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Scoring Martial-Arts Workouts for Intensity

Pitmaster John Hackleman offers ideas on how athletes and trainers can measure the quality and quantity of martial-arts fitness training.

John Hackleman with Greg Amundson and Shain Howard

Courtesy of John Hackleman

One of the core tenets of CrossFit is intensity as measured by average power. This is a pretty easy concept to evaluate in most of the CrossFit movements. You have a fixed load moving a known distance. Multiply the number of reps and divide by time. Doing more work in less time is the fast lane to fitness.

However, in the world of mixed martial arts (MMA), coaches face some daunting tasks when it comes to measuring athletes' workouts.

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Courtesy of John Hackleman

Are these athletes exerting themselves? An experienced coach can usually determine how hard an athlete is working, which helps take some of the guesswork out of measuring MMA workouts.

Coach Glassman and I collaborated on a program called "CrossPit." The task at hand was to find a way to qualify and quantify workouts that involved physical modalities such as grappling, free sparring, kata and heavy-bag work.

My purpose in writing this article is to introduce CrossFit athletes and coaches to some of the adaptations I've used with success at my CrossFit affiliate: The Pit martial arts and fitness.

Take a simple Pit workout: 100 head kicks and 1,000 punches for time. That workout seems easy to score, right? The faster you hit the bag with 100 head kicks and 1,000 punches, the better your score. But, if Athlete A performs the task in five minutes and uses only 10 percent of his speed and power while Athlete B performs the task in 10 minutes and uses 90 percent of his speed and power, is Athlete A still getting better results?

Coach Greg Glassman has addressed this very issue in the case of quantifying and qualifying workouts involving sledgehammer drills. Performing 10 sledgehammer strikes on a large tire fast but with little speed and power is much different than 10 sledgehammer blows with maximum power output.

The Value of a Punch

First, when I refer to a "martial artist," I'm using a broad and inclusive term that includes athletes from the sport of mixed martial arts, made famous on such events as the Ultimate Fighting Championship. However, I also include athletes who train in boxing, karate, judo, wrestling, and even reality-based programs such as Krav Maga and Tony Blauer's Spear System.

When I was first introduced to CrossFit at a certification in 2003, I was amazed by the genius of Greg Glassman. He had essentially turned fitness into a sport. By timing how long it took athletes to complete various physical tasks, Coach Glassman was able to quantify and qualify an athlete's score, which was usually associated with the speed at which the tasks were completed. My goal after completing the certification was to find a method by which I could quantify and qualify traditional martial-arts workouts. In this pursuit, Coach Glassman and I collaborated on a program called "CrossPit." The task at hand was to find a way to qualify and quantify workouts that involved physical modalities such as grappling, free sparring, Kata and heavy-bag work.

As Bruce Lee famously stated, "Boards don't hit back," and when you're training it's important to remember that people, unlike inanimate objects, do hit back. We have to take this into consideration when considering kata and bag work, which involve only one athlete, and grappling and sparring, which involve multiple athletes.

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Courtesy of John Hackleman

John Hackleman uses simple formulas to quantify MMA workouts. The key component is to use a trained eye to measure an athlete's level of exertion during a drill.

A punching-bag workout is hard enough to measure. Now imagine how difficult it is to measure and quantify a workout with the added dynamics of two athletes competing with each other in a training session involving the modalities of grappling and bag work. Unlike a 50-lb. plate of iron that never changes or a 400-meter track that will never be 430 meters, martial-arts athletes are always changing: better, faster and stronger some days, and worse, slower and weaker other days. The only consistent factor in martial-arts partner training is that your partner will never be the same two days in a row. This makes it very challenging for a coach to measure the work output of two athletes.

The Formula

In order to assist affiliate coaches in quantifying and qualifying martial-arts type workouts, I would like to offer three formulas that have worked with great success at The Pit:

1. Perceived Level of Exertion (PLE)—The level of exertion an athlete displays during a martial-arts workout, as perceived by the coach or athlete.
2. Assigned Level of Exertion (ALE)—The assigned level of exertion given by a coach to an athlete to be used during a martial-arts workout.
3. Variable Imposed Resistance (VIR)—The assigned amount of resistance given by a coach to an athlete to be used during martial-arts partner training.

Perception in the Fitness World

In CrossFit workouts, coaches are very rigid in their scoring. Ensuring that full range of motion is used and required repetitions are met helps maintain a standard of fairness during CrossFit competitions, but it also contributes to the safety and efficacy of the movements in everyday WODs. Full range of motion is important not only to determine the winner of the CrossFit Games, but for every athlete seeking true functional capacity.

But what about workouts that involve a coach's perception of the amount of work an athlete is doing?

In the case of martial-arts training, it is simply not practical to think that everything can be precisely preformed, counted, measured and documented to be scored. At the same time, the need for training with maximal intensity is as real for martial artists as it is for any CrossFitter. In this way, perception can be a martial artist's ally.

Perception already has an established place in sport. For example, in Olympic boxing, judges score fights and—barring knockouts—decide a winner based on their perception of which fighter won. The same is true for figure skating and gymnastics, where scores are largely based on the perception of the judges. Awards, degrees, medals and fortunes are won and lost on perception, and if the evaluation is done with honesty, an educated eye and some consistent standards of reference, perception can be a very accurate measuring tool. In some cases, it's the only one.

Shadow Boxing or Kata

In the above examples, perception was used to determine the outcome of a competition. In our case, perception can be applied to measure the intensity of martial-arts workouts. This will never be as accurate as force x distance / time with fixed loads and distances, but we have used it successfully at The Pit.

We'll start with the easiest martial-arts movements or drills to score: kata and shadow boxing. Both are just drills where you practice your moves without hitting anything but the air. While these skill drills are known for developing focus, coordination, accuracy, agility and balance, they can also improve stamina, cardiovascular endurance, speed and power if they're performed with more intensity.

The scoring or measuring of a kata or shadow-boxing session is based solely on time and PLE or ALE. Here is the formula: length of workout multiplied by PLE or ALE. For example, if I did a 15-minute shadow boxing or kata session and my coach thought I put 65 percent of my intensity into the workout, my score would be calculated as follows: 15 x .65 = 9.75.

Heavy-Bag Work

For decades, bag work has been used in all combat training to help build strength and power. However, with a little bit of creativity, heavy-bag training can improve all 10 of CrossFit's recognized fitness domains. Throw in some calisthenics, weight work or even grappling with a bag, and the possibilities are endless.

The key point, as with all CrossFit workouts, is to maximize intensity. Here are a few hints: visualize an opponent and avoid just hitting a bag, snap or whip your strikes instead of pushing them, and always be on the move—in, out or laterally.

To measure bag workouts, start with a raw score. Punch workouts score .25 per punch, kick workouts score 1 per kick, and freestyle (punches and kicks) workouts score 20 per minute. Then, multiply the work time with ALE or PLE and the heavy-bag factor (HBKF for kicks and HBKP for punches).

Here's an example: Al did a head-kick workout and threw 18 kicks in a one-minute workout. His coach perceived his intensity to be 75 percent. Here is Al's score: 18 kicks x 1 (HBKF) x .75 (ALE) = 13.5.

Courtesy of John Hackleman

If John Hackleman's opponent is rated a "5" and they spar for 10 minutes at 60 percent intensity, John's score for the workout is calculated as follows: 10 x .6 x 5 VIR = 30.

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Al did a punching-bag workout, throwing 88 punches. He perceived his own intensity to be 80 percent. Here's the scoring: 88 punches x .25 (HBPF) x .80 (PLE) = 16.

Al's two-minute freestyle bag workout at his coach's ALE of 80 percent would be scored as follows: 2 minutes x 20 X .80 (ALE) = 32.

There will always be some inaccuracies in measuring exertion, and there's little you can do with someone committed to faking it. Still, it does give us a way to measure and compare workouts based on approximate numerical values.

Grappling and Sparring

This category is by far the most difficult in which to measure one's fitness progress. There are so many variables and factors, which are exponentially more difficult to measure when you realize that an athlete's performance and progress are directly influenced by the other athlete. It would be like a weightlifter trying to measure and track progress when he never performs the same lift and never knows what weight he's lifting. How could he possibly measure his progress accurately?

Because your training partner has so much to do with the level of intensity, he needs to be factored into your score. To do that, we assign him a variable imposed resistance (VIR) number that considers his weight, strength and skill level compared to his opponent.

For instance, the bigger and better your training partner is, the higher his VIR number, so the harder you have to work. The VIR scale is based on a 1-10 system, with 10 being the highest level of partner-offered resistance and 1 being the lowest.

Measuring, documenting and tracking you and your students' martial-arts workouts are great tools for pushing your workouts to their limit.

Staff/CrossFit Journal

The Pitmaster beats home his point: larger, more experienced opponents receive a greater variable imposed resistance score.

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For example, world-class 135-lb. MMA fighter Antonio Banuelos would be rated a 10 if paired with an average 135-lb. non-pro fighter, but if he was paired with former UFC champion Chuck Liddell (approximately 205 lb.), he would be rated a 3. As you can see, the VIR is relative to the partner.

The VIR is used as a multiplier to score an athlete's grappling or sparring session. For example, a 20-minute session at a coach-assigned ALE of 75 per cent with a partner whose VIR is 8 would be scored as 120 (20 x .75 ALE x 8 VIR).

"White Boarding" the Martial Artist's Workouts

In conclusion, we can see that measuring the fitness score or progress of a martial-arts or "combative" workout can be quite challenging for a number of reasons. Assigning scores and measuring workloads, work capacity, technique, intensity and progress make for a full-time job with so many complex techniques and variations in skill sets and drills. Still, putting in the effort will provide you with data and allow you to track progress and improvements.

The scoring for our martial-arts or CrossPit workouts is done on a points system similar to Fight Gone Bad, and, like CrossFit workouts, these scores can be posted on the white board. The idea is to measure the martial artist's status and progress in his fitness. Measuring, documenting and tracking you and your students' martial-arts workouts are great tools for pushing your workouts to their limit.

While this article was written for martial artists and their training, these approaches give CrossFit trainers and athletes a way to incorporate martial-arts-type workouts into their CrossFit training without abandoning measurable, observable and repeatable results.

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About the Authors

***John (The Pitmaster) Hackleman**, RN and 10th degree black belt, is the founder of The Pit in Arroyo Grande, Calif. He has trained UFC superstars Chuck (The Iceman) Liddell, K-1 Champion Scott Lighty, and world-ranked WEC and UFC fighters Antonio Banuelos and Glover Teixeira. He is a Level 3 CrossFit trainer.*

***Greg Amundson** has been recognized by his peers as being the original CrossFit firebreather. He was coached and mentored by CrossFit co-founders Greg and Lauren Glassman at the historic CrossFit Headquarters in Santa Cruz, Calif. Greg has served in law enforcement and military leadership roles for over 10 years.*

***Shain Howard** is the co-owner of SinCity CrossFit in Henderson, Nev. Born in California, Howard spent time in both Peru and Ecuador before moving back to the U.S. He graduated from UNLV with bachelor's degree in pre-professional biological sciences and is working toward becoming a medical doctor.*