

MX Training Physiology

Anaerobic Theory

MX is a mix of aerobic and anaerobic exercise. It is important that we understand the basics of both of these exercise/physiological principals. Motocross is extremely dependant on proper conditioning, mental alertness, and skill. If at anytime our conditioning suffers, so will every facet of our game.

Before I begin, I am a certified trainer (NETA). However, I encourage you to take the steps to employ a trainer full time if you are 12 years or older. It is critical that you spend at least 25% of your awake time training in some manner everyday. That includes but is not limited to: Aerobic Exercise, Anaerobic exercise, weight training, uneven surface ply metrics, stretching, riding, bicycle riding.

Anaerobic Exercise Theory

What is Anaerobic – A point or threshold of exercise activity that establishes or creates the metabolic process. This process produces lactic acid. This process is also considered the “Non oxygen” process whereas endurance is not being achieved -yet strength, speed, and power are.

- In motocross it is critical that anaerobic thresholds in athletes be as high as possible to ensure useable optimal power and quickness throughout the entire moto. We measure these levels by work output vs. lactate in the blood.
- All highly skilled athletes in general possess a greater degree of fast twitch muscles fibers compared to, say, non skilled athletes. Fast Twitch muscle fibers are composed of anaerobic metabolic characteristics. Making that athlete even more capable of higher anaerobic fitness levels.
- Adenosine Triphosphate (ATP) is stored in small amounts in muscle cells. It's a fuel for the muscles. Training can increase both the volume of stored and dispensed ATP's. MX requires both high volumes of ATP and efficient releases of ATP. Necessitating focused anaerobic training.
- Anaerobic Glucoses exclusively uses Glucose as a fuel in the blood in place of oxygen. When ATP is needed at a point of exceeding output capability, rapid glucose breakdown is the formation of lactic acid or lactate.
- Trainers and athletes used to think congregation of lactate around muscles was detrimental to muscle function. However, today, it appears that only high levels of lactate in and around the muscles can be limiting to the athlete.
- Anaerobic exercises: Sprints, stair steps, box jumps, lunges, dynamic stretches with weights.

Aerobic Theory

Aerobic exercise that is physical exercise which tends to improve the efficiency of the cardiovascular system in absorbing and transporting oxygen. This is primarily accomplished by low intensity, long duration, exercises such as running, bicycling, treadmilling, swimming.

In the beginning of our motos anaerobic energy is released..As the gate drops, very powerful bursts of energy are released into muscle cells that allow for quick, cat like responses, as well as sustained power for ease of handling our bikes and negotiating those first several laps. Then once a steady, settled, physical rhythm ensues, aerobic process takes over as glycogen energy stores are depleted and a dependency on oxygen begins.

Think of anaerobic energy like nitrous oxide compared to gasoline (aerobic). If we could run further on anaerobic it may be better especially if we are fast twitch muscle based. But we would expend a lot of energy, fast. So, use both. Anaerobic and Aerobic. Our training dictates how much of each and when each is used.

- Anaerobic training has to be a 2-3 times a week function beyond riding. Sprints are a great method. So is stair stepping. Below I have listed my favorite anaerobic exercises.
 - Sprints: 30-30's: 30 reps of 30 yard sprints.
 - Stair Steppers: Run up and down one flight of steps for 20 minutes. Do this in 2 minute intervals. So, that's 10 sets for 2 minutes. No more than 30s of rest between intervals.
 - Jump roping: 20 minutes
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- Aerobic training: has to be 3-5 times a week. Aerobic is very cross functional, playing basketball, running, cycling, swimming, even riding laps, can be used as a aerobic time unit. Any 30-45 duration where the heart rate trains at ~65-75% of max is sufficient. See attached Fox and Haskell formula for training.

Sequencing and programming of these two very useful training options is systemic to the athlete, abilities, goals, and time commitment.

		EXERCISE ZONES										
		AGE										
		20	25	30	35	40	45	50	55	65	70	
BEATS PER MINUTE	100%	200	195	190	185	180	175	170	165	155	150	VO2 Max (Maximum effort)
	90%	180	176	171	167	162	158	153	149	140	135	
	80%	160	156	152	148	144	140	136	132	124	120	Aerobic (Cardio training / Endurance)
	70%	140	137	133	130	126	123	119	116	109	105	
	60%	120	117	114	111	108	105	102	99	93	90	Moderate activity (Maintenance / Warm up)
	50%	100	98	95	93	90	88	85	83	78	75	