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## THE KARVONEN FORMULA

This is a heart rate reserve formula and it's one of the most effective methods used to calculate training heart rate. The formula factors in your resting heart rate, therefore, you'll need to determine your resting heart rate by counting the number of beats, starting with zero, for one minute.

Another element in finding your training heart rate zone is determining the intensity level at which you should exercise. As a general rule, you should exercise at an intensity between 50% - 85% of your heart rate reserve. Your individual level of fitness will ultimately determine where you fall within this range. Use the following table as a guide for determining your intensity level:

|                         |           |             |
|-------------------------|-----------|-------------|
| Beginner or low fitness | 50% - 60% | (0.5 - 0.6) |
| Average fitness level   | 60% - 70% | (0.6 - 0.7) |
| High fitness level      | 75% - 85% | (0.75-0.85) |

Now that we've determined and gathered the information needed, we can pull the information together in the Karvonen Formula:

220 - Age = Maximum Heart Rate

Max Heart Rate — Rest. Heart Rate x Intensity + Rest. Heart Rate = Training Heart Rate

For example, Kate is 18 yrs old, has a resting heart rate of 60 and she has a high fitness level (her intensity level will be 75% - 85%.) Kate's training heart rate zone will be 167-180 beats per minute:

Kate's **Minimum** Training Heart Rate:

$$220 - 18 (\text{Age}) = 202$$

$$202 - 60 (\text{Rest. HR}) = 142$$

$$142 \times .75 (\text{Min. Intensity}) + 60 (\text{Rest. HR}) = 167 \text{ Beats/Minute}$$

Kate's **Maximum** Training Heart Rate:

$$220 - 18 (\text{Age}) = 202$$

$$202 - 60 (\text{Rest. HR}) = 142$$

$$142 \times .85 (\text{Min. Intensity}) + 60 (\text{Rest. HR}) = 180 \text{ Beats/Minute}$$

Periodically, take your pulse during your exercise session to gauge your intensity level. Typically, the easiest location for taking a pulse is on the side of your neck, the carotid pulse.

Be sure not to press too hard on the carotid artery or you'll get an inaccurate reading. Count the number of beats, always beginning with zero, for 6 seconds (then multiply by 10), or for 10 seconds (then multiply by 6) to get the number of times your heart is beating per minute.

|                    |  |
|--------------------|--|
| Resting HR         |  |
| Max HR (220 – Age) |  |
| Max HR – Rest HR   |  |
| Min Training HR    |  |
| Max training HR    |  |