Movement Economy 37% | Limitation

Why it matters

The second best indicator of performance in endurance events.

How to improve it

Zone 2 training, coordination training, and technic enhancement are the ways to improve the movement economy.

Oxygen Score 84% | Excellent

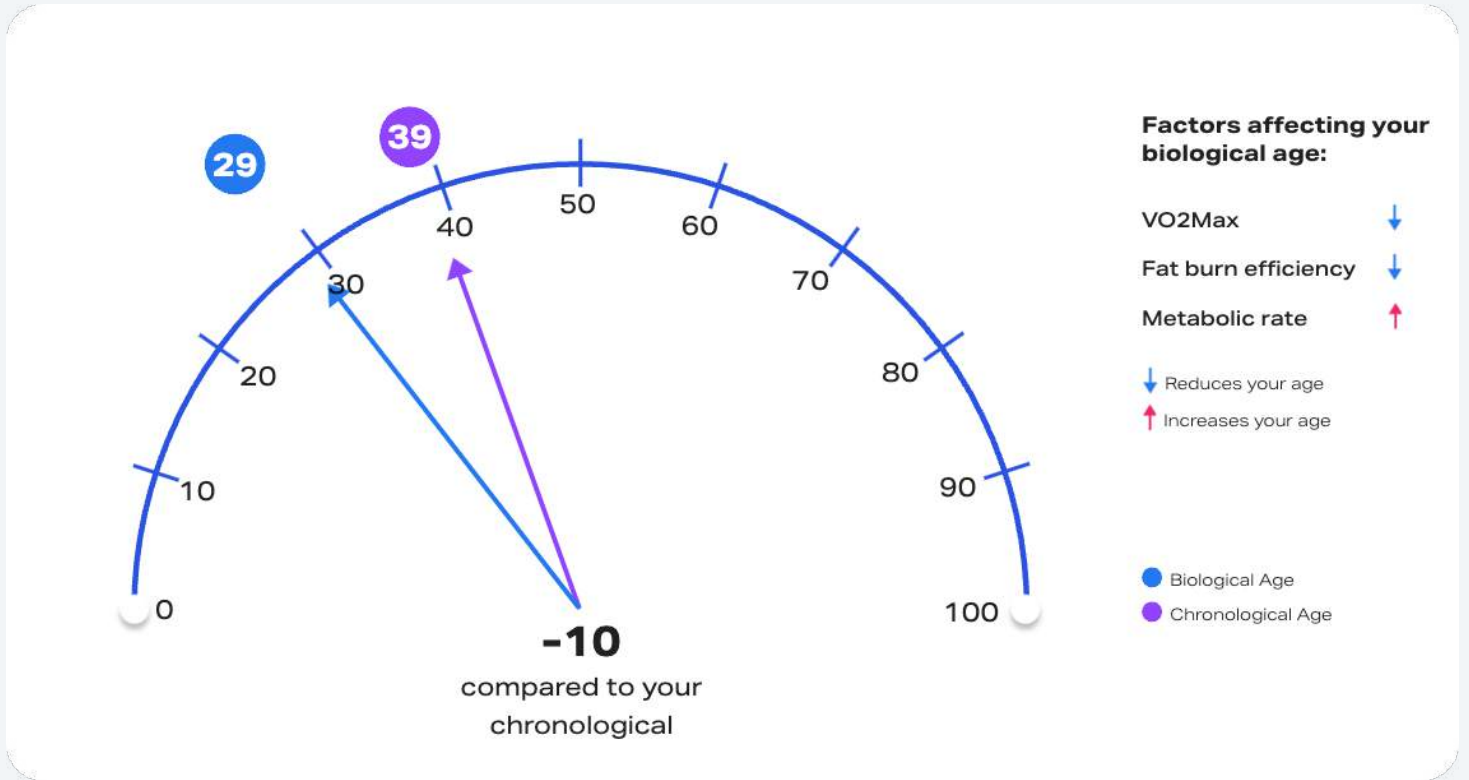
Why it matters

It is the athletic performance lab grade predictor.

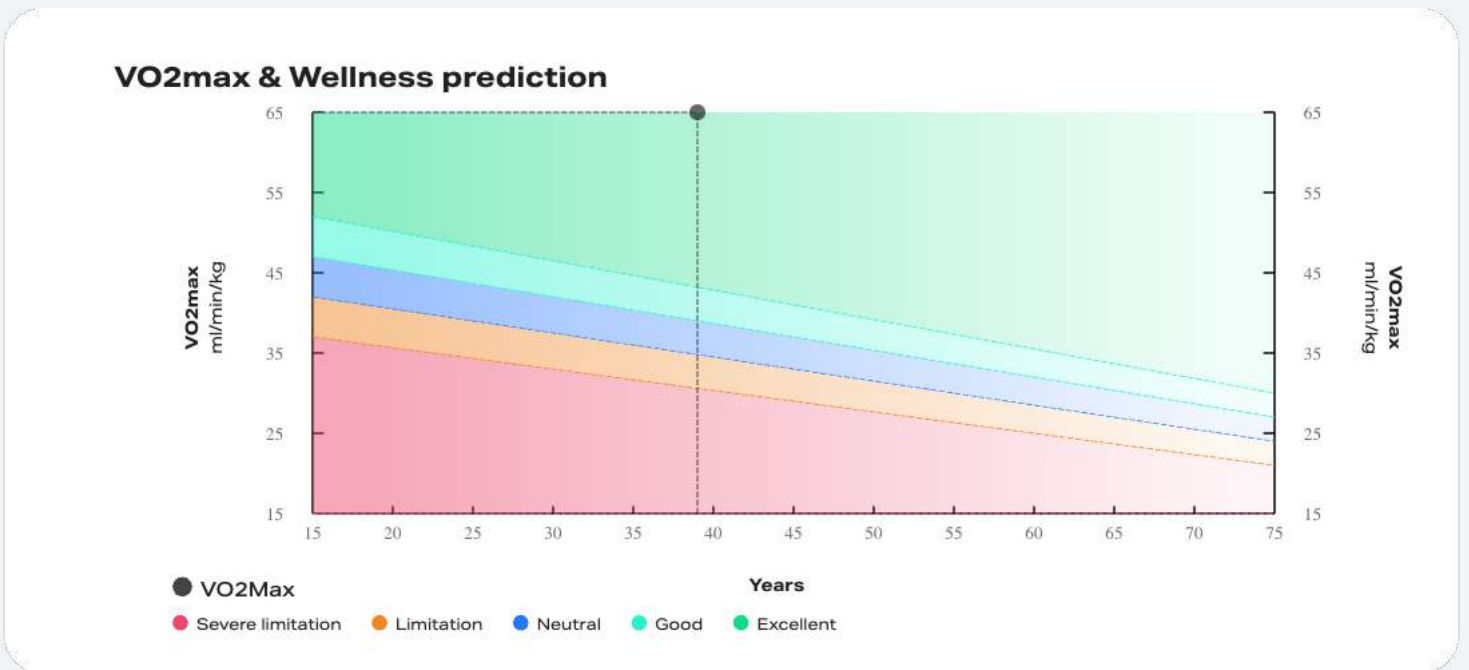
How to improve it

All three core systems (i.e., cells, heart, lungs) play a role in oxygen transport. Improving this score thus means fixing the deficient system(s) with each one requiring an individualized process.

Biological Age



PNOE estimates 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.



This green 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.

Aerobic Capacity - 100% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it is

Aerobic Capacity is one of the best predictors of overall wellness since a high oxygen absorption or VO2 peak requires effective operation of all critical organs, namely lungs, heart, cells, and blood. Therefore Aerobic Capacity provides one of the most holistic pictures of every system essential to a long life and athletic performance.

How it is measured

Aerobic Capacity is calculated based on your measured VO2peak, i.e., the maximum amount of oxygen your body can absorb. The higher the VO2peak is, the higher the Aerobic Capacity score.

Recommendations to improve it

EXERCISE

Resistance

Increases muscle mass which in turn leads to greater oxygen uptake as muscles have high oxygen requirements.

Interval

Improves heart function (more oxygen-rich blood pumped), lung function (more oxygen absorption), and thus overall oxygen uptake.

Endurance

Improves your cells' ability to absorb oxygen, resulting in greater oxygen uptake across the entire body.

NUTRITION

Beetroots

Consuming beetroots rich in nitrates can boost oxygen uptake levels during exercise and thus increase your VO2 max.

LIFESTYLE

Exercise timing

Completing endurance or interval training in the afternoon positively affects your VO2 max.

Sleep

Getting sufficient (7-8 hours) and high-quality sleep will keep allows for better physical recovery and thus facilitates the improvement of your VO2 max.

Weight loss

Being overweight and obese will negatively impact your VO2 max, whereas a reduction of just 5% of your current weight can significantly increase your VO2 max.

Why it's important for your goal

Oxygen is the molecule of life. It's a critical element for your metabolism, the process by which your cells "burn" nutrients (e.g., fats, carbs, proteins) to release their energy and keep you alive and moving. Your heart, lungs, and muscles all participate in this process. Whenever any of them underperforms, your Aerobic Health will be immediately reduced. The American Heart Association has recognized it as one of the most holistic gauges of overall wellness. It's also no surprise that every significant chronic condition is related to these systems and is manifested when their ability to absorb or utilize oxygen declines.



Scan to learn more

Scientific sources

- Ross R. et al., Assessing Cardiorespiratory Fitness in clinical practice , 653-699
- Brewer C.P. et al., Effect of sodium phosphate loading on VO2peak , 187-194
- Kuwabara A.M. et al., Iron deficiency in athletes , 620-642
- Perez J.M. et al., The effects of beetroot juice on VO2max , 332-342
- Antunes B.M. et al., Sleep quality and duration associated with performance , 252-256
- Berge J. et al., Cardiorespiratory fitness and weight loss in severe obesity, 69
- Torii J. et al., Effect of time of day on adaptive response , 348-352

Cardiovascular Fitness - 86% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it is

Cardiovascular fitness is a gauge of your cardiovascular system's ability to pump oxygen-rich blood to your body.

How it is measured

It's calculated based on your O2 pulse, a metric indicating the amount of absorbed oxygen per heartbeat as well as your VO2peak (i.e. peak oxygen consumption during the test).

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.

Why it's important for your goal

Cardiovascular fitness is critical for your well-being because issues related to heart function are the number one cause of mortality. A low VO2peak score combined with a flattening or decline in O2pulse is considered a credible risk factor that can help you act early.



Scientific sources

- Forman D.E. et al., Cardiopulmonary Exercise Testing, 68-86
- Ros E. et al., Consumption of plant seeds and cardiovascular health, 553-565
- Tang G.Y et al., Effects of vegetables on cardiovascular diseases, 857
- Zhao C.N. et al., Fruits for prevention of cardiovascular diseases, 598
- Laukkanen J.A et al., Cardiovascular health benefits of sauna bathing, 1111-1121
- Levine G.N. et al., Meditation and cardiovascular risk reduction, e:002218

Scan to learn more

High Intensity Performance - 80% | Excellent

Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's a gauge of how well your lungs and heart perform at high exercise intensities.

How it is measured

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.

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. For more information, see PNOE's breathing training program.

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.

Why it's important for your goal

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.



Scan to learn more

Scientific sources

- Pennington C., The exercise effect on the anaerobic threshold in graded exercise, 225-234
- Alaunyte I. et al., Iron and the female athlete, 38
- Ammar A. et al., Effects of pomegranate supplementation on exercise performance, 1201-1216
- Domínguez R. et al., Effects of beetroot juice supplementation on cardiorespiratory endurance, 43
- Guérin C. Prone position, Springer, Cham 2017
- Shruti P.R. et al., Comparison of effects of meditation on cardiorespiratory parameters, 6-12
- Vanderlei F.M. et al., Effects of hydration on cardiorespiratory parameters, 33

Recovery Capacity - 51% | Neutral



Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's a gauge of your ability to recover from physical exercise efficiently.

How it is measured

Recovery Capacity is measured by assessing the rate with which heart rate and volume of carbon dioxide exhaled (i.e. VCO₂) drop during the recovery phase of the exercise test. The faster the heart rate and VCO₂ drop during the first two minutes of the recovery phase, the higher the Recovery Capacity.

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.

Why it's important for your goal

High Recovery Capacity is essential for any type of workout, especially for interval training (e.g., spinning), where there is a continuous change between exercise bouts following recovery phases. The higher your Recovery Capacity, the greater your body's ability to recover, the longer and more efficiently you can exercise, and the more calories you burn.



Scientific sources

- Qiu S. et al., Heart rate recovery and risk of cardiovascular events, Article number : 6
- Beck K.L. et al., Role of nutrition in performance enhancement , 259-267
- Bell P.G. et al., The effects of tart cherry concentrate supplementation on recovery, 441
- Cintineo H.P. et al., Effects of protein supplementation on performance and recovery, 83
- Behm D.G. et al., Acute effects of muscle stretching on physical performance , 1-11
- Bird S.P., Sleep, recovery, and athletic performance , 43-47
- Judge L.W. et al., Hydration to maximize performance and recovery, 111-122

Scan to learn more

Fat Burning Efficiency - 57% | Neutral

Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's the gauge of your cells' ability to use fat as a fuel source during exercise. Human cells burn fats and carbohydrates to release the energy they contain and power your body's movement. The higher your Fat-burning Efficiency, the more your cells will rely on fats as a fuel source. Fat-burning Efficiency is also one of the most vital indicators of good cellular condition.

How it is measured

It's calculated by assessing your crossover point, the exercise intensity where your body transitions from burning primarily fats to burning mainly carbs. The higher the exercise intensity at this transition occurs, the higher your 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, 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.

Why it's important for your goal

High Fat-burning Efficiency is essential for your wellness because fat is a fuel source that requires oxygen to be "burnt." The more oxygen your cells can absorb and utilize, the healthier they are, and the more they can rely on fat as a fuel source. That's why Fat-burning Efficiency is one of the most powerful indicators of good cellular condition and is strongly correlated with longevity and wellness.



Scientific sources

- Amaro-Gahete F.J. et al., Assessment of maximal fat oxidation during exercise, 910-921
- Buckley J.D. et al., Long-chain omega-3 polyunsaturated fatty acids for reducing obesity, 1212-1230
- Eales J. et al., Is consuming yoghurt associated with weight management?, 731-746
- Tabrizi R. et al., The effects of caffeine intake on weight loss, 2688-2696
- Halton T.L. et al., The effects of high protein diets on weight loss, 373-385
- Ouellette V. et al., Brown adipose tissue metabolism during acute cold exposure, 545-552
- Rabasa C. et al., Impact of stress on metabolism and energy balance, 71-77

Scan to learn more

Movement Economy - 37% | Limitation

Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's a gauge of how many calories you burn during exercise. In other words, it demonstrates whether your body burns more or fewer calories when moving than predicted based on your gender and age.

How it is measured

Movement Economy is measured by assessing the rate you burn calories at different exercise intensities between warm-up and the anaerobic threshold.

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. For more information, see PNOE's breathing training program.

Why it's important for your goal

Movement Economy is essential for your wellness because staying lean or losing weight requires having a low Movement Economy at low exercise intensities (e.g., casual walking). In other words, you want your body to be uneconomical and burn as many calories as possible during daily activities.



Scientific sources

- Barnes K.R. et al., Running economy : measurement , and norms, Article number : 8
- Swinnen W. et al., Comparison of running and cycling economy, 1331-1338
- Shaharudin S. et al., Muscle synergies during incremental rowing VO2max test, 980-989
- Dolezal S.M. et al., The effects of high protein diets on weight loss, 657-666
- Sousa A.S.P. et al., Neurophysiological mechanisms related to efficiency of movement , 131-143

Scan to learn more

Metabolic Rate - 49% | Neutral



Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's 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

Metabolic Rate is calculated by assessing your mechanical efficiency during warmup. Mechanical efficiency shows how much energy from nutrients (i.e. calories) your body consumes in order to move. The greater the number of calories burnt to move at a certain rate, the higher your metabolism is.

Recommendations to improve it

EXERCISE

Resistance

Strength and hypertrophy training is the most 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, your metabolic rate.

High-fiber foods

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

Coffee

Consuming moderate amounts of coffee (2-3 cups per day) can increase your metabolism 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 and thus elevates your metabolism.

Why it's important for your goal

A high Metabolic Rate will protect you from weight gain as your body will burn more calories, thus 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 significant weight loss.



Scientific sources

- Hargreaves M. et al., Skeletal muscle energy metabolism during exercise, 817-828
- Arciero P.J. et al., Increased protein intake reduces abdominal fat, 1357-1366
- Calcagno M. et al., The thermic effect of food, 547-551
- De Meija E.J. et al., Dietary protein's role in satiety and weight loss, S105-112
- Júdice P.B. et al., What is the metabolic and energy cost of sitting?, 263-273
- Wang H. et al., Correlation among proprioception, muscle strength and balance, 3468-3472
- Westerterp-Platenga M.S. et al., Dietary protein's role in satiety and weight loss, S105-112

Scan to learn more

Breathing & Cognition - 61% | Good



Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's a gauge of how your breathing affects your cognitive function during exercise.

How it is measured

It's calculated by assessing the breathing frequency during the low exercise intensities of the test (i.e. warm-up and zone 1). Breathing above a specific breathing frequency range is known as hyperventilation and limits oxygenation of the brain.

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.

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.

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 stemming from its high content of the amino acid L-theanine.

Avocados

Avocados are rich in magnesium, a mineral that reduces stress levels by regulating the stress hormone cortisol.

LIFESTYLE

Breathing training

Breathing training that lowers breathing rate and increases carbon dioxide levels in the body can drastically improve cognitive function and reduce stress levels. For more information, see PNOE's breathing training program.

Diet

A healthy diet that contains as low as possible levels of processed foods, caffeine and alcohol, can significantly reduce stress, slow your breathing rate throughout the day, and thus improve cognitive function.

Sunlight exposure

Sunlight exposure within the first 30 minutes after waking up can significantly reduce stress levels by regulating cortisol levels throughout the day and thus improving mood and cognitive function.

Why it's important for your goal

This metric is vital for your wellness because hyperventilation is considered one of the most common but under-diagnosed conditions that severely impact the quality of life in our society. It's estimated that 15% of the population chronically hyperventilates, with only a few knowing about it. Chronic hyperventilation reduces cognitive function at work, increases feelings of fatigue, and is associated with higher rates of anxiety and panic attacks.

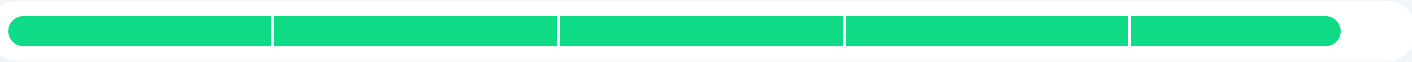


Scan to learn more

Scientific sources

- Zering J.C. et al., Cognitive control exertion on a graded exercise test, 1799-1807
- Cheng F.W. et al., US older adults that consume avocado have better cognition, 746453
- Sakurai K. et al., Effects of matcha tea on cognitive functions, 3639
- Tao M.H. et al., Association between magnesium intake and cognition, e12250
- Ferreira L. et al., Respiratory training to prevent cognitive decline in aging, 593-603
- Jamrozik A. et al., Access to daylight improves cognitive performance, 106379
- Otaegui-Arrazola A. et al., Respiratory training to prevent cognitive decline in aging, 1-23

Breathing & Stability - 96% | Excellent



Severe limitation

Limitation

Neutral

Good

Excellent

What it is

It's a gauge of how your breathing affects your posture, the likelihood of musculoskeletal injury, and lower back pain.

How it is measured

It's calculated by assessing the average breathing frequency in each training zones (i.e. zone 1 - 5) and comparing it against a benchmark breathing frequency that is specific for each zone (e.g. 25 breaths per minute for zone 2). As the average breathing rate in each training zone rises above the recommended benchmark, the negative impact breathing has on posture increases.

Recommendations to improve it

NUTRITION

Broccoli

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

Dark chocolate

Dark chocolate contains high levels of magnesium, a mineral that reduces levels of the stress hormone cortisol, lowers breathing rate, and thus improves core stability.

Fermented foods

Fermented foods, such as kefir and kimchi, are rich in probiotics which improve gut condition, reduce stress levels and thus improve core stability.

LIFESTYLE

Meditation

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

Sleep pose

Sleeping in positions that support the curvature of your back is important to maintaining a healthy posture. Lying on your back while placing a pillow under your knees or on your side in an embryonic pose greatly reduces the chances of promoting good posture.

Sitting

According to the American Chiropractic Association, the sitting position puts significant stress on your lower back. To relieve this pressure, remember to always take breaks when sitting for long periods (e.g. walk for 5-10 minutes for every hour of sitting).

Why it's important for your goal

This metric is essential for your wellness because abnormal breathing patterns are among the most significant risk factors for musculoskeletal problems like lower back pain which currently represents the biggest burden to health systems and one of the most critical factors in reducing the quality of life. Proper breathing can improve posture, feelings of musculoskeletal pain, and quality of life.

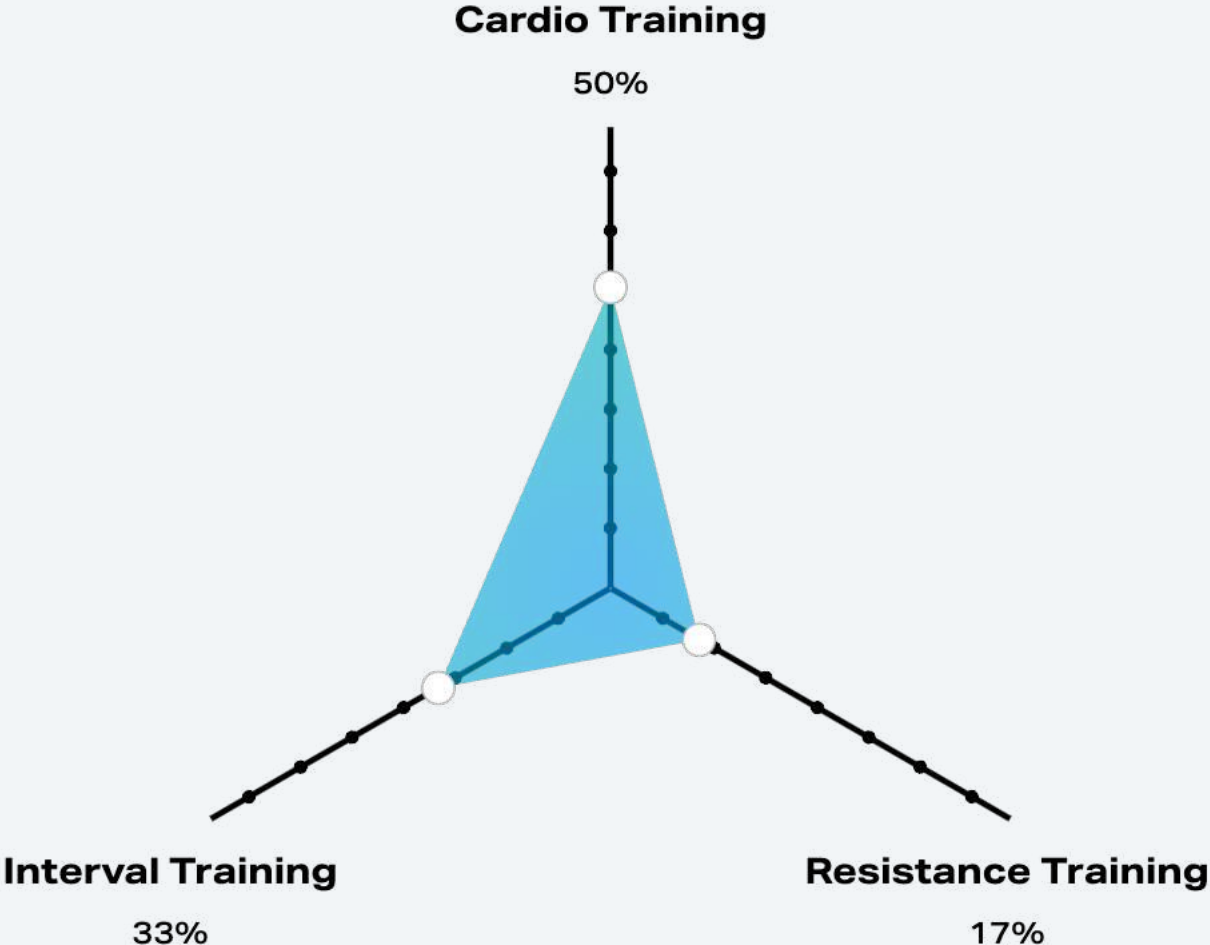


Scientific sources

- Nicolò A. et al., Respiratory frequency during exercise, Article number : 922
- Karbownik M.S. et al., Consumption of food-derived probiotics and cognitive performance, 850249
- Tarleton E.K. et al., Relationship between magnesium intake and chronic pain, 2104
- Tsang C. et al., Effect of dark chocolate on cortisol and mood, 149
- Green B.N. et al., Association between smoking and back pain, e806
- Ki C. et al., The effects of forced breathing exercise in chronic low back pain, 3380-3383
- Yang H. et al., Low back pain and related workplace psychosocial risk factors, 459-472

Scan to learn more

Training Program



Training Program

Resistance Training - 1x per week

Type	Sessions per week	Sets	Work time Zone	Effort
Strength	1	2-3	n/a	20

Interval Training - 2x per week

Type	Sessions per week	Sets	Work time Zone	Recovery time in between sets	Effort
Long	2	2-3	4-10 min 4	1:1/2	8

Cardio Training - 3x per week

Type	Sessions per week	Sets	Work time Zone	Recovery time Zone	Effort
Base	3	1-0	60-240 min 2	n/a	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 (KM/H)	Benefits	Feels like	When to use
Zone 5	177-181	709-728	16-17	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	162-177	350-709	12-16	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	132-162	238-350	8-12	Improves heart fitness	On the verge of becoming uncomfortable, short of breath, can speak a sentence	Long intervals, Medium endurance
Zone 2	124-132	210-238	7-8	Enhances fat burning efficiency and good cellular condition, Improves recovery capacity	Feel like you can exercise for long periods of time, able to talk and hold short conversations	Base
Zone 1	114-124	191-210	7-7	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 %	0 %	0 kcal/min	0 kcal/min	0 kcal/min
Zone 4	9 %	91 %	26 kcal/min	16 kcal/min	34 kcal/min
Zone 3	31 %	69 %	20 kcal/min	11 kcal/min	31 kcal/min
Zone 2	47 %	53 %	15 kcal/min	10 kcal/min	22 kcal/min
Zone 1	70 %	30 %	8 kcal/min	2 kcal/min	17 kcal/min

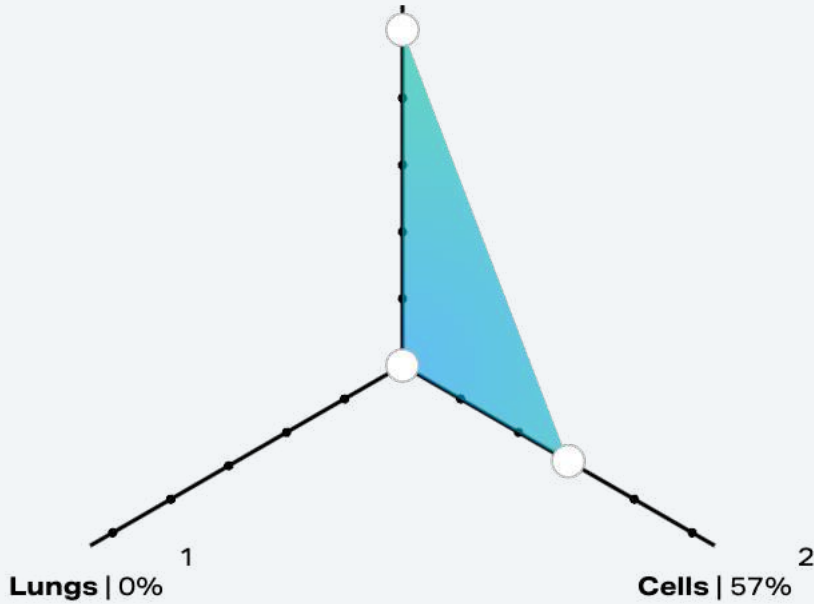
Testing Schedule



Performance prediction

Oxygen Score 84 %

VO2max | 100%



1 Calculated by combining all respiratory related scores
2 Calculated by fat-burning efficiency.

We analyze the core metrics related to oxygen flow through your body to quantify your overall athletic performance ability. The efficiency with which oxygen is transferred across your heart, lungs, and cells is the foundation of every type of athletic performance.

Estimated time to complete

5k	13
10k	28
Half marathon	64
Marathon	129

Calculated based on your maximal aerobic speed and speed at VT2.

Thresholds

	Units	03/07/2023
Fat-Max	at BPM	125
Ventilatory Threshold 1 (VT1)	at BPM	126
Ventilatory Threshold 2 (VT2) or anaerobic threshold)	at BPM	174
VO2 Peak	ml/min/kg	65
Heart rate max	at BPM	175

Fat-Max

The exercise intensity where a person burns the most amount of fat.

Ventilatory Threshold 1 (VT1)

The exercise intensity at which physical activity starts to be considered a workout.

VO2 Peak

The maximum oxygen consumption in milliliters per kilogram per minute (ml/min/kg) of body weight achieved during the test.

Ventilatory Threshold 2 (VT2) or anaerobic threshold)

The exercise intensity at which the body transitions into Zone 5 where anaerobic metabolism becomes a large part of the body's energy generation.

Recommended Services

Based on your metabolic test we recommend the following services that address some of the important limitations identified.

Body composition analysis

Combining metabolic analysis and body composition is a powerful method for identifying the underlying drivers of a metabolic slowdown. Metabolic analysis will provide insight as to whether a person's metabolism is lower or higher compared to what's predicted based on weight, gender, height, and age. Subsequently, Body composition will reveal the breakdown between fat and lean muscle tissue in the person's body. Combining the two can shed light on whether a reduced metabolism is a consequence of low muscle mass composition and or increased muscular-skeletal muscle efficiency. The latter is a common consequence of chronic dieting and hormonal perturbation caused by abnormal food intake, aging etc.



Wellness benefits

- Metabolism