

HEART RATE / PULSE

FINDING YOUR HEART RATE / PULSE

- **Pulse rate measures your heart rate (beats/minute)** that is felt in your arteries throughout your body.
- The easiest places to check your pulse is at your Radial Artery (arm) and your Carotid Artery (neck).
 - **RADIAL (arm)** – located inside of your wrist in the groove on your thumb side
 - **CAROTID (neck)** – located on the side of your neck next to your windpipe below the jawbone.
- Use your **index(pointer) and your middle finger** to locate and count your pulse rate.
- You may need to **shift your fingers until you can easily feel your pulse**
- Be careful to only **press lightly** so that you won't stop the flow
- **Never use your thumb** as you will feel your own artery in your thumb and can make it harder to count
- Once you feel your pulse, **count how many beats you feel** in 15 seconds
- Multiply this number by 4 to get your heart rate **(beats per minute)**

RESTING HEART RATE

- Check your resting pulse **just after waking up** (without an alarm) and **before you've moved** (If you can't do this, then lay down and relax with calming breathing exercises for about 10 min. and then check pulse)
- Check it 2-3 times to ensure an accurate reading
- Most people are between 50-85 beats per minute
- It's easier to **check it for 30 seconds and multiple that number by 2** to get beats/minute
- Change in your heart rate can indicate a change in overall health
- Heart is a muscle and when exercised becomes more efficient

CHECK HEART RATE WHILE EXERCISING

- Accurate Heart Rate Monitors can give immediate feedback without stopping
- Manual PULSE CHECK
 - **STOP EXERCISING BRIEFLY** to check your pulse
 - Count for **10 sec. and multiply the number by 6** = _____ btm (beats per minute)
 - OR**
 - Count for **6 sec. and multiply the number by 10** = _____ btm (beats per minute)
 - If you check the pulse for a **longer period, it will have started to RECOVER** (and slowed down) and therefore it **won't be an accurate** indication of what your heart was just doing while you were exercising

TARGET HEART RATE ZONES

- SEE KARVONEN FORMULA FOR YOUR CALCULATED TARGET ZONES
- **CONVERT TARGET HEART RATE ZONES FOR A 10 sec COUNT and a 6 sec COUNT**

LOW END TARGET HEART RATE _____ divided by 10 = _____
HIGH END TARGET HEART RATE _____ divided by 10 = _____

LOW END TARGET HEART RATE _____ divided by 6 = _____
HIGH END TARGET HEART RATE _____ divided by 6 = _____

GENERAL ZONES

- **RECOVERY ZONE = 60% to 70% TARGET HEART RATE**
 - Active recovery training should fall into this zone (ideally to the lower end).
 - Also useful for very early pre-season and closed season cross training when the body needs to recover and replenish.
- **AEROBIC ZONE = 70% to 80% TARGET HEART RATE**
 - Exercising in this zone will help to develop your aerobic system and in particular your ability to transport and utilize oxygen.
 - Continuous or long, slow distance endurance training should fall under in this heart rate zone.
- **ANAEROBIC ZONE = 80% to 90% TARGET HEART**
 - Training in this zone will help improve your bodies ability to deal with lactic acid.
 - May help to increase your lactate threshold.

Below is a guide of 5 different zones

Zone 0 Low Heart Rate Zone: 40% - 50% Max HR Beg. Exerciser Heart Rate Training Zone

Exercise Benefits: ideal heart rate training zone for **beginning exerciser**, or on **Active Rest, easy or recovery training days**.

Zone 1- Healthy Heart Zone: 50%- 60% Max HR Easiest, Most Comfortable Zone Exercise

Exercise Benefits: Body fat decreases, blood pressure lowered, cholesterol lowered, muscle mass improvements, decreased risk for degenerative diseases, safety high.

Zone 2 - Temperate Zone: 60% - 70% Max HR Cruise Zone you can train for extended periods of time, 75% - 85% of all calories from fat as fuel, 6- 10 calories per minute

Exercise Benefits: Gain muscle mass, lose fat mass, strengthen heart muscle, fat utilization zone, training your fat mobilization, fat transportation, your muscles to burn fat, your fat cells to increase the rate of fat release, increase in the number of mitochondria in the muscle.

Zone 3 - Aerobic Zone: 70% - 80% Max HR Transition Zone from two health zones to two perf. zones Still feels comfortable, you will break a sweat, but no anaerobic burn sensation

Exercise Benefits: Improved overall functional capacity with increase in the number and size of blood vessels, increased vital capacity, respiratory rate, max pulmonary ventilation, pulmonary diffusion, increase in size and strength of the heart, improvements in cardiac output and stroke volume.

Zone 4 -Threshold Zone: 80% - 90% Max HR Max Calorie Burn Zone

Exercise Benefits: Max fat burn, but you must be fit enough to train with some oxygen present for additional fat burn. No fat burning if exercising above fat burning heart rate. High total calories burned during exercise, high carbohydrates as source of calories. Improved VO₂ and higher lactate tolerance.

Zone 5 -Performance Red Line Zone: 90% - 100% Max HR Peak Race Zone. Athlete Only Zone!

Exercise Benefits: Highest total calories burned, but lowest percentage of fat calories. Lactate tolerance zone. This zone is **ONLY** for the **VERY HEALTHY & FIT!!!** Spending too much time in this zone, even for elite athletes can be painful, cause injuries and lead to over training, which leads to poor performance!

KARVONEN FORMULA TO DETERMINE TARGET HEART RATE

Karvonen Formula is a mathematical formula that helps you determine your target heart rate zones. Staying within this range will help you work most effectively during your cardio workouts depending on your training and health goals.

STEP 1: DETERMINE YOUR RESTING HEART RATE (RHR)

Take your resting pulse for 1 min. just after waking up (without an alarm) and before you've moved. Most people find it easier to check it for 30 seconds and multiple that number by 2

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & & \mathbf{x} & & \mathbf{2} & & = \underline{\hspace{2cm}} \\ \text{(Ck your HR for 30 sec)} & & \text{multiply} & & 2 & & = \text{(RHR for 1 min.)} \end{array}$$

STEP 2: CALCULATE ESTIMATED MAXIMUM HEART RATE (eMHR)

$$\begin{array}{ccccccc} \mathbf{220} & & - & & \underline{\hspace{2cm}} & & = \underline{\hspace{2cm}} \\ 220 & & \text{subtract} & & \text{(age)} & & = \text{(eMHR)} \end{array}$$

STEP 3: CALCULATE HEART RATE RESERVE (HRr)

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & & - & & \underline{\hspace{2cm}} & & = \underline{\hspace{2cm}} \\ \text{(eMHR)} & & \text{subtract} & & \text{(RHR)} & & = \text{(HRr)} \end{array}$$

STEP 4: CALCULATE 70% and 85% of aMHR, ADD TO RHR to get LOW/HIGH TARGET ZONES

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & & \mathbf{x} & & \mathbf{.70} & = & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \\ \text{(HRr)} & & \text{multiply} & & .70 & = & \text{(70 \% of HRr)} & & \text{add} & & \text{(RHR)} & = & \text{LOW END TARGET ZONE} \end{array}$$

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & & \mathbf{x} & & \mathbf{.85} & = & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \\ \text{(HRr)} & & \text{multiply} & & .85 & = & \text{(85 \% of HRr)} & & \text{add} & & \text{(RHR)} & = & \text{HIGH END TARGET ZONE} \end{array}$$

STEP 5: CALCULATE 60% of HRr, ADD TO RHR

$$\begin{array}{ccccccc} \underline{\hspace{2cm}} & & \mathbf{x} & & \mathbf{.60} & = & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} \\ \text{(HRr)} & & \text{multiply} & & .60 & = & \text{(60 \% of HRr)} & & \text{add} & & \text{(RHR)} & = & \text{HIGHER FAT BURNING ZONE} \end{array}$$