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Effective Conditioning for CrossFit Athletes: Effort Measurement and Overview

By Marilyn Chychota

Conditioning is a measure of how well an athlete is able to meet the energy production of their sport. Conditioning is much more than just about “Cardio.” Every sport requires a different combination of power and endurance. Some sports require a great deal of power and little endurance, while others require the exact opposite.

Understanding and training the different energy systems will help you more effectively move towards your performance goals. Having a clear plan in how you train will result in much more effect results than simply throwing spaghetti at a wall and hoping something sticks. My goal is to help you understand and incorporate specific conditioning sessions to become more effective in your training and take things to a higher level.

By making your conditioning specific, you’ll recover better, learn how to execute different workouts better, and have the physical development to do each type of workout at a new level. Top conditioning results come from finely tuned development of all your energy systems. When even just one system is underdeveloped, your performance is compromised. Conditioning takes time and commitment throughout the entire year. Just working harder is not always the answer. Working smarter and, more specifically, with organization and a purpose, will cause your conditioning to excel.

Why we do conditioning as CF athletes- We do conditioning to be better for the test sets and competition. Think of conditioning training as supplementary training to handle key workouts better, just as you would do squats, accessory lifts and pulls for Olympic lifting.
We wouldn’t go into an Olympic lifting competition and do a clean pull, but we need to do clean pulls in training to be better at competition lifts. Conditioning sessions serve the same purpose for your test and competition efforts.

Multi-wod and multi-day competitions require a great aerobic base to recover from one to the next and still continue to perform at a high level. Wods over 8 minutes long and repetitive wods such as two efforts quickly (one immediately after the other) require good ability to clear lactate

and handle working at a high % of your max. This requires a well trained threshold. High intensity wods will require well trained V02.

Names and Definitions:
There are many different terms out there for the same thing. The following are the terms, zones, and definitions I find most valuable and applicable to conditioning for Crossfit athletes.

Recovery-Goal: To speed the recovery process by going at an easy pace at low resistance, low load. Benefits include increasing blood flow to the muscles to help remove muscle soreness, and reducing free radical build-up that causes muscle stress and damage. Studies have shown that active recovery at an appropriate pace leads to faster recovery than complete rest. To do this, heart rate must remain low and load must also be very low. The key to recovery sessions is to do just enough work to engage the active recovery process, but not long or intense enough to induce a training stress upon yourself. This is a workout that you will use during all your training periods. Even though the temptation is there to vegetate on the couch the day following a tough workout, use low-load sessions as an active recovery workout to jumpstart the process of repair and regeneration. The best example of this is a light swim including some kicking, drill and easy swimming or yoga. The most common error is if an athlete uses a run session or gym session as active recovery.

Easy- This is very low-intensity training. Easy training promotes increased oxygen absorption. This can aid injury prevention and recovery. This zone aids in teaching the body to use fat as a fuel source. Effort should be measured as 4/10 on scale or under 50%. No fueling is required in this zone. All warm up and cool down should start here.

Aerobic- This is moderate-intensity training used to maximally develop your ability to generate fat as your main fuel source. This allows for better recovery later in the season and ability to tolerate higher work loads. This is a long term adaptation. A good amount of your training each week and a block throughout your off season should be dedicated to this zone. This zone is 6/10 or can be guided as 60%. You should be able to carry on a complete conversation while training this zone. Very little concentration is required in this zone.

Tempo- This training zone develops the ability of your fast oxidative glycolytic fibers to generate energy aerobically. The upper reaches of this intensity offer many of the adaptations of the "hard" zone without the prolonged recovery between sessions. This session is where you will take your first deep breath and conversation starts to become difficult. Concentration at this effort starts to switch on. Effort is measured at 7/10 or 70-75%.

Threshold- This training zone maximally develops the ability of your fast twitch fibers to generate energy aerobically. It is a powerful zone to improve cardiac stroke volume and V02 Max. This zone improves the athlete's ability to process lactate. A large portion of an athlete's training should be spent in this zone. Effort is measured by 8/10 or 80-85%. Good concentration is

required in this zone. Breathing is difficult but manageable through developed breathing skill and improved conditioning.

V02 Max training- This training zone maximally develops the ability of your oxygen delivery systems to get oxygen to the working muscle. In this zone, maximal gains on top speed are made. Recovery from this zone takes longest and this training must be placed appropriately within the athlete's week and in relationship to their main event. There are high speed gains in this zone, but also high risk. Warm-ups and cool-downs are essential. This is 90-100% effort. In other words, effort is maximal.

Absolute Max- This is where the athlete is improving complete top power and speed. Efforts such as max starts highly benefit from this training. Absolute 3-5 seconds power. Max coordination and skill is required.

How to identify them:
There are several different ways to identity these efforts and the markers to be in each zone.

1- The Borg Scale or Perceived Exertion: (1 - 10. 1 being easiest/10 being maximal)
The “Borg Scale for Rating of Perceived Exertion“ is a useful way of checking intensity.
Using the Borg Scale of Perceived Exertion, you can learn to monitor your performance and intensity. This will pace your effort and help you maintain a moderate level of exertion. Learning to use the Borg Scale of Perceived Exertion does not require any special skills or equipment.
While you are exercising, try to estimate how hard you feel the work is. Rate the degree of perceived exertion you feel. Include the total amount of exertion and physical fatigue.
Don't concern yourself with any one factor such as pain, shortness of breath or how hard the work is. Try to concentrate on your total, inner feeling of exertion. Estimate your exertion as honestly and neutrally as possible. Rate your perception of the exertion using the Borg Scale.

2- H.R training based on max HR and % of max HR: Using the subject's highest HR achieved during a test set as max HR is one way to determine max, or you can calculate max HR by subtracting your age from 220. For example, a 44 year-old athlete would calculate 220 - 44 = 176. This is not the most accurate way to determine zones, but it can give you an idea of range you are looking for.
NOTE: An athlete should know their max HR and resting HR.
A reduction in heart rate for a given intensity is usually due to an improvement in fitness, but a number of other factors might explain why heart rates can vary for a given intensity:

- Dehydration can increase the heart rate by up to 7.5%
- Heat and humidity can increase the heart rate by 10 beats/minute
- Altitude can increase the heart rate by 10 to 20%, even when acclimated
- Biological variation can mean the heart rate varies from day to day by 2 to 4 beats/minute

3- VO2 testing with gas: This is measuring the maximal amount of oxygen one can take in, distribute, and use. The VO2max test is an assessment of the maximal amount of oxygen an athlete can consume and use. This test will tell us at what heart rate these things occur, so a tailored program can be implemented. Then the athlete can be given personalized HR zones that correlate with different energy systems, and ventilation thresholds. Testing determines ventilation threshold, and the program will identify it for you based off of a commonly used slope prediction.

4- Lactate step testing with a fuel profile: (blood lactate response to exercise) The most important part of the testing results are the blood lactate results. This is how we pinpoint your thresholds, your training zones, evaluate improvements and areas that require work. These thresholds determine how you perform at various types of events. The reason we use lactate to determine your training zones is that lactate has a direct correlation to fatigue. Where you have high levels of lactate, you also have high levels of fatigue. Our goal through training is to lower the lactate level for each power output – that way you are generating more power while producing less fatigue, which makes you faster.

Any one of these ways of measuring your execution of conditioning sets is effective. Choose one that suits your overall needs best, but come into each conditioning set with a clear understanding of what your effort that training session is targeting. Be specific and purposeful in your training sessions.

This 8 week program is designed to work with your Crossfit week program, taking Crossfit wod days and strength days into account in the overall program. This program is best suited for a competitive Crossfit athlete or an athlete looking to improve their conditioning within their overall program. I recommend before including this program into your overall training to be able to complete a 20 minute easy conditioning session 1-2 x / week within your overall Crossfit program.

This program is based on an athlete whose overall program may consist of 2-5 Crossfit wods per week and 2-3 strength sessions per week, depending on the level of athlete and their training needs.

Effective Conditioning for CrossFit Athletes:
Eight-Week Program

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Week One:

Day 1- Aerobic- Run:

- 20min run on road or trail (aerobic effort). Every 8min, walk briskly for 2min.
- Include at the end of your run- 10-15M of each drill:

Russian fast feet
Carioca
Quick side /side
Pawing
Butt Kick
High knees
B skip drill
https://www.youtube.com/watch?v=vcH97Dx8VCk
https://www.youtube.com/watch?v=4o7bmeE5dio

Day 2- Tempo- Rower:

- 3min easy warm up.
- Then 4x sprint start practice - https://www.youtube.com/watch?v=2gm8tiSp23c .
    - 2min easy between each sprint start.

Main set- 5x4min at tempo effort/2min easy between each.

Day 3- Aerobic- Hike:

- 30-45 min hike on hilly trail- Wear a weighted pack for extra work.

Week Two:

Day 1- Aerobic- Swim:

NOTES:

- SR = Seconds Rest
- Swim distances are listed as numbers. These numbers can be either yards or meters, depending on the length of the pool you swim in. If the program says 4x150, that means 150 yards or meters, 4 times. Most of the lap pools you use will be 25 yards or meters, so you can add up the number of laps you need to reach your programmed distance.

- 4x150 done as:

1- 150 free swim, build pace each 50m to 70%

2- 50 kick with board-100 free swim.
3- 50 fingertip drag drill-100 free swim- https://www.youtube.com/watch?v=XITzpum5lxA
4- 50 side/side drill (alternate sides)-100 free swim- https://www.youtube.com/watch?v=0mjZsk8L0M0
- 4x100 descending pace 1-4, 10SR
- 4x100 go from fastest to easy (ascend), 10SR
- 2x200 swim. Pace steady. Time both. Both should be as close to same time as possible. 20SR between.

Day 2- Tempo- Airdyne:
- 10min easy warm up
- 4 x (2min tempo/1 min easy/2min tempo/1 min easy)
* The tempo is 75%, the easy is 60% (so you don't go WAY slow on the easy, just back it down to 60%)
- 10-15min cool down

Day 3- Aerobic:
- 30min run on flat road or trail. Every 5min, walk briskly 10 steps.

Week Three:

Day 1- Tempo- Rower:
- 3min easy, 4 x sprint starts practice, 2min easy between each.
- Main set: 8min tempo, 2min easy, 6min tempo, 2min easy, 4min tempo, 2min easy, 6min tempo, 2min easy, 8min tempo, 2min easy.

Day 2- Threshold- Airdyne:
- 3-5min easy warm up
- 7x2min at threshold effort; 2min very easy recovery after each
- 5 min easy, then repeat (7x2min)
- 5-10min cool down

Day 3- Aerobic- Swim:
- 100 warm up, your choice of strokes or drills
- 6x50- https://www.youtube.com/watch?v=BDBVZQlLdoY
- 4x150- building effort each 50m, 10SR
- 4x75- descending effort each 75, 15SR
- 100 easy cool down

Week Four:

Day 1- Threshold- Hill Run:
- 3-5min warm up on flat road
- 30sec uphill, jog back down
- 1min uphill, jog back down
- 90sec uphill, jog back down
- 2min uphill, jog back down
Then go back up through the ladder 2/90/1/30.....
* Effort is Threshold
* Focus on good technique- lean chest into the hill, drive with your knees, use your glutes and hamstrings, arms in good position, chin down.

Day 2- V02- Airdyne:
- 10min easy warm up
- 5x30sec hard/30sec easy
- 5x1min hard/1min easy
- 5x2min hard/2min easy
- 5x1min hard/1min easy
- 5x30sec hard/30sec easy
- 5-10min cool down

Day 3- Aerobic- Rower:
- 5km row (aerobic effort)

Week Five:

Day 1- Threshold- Run:
- 5-10min easy warm up jog
- 4x20sec strides/40sec jog
- Five Sets of:
500 M Run
Rest 60 seconds
500 M Run
Rest 2 minutes
Total: 5000 M
- 5min jog to cool down

Day 2- V02- Rower:
- 3-5min easy warm up
- 6 x sprint starts, one every 90sec
- 3min easy.
- 8x90sec (V02 effort) /3min easy between.
- 5-10min cool down

Day 3- Tempo- Airdyne:
- 10min warm up
- 10 x 1min rpm 105 light gear, focus is light quick efficient pedalling. 30sec easy between.
- Then 4x5min 50-60rpm, 2min easy between. Focus is strength.
- 5min cool down
Session Note
Neuromuscular Quickness - In this zone, the load is extremely light. High smooth turnover is the target. Moving quickly and efficiently under very light load. High coordination is required in this zone.
Conditioning specific strength endurance- This type of training is under high load in terms of resistance. Effort stays in the tempo zone or 7/10 range, but max torque under this load is the target. Training strength comes through time spent under load in this zone.

Week Six:

Day 1- Aerobic- Swim:

- 100 warm up, your choice of strokes or drills
- 2x (200 buoy swim, 200 kick, 200 buoy swim, 200 swim no buoy, 4x 50 buoy swim, descend 1-4 on 10SR.)- https://www.youtube.com/watch?v=xpW9HWt_fBs

Day 2- Threshold- Airdyne:
- Your choice warm up
- 3 x16 minutes as...
4 min Threshold Choice Cadence; 2min easy
4 min Threshold 60 rpm; 2min easy
4 min Stand Choice Cadence Threshold; 2min easy
4 min Threshold 92 rpm; 2min easy
- Your choice cool down

Day 3- V02- Run:
**When running, we never run intervals faster than 95% effort. The benefit is limited and the risk of injury is high.
- Warm up for a minimum of 10min and then go into 8x200 (4x200 holding V02 effort, 1min rest between. After the first 4 200s, take an extra 2 min recovery and repeat the pattern for a total of 8.)
- Your choice cool down
- 5-10min stretching to finish

Week Seven:

Day 1- Aerobic- Row:
- 10km row (aerobic effort)

Day 2- V02- Airdyne:
GOAL: To increase power output during short intense efforts.
HOW TO DO IT:
- Resistance should be moderate, but pedal cadence must be high (100-110 rpm).
- Take one minute to build up to the desired training zone, then maintain this intensity for the remaining interval.
- It will be during the last two minutes of each interval that will develop your maximum aerobic capacity. Don't let the intensity of the interval drop. With a high cadence, your heart rate will remain extremely high and you will train your body's ability to deliver oxygen to the muscles.
- Recovery between intervals is easy spinning.
- The goal of the workout is to produce the highest average power you can for the interval set.
Session:
- 5-10min warm up
- 5 intervals 3 min long, 100% as hard as you can go. 100+ cadence. 3-4 min off. Then Repeat.

Day 3- Absolute Max- Run:
- 5-10min easy jog
- 10-15m of each drill:
Russian fast feet
Carioca
Quick side /side
Pawing

Butt Kick
High knees
B skip drill
https://www.youtube.com/watch?v=vcH97Dx8VCk
https://www.youtube.com/watch?v=4o7bmeE5dio
- Banded Sprints: 8 x Absoute max banded sprints -https://www.youtube.com/watch?v=CiNxQa56rkc . Complete rest between 2-3min.
- 5min jog to cool down
- 10-20min stretching to finish

Week Eight:

Day 1- Recovery- Swim:
Goal of this swim is to reduce swelling and stiffness, and speed up recovery. Just some easy swimming, kicking, non free as you feel.

Day 2- Threshold- Run:
- 15-20 minute warm up
- 6x100M strides (only build to full speed in the last 20m)
- Drills: high knee skip, extended leg skip, backward skip, sideways cross over/twist, bounding (2x through each)

Main Set :
* None of these are anaerobic; all to be threshold pace. It's always a hard to go slower when you get onto a track. People tend to want to run faster on them. Stay at about 80-85% for this set. NOT OVER!!
- 2x400 (200 jog)
- 2x800 (400 jog)
- 1x1200 (800 jog)
- 2x800 (400 jog)
- 2x400 (200 jog)
- 15min walk/run to cool down
- 10-20min stretching to finish

Day 3- Absolute Max- Airdyne:
Really work on mechanics of standing accelerations.
- 10 minute spin.
- 5 x 10sec standing@Absolute Max Effort /40sec very easy seated.
- 5min easy seated.
- 5 x 10sec standing@Absolute Max Effort /40sec very easy seated.
- 10-20min easy seated.

Take 2 recovery days and then test.

- **Testing will be determined by the athlete's program (Ex: Fran, Grace, 5k Time Trial Row, 1 mile run, etc.)**