Calculation of Heart Rate Training Zones.

Step1. Establish your maximum heart rate. This can be done in several ways, for example:

1. In a sports laboratory with a fully qualified sports physiologist;
2. By doing 3x1000-1500m up a hill, all-out, while wearing a heart rate monitor;
3. Running the last 1km of a race at maximum effort while wearing a heart rate monitor;
4. Running the last interval run of a session at maximum effort.

The highest pulse/heart rate in all of the methods described from points 2 – 4 above will be your maximum. Then add 5 beats to your maximum to allow for a margin of error. So, for example, if your maximum heart rate is 172 on the field test, add 5 beats so it becomes 177.

Step 2. Establish your resting pulse. Take pulse first thing in the morning for 5-7 days and divide by either 5 or 7 to get your average. Take your pulse when lying down.

Step 3. So, your maximum heart rate is 177 and let's say your resting pulse is 51 beats per minute; your heart rate reserve (HRR) can be calculated by taking your resting pulse away from your maximum heart rate.

177-51 = **126.** This is the athlete's HRR.

Training Zones for you based on the above info are as follows:

Zone 1. Aerobic Recovery 50-65% of HHR.
HRR = 126 X 0.50 = 63 + resting pulse of 51 = 114.
HRR = 126 X0.65 = 81.9 which becomes 82 + 51 = 133
Aerobic recovery for you will be between 114 – 133 beats per minute. Easy runs.

Zone 2. Aerobic conditioning 65-80% of HHR.
65% = 133
80%. HRR = 126 X 0.80 = 100.8 which becomes 101 + 51 = 152
Aerobic conditioning zone for you will be between 133 – 152 beats per minute. Most of long run.

Zone 3. Lactate Threshold Running 80-85% HHR.
80% = 152.
85%. HRR = 126 X0 .85 = 107 + 51 = 158
Lactate threshold zone for you will be between 152-158 beats per minute. Hill intervals, 10km and ½ marathon pace efforts.

Zone 4. Aerobic Power Running. 80-90% of HHR.
80% = 152.
90%. HRR = 126 X 0 .90 = 113 + 51 = 164.
Aerobic power zone for you will be between 152-164 beats per minute. 5km & 10km efforts.

Zone 5. Maximal Oxygen Uptake Running. 90-97% of HHR.
90% = 164.
97%. HRR = 126 X 0.97 = 126.9 which becomes 127 + = 178 beats per minute.
Max O2 running for you in this zone is between 164-178. 1500m & 3000m pace.

Glossary of Terms.

1. **Aerobic recovery running**. Easy running. Used before and after hard training sessions or races. Heart rate 50-65% of Heart Rate Reserve. 30-40 % of weekly/annual total.

Benefits-

- ✓ Aids recovery/preparation,
- ✓ Improves heart-stroke volume,
- ✓ Muscle capillarization,
- ✓ General circulation.

2. **Aerobic conditioning running**. 65-80% of HHR. 30-40% of weekly/annual volume.

Benefits-

- ✓ As for aerobic recovery running plus:
- ✓ The ability of the body to use fat as a fuel
- ✓ Muscular strength
- ✓ Skeletal strength.

3. **Lactate Threshold Running**. Heart rate 80-85% of HRR 12-20% of weekly total.

Benefits-

- ✓ As for aerobic conditioning running plus
- ✓ Ability to hold a face pace
- ✓ Pace judgement.

4. Aerobic Power Running. 80-90% of HHR.

Benefits-

- ✓ Increase HR
- ✓ Ability to tolerate faster speeds

5. **Maximal Oxygen Uptake (MVO2) running. 90-97% of HHR.**

Benefits-

- ✓ Improves the rate of oxygen consumption.
- ✓ Introduces small amounts of acidosis into the blood.
- ✓ Increases running speed
- ✓ Improves running economy.

Sources:

Benson, T.and Ray, I. (1998) *Run With The Best.* Published by Tafnews Press.

Doughlas, S. & Pfitzinger, P. (2001). Advanced Marthoning. Published by Human Kinetics.