

Strength & Conditioning

| FITT | Strength | Conditioning/Aerobics |
|-------------|---|--|
| Frequency | 2-3x/week | 3-5x/week |
| Intensity | 1-3 sets - 4-8 Reps (power) 1-3 sets - 8-12 Reps (strength) 1-3 sets - 15-20 Reps (endurance) | 50-70% of THR for moderate 70-85% vigorous >85% intervals |
| Time | 20-30 minutes | 20-30 mins for general health 30-60 mins for fat loss/maintenance 20-30 mins intervals for performance |
| Type | Multi jointed exercises are recommended Muscle isolation if needed | Aerobic exercises that involve large muscle groups |

THR – Target Heart rate Reps = repetitions

Figuring out the Right Intensity

Strength Training Intensity

A method to measure Strength in an athletic population is the 1 - Repetition Max (**1RM**)

*Find a partner to help assist you for safety purposes. Don't have a partner? Don't desire to max it out? – play it safe with the **One Rep Max Calculator**. Select a comfortable weight, lift it as many times as you can, then enter weight and reps in the website link: <http://www.timinvermont.com/fitness/orc.htm> VOILA! – one rep max is predicted.

To prepare for a 1RM:

- 1) Warm up properly for the given test, with low weights.
- 2) Determine the 1RM with 4-5 trials and allow 4 minutes of rest between each trial.
- 3) Select an initial weight that is about 50-70% of the subject's perceived capacity.
- 4) Increase the weight until the subject cannot complete a single repetition. Be sure that each repetition is done in a consistent speed and motion.
- 5) The final complete repetition is the RM.

What to DO with your 1RM?

Your newfound RM, gives you an estimate of where to commence your planned exercise. Lifting 65-75% of your RM is good for **general health strength gain/maintenance and muscle tone** and should be completed within 8-12 reps.

Example: Leg press 1RM is 120lbs. You plan to do a normal strength training routine. Choose about 70% of your 1RM. $120 \text{ lbs} \times .70 = 84\text{lbs}$. You may adjust your weight around that 84lbs to get within the range (8-12 reps) you feel comfortable in order to obtain muscle fatigue in those last reps of your set.

Power gains will be less reps and heavier weights.

Endurance will be higher reps with lower weights.

Aerobic Intensity

Find your Heart Rate Max

During exercise, heart rate determines how hard your body is working. However, everybody is different and heart rate depends on the individual. To decide the right intensity your heart should be working, Heart Rate Max needs to be determined. A general estimate can be used with the formula below.

Requires knowing your Resting Heart Rate (**RHR**): Take resting heart rate at wrist each morning for one full minute, three days in a row. Use the 3-day average in the formulas below:

1. Use this formula if maximum heart rate is known: $(MHR - RHR) \times (\text{intensity level } \%) + RHR$
2. Use this formula if maximum heart rate is unknown: $[(220 - \text{age}) - RHR] \times (\text{intensity level } \%) + RHR$

Which Target Heart Rate/Intensity to use?

Depending on your goal, there are 3 options:

Moderate = 50-70% of THR

Vigorous = 70-85% of THR

Interval sessions = 85-95% of THR

Example:

Client is 45 year old. Resting heart rate is 70.

$$[(220 - \text{age}) - RHR] \times (\text{intensity level } \%) + RHR$$

$$(220 - 45) - 70$$

$$175 - 70 = 105$$

$$105 \times .50 = 52.5 + 70 = 122.5 = 123$$

$$105 \times .70 = 73.5 + 70 = 143.5 = 144$$

$$105 \times .85 = 89.25 + 70 = 159.25 = 159$$

$$105 \times .95 = 99.75 + 70 = 169.75 = 170$$

| Intensity | Beats per minute (bpm) |
|-----------|------------------------|
| Moderate | 123-144 bpm |
| Vigorous | 144-159 bpm |
| Interval | 159-170 bpm |

For those who are already working out at a highly conditioned/ athletic level, or take heart rate/blood pressure restricting medication, the Rate of Perceived Effort (**RPE**) scale may be more suitable for judging intensity. In the athletic population heart rate max may generally be higher than what is to be estimated due to superior cardiac muscle conditioning. In heart or cardiac patients the medications and heart muscle damage may limit the rate of heart muscle contractility.

The RPE Scale

Ratings of Perceived Exertion

| | |
|-----|---------------------------|
| 0 | NOTHING AT ALL |
| 0.5 | VERY, VERY LIGHT |
| 1 | VERY LIGHT |
| 2 | LIGHT |
| 3 | MODERATE |
| 4 | SOMEWHAT HARD |
| 5 | HARD |
| 6 | |
| 7 | VERY HARD |
| 8 | |
| 9 | |
| 10 | VERY, VERY HARD (MAXIMAL) |