

Training Zones in your program are the most important part in improving athlete performance. Each training zone represents a training load that will induce specific training adaptations in the body. In order for an athlete to improve his/her performance – these zones must be adhered to wherever possible. Changes in training zones on your program represent the need to improve and adapt to new and higher level of performance. Training zones are very unique and vary with each individual. Age can be very general guide to ranges although the common mistake made is that the higher the heart rate the better the training – this is not the case, especially with endurance athletes. Below is an outline of each training zone, the training load, and why it is used to improve your performance, as well as a detailed description of each zone © Tri Alliance 2018

Traning Zone	% HR MAX	Perceived Effort	Dominant Fuel Source	Training System	Benefits/Adaptations	Additional Terminology
T1	55-65%	Very easy	Fat	Recovery	<ol style="list-style-type: none"> <li>1. Allows the body to replenish fuels</li> <li>2. Flushes and removes lactic within the body</li> <li>3. Very important in adaptation and the recovery process</li> </ol>	You should be able to comfortably speak and have a conversation in this zone
T2	65-75%	Easy	Carbohydrate & Mostly Fat	Base Endurance	<ol style="list-style-type: none"> <li>1. Increased stroke volume (amount of blood pumped per heartbeat)</li> <li>2. Increased oxygen transport in the blood and the ability of muscles to use oxygen</li> <li>3. Increased capillary (blood vessel) density within the trained muscles</li> <li>4. Improved use of fat as a fuel, thus teaching the muscles to conserve the limited carbohydrate (glycogen) supply</li> </ol>	You should be able to speak sentences in this zone without loosing your breath
T3	75-85%	Moderate	Carbohydrate & Fat	Intensive Endurance	<ol style="list-style-type: none"> <li>1. Similair adaptations as T2 training</li> </ol>	Speaking sentences in this should be somewhat difficult and will take you breath away
T4	85-95%	Hard	Mostly Carbohydrate & Fat	Threshold Training	<ol style="list-style-type: none"> <li>1. Elevation of VO2max</li> <li>2. Elevation of anaerobic threshold - increased ability to remove lactic acid and decrease build up</li> <li>3. Increased tolerance of the pain of lactic acid within the muscles</li> </ol>	You should only be able to speak short sentences of 2 - 3 words in this zone
T5	>95%	Very Hard	Carbohydrate	Anaerobic	<ol style="list-style-type: none"> <li>1. Improved economy and efficiency</li> <li>2. Increased tolerance of the pain of lactic acid within the muscles</li> <li>3. Greater power and speed</li> </ol>	You should not be able to speak when in this zone

Zone	Further Description
T1	After hard training sessions it is important to keep the body moving which will accelerate recovery more than complete rest. Easy aerobic training stimulates circulation, which accelerates tissue healing response. Intensity is enough to increase blood circulation and trigger a growth hormone response, but not intense enough to cause any further muscle damage. It is important to follow the program and ensure you are training at an easy intensity when required. Generally T1 efforts will be placed in recovery weeks or post races etc.
T2	T2 is a heavily used zone by multisport athletes and is often overlooked. In this zone, Lactate is low so we can train for longer periods of time to extensively build our aerobic endurance. This zone is also used for warm up and cool down to ensure the body is ready to train at higher effort levels. T2 should feel easy and you should be able to comfortably have a conversation. For those who always push their limits you may find it hard to believe that this is training at all. Staying in T2, when appropriate, is critical for everyone and in many instances if you're not a well-trained athlete you may find yourself walking on your long runs. This is completely normal and it is EXTREMELY important to stick with this as you will see improvements in as little as 4 weeks. Going too hard on easier days is the #1 cause of overtraining. Training at this intensity primarily uses slow-twitch muscle fibers which will provide most of the mobility for triathlon events. Training above this intensity will not overload your slow-twitch fibers; which you are attempting to train to become more efficient at using oxygen to produce energy while conserving carbohydrate stores. At T2 effort you are training the body to use fat as a fuel which is extremely important for triathletes racing for more than 2 hours.
T3	T3 builds the base to better enable the athlete to handle more intense periods of exercise at a later stage in their development. Designed to place a moderate stress on the cardiovascular system, it is designed to improve aerobic metabolism and efficiency in performance. At T3, the body is still functioning aerobically and you should be able to remain in this zone for an extended duration. It is a progression from T2 and has similar cardiovascular adaptations. The effort is borderline comfortable and burning in the muscles and shortness of breath are present. At this intensity, you really aren't going hard enough to make yourself faster eg race efforts, but you are going hard enough to use more carbohydrate as a fuel source instead of fat. During a T3 endurance workout your intensity may reach uncomfortable levels on hills and/or harder drills completed in the pool etc. Drills and skills for all 3 disciplines will be completed in this zone and depending on your skill level your efforts may feel higher than T3 in the beginning. This training zone is referred to by some as "no man's land" as it is not working your anaerobic threshold (T4) but is not light enough to obtain the same physiological benefits of T2 training. For these reasons, it is important to follow the programs structure and recommendations.
T4	Lactate threshold or anaerobic threshold is the highest intensity at which the body can recycle lactic acid as quickly as it is produced. In zone 4, the aerobic and anaerobic systems are working together in balance to provide energy for exercise. Anaerobic metabolism is slow enough that lactic acid, the substance that makes muscles burn during hard exercise, does not accumulate. At this intensity, you are working very hard, but can still maintain exercise because lactic acid levels in the blood and muscles are steady, not increasing. Increasing the intensity just slightly causes lactic acid to build up and brings premature fatigue and delayed recovery. At this intensity, the fast-twitch fibers can be trained to produce less lactic acid and the slow twitch fibers can be trained to burn more lactic acid, both of which raise the lactic acid threshold and allow you to work harder at a higher intensity. Since lactic acid levels are controlled, recovery from this type of training is quicker than T5 high-intensity training methods, therefore T4 training has the best cost:benefit ratio of any type of training. When you experience "rubbery leg" syndrome and marked breathing difficulty where you cannot maintain the same effort level; you have reached the point where lactic acid accumulates at a faster rate than it can be removed and you're training at T5 intensity.
T5	T5 or maximum aerobic training employs intervals with speeds that are greater than planned race pace but with long recoveries. Intensity now exceeds the lactate threshold and the body is stressed in its ability to withstand high lactate levels and remove lactate. In Zone 5, lactic acid builds up quickly and therefore this intensity cannot be sustained for long periods. This intensity is anaerobic, so your body cannot use oxygen, which limits efforts in this zone to about 60 seconds maximum. T5 training is a very effective means of increasing speed and performance however because lactic acid levels become extremely high, this type of training requires extensive recovery between both workouts and intervals. T5 training is beneficial but its presence in your training program will depend on the distance you are racing. High levels of training in this zone is a common cause of overtraining and typically short intervals will be conducted.