

the  
**CrossFit**  
JOURNAL ARTICLES

## Dr. Tabata and the Dumbbell

Michael Rutherford



In 1996, Dr. Izumi Tabata published the results of a study demonstrating, with speed skaters, that the aerobic and anaerobic pathways could be trained simultaneously (*Medicine and Science in Sports and Exercise* 28). This was a significant finding, as most authorities had

regarded the two pathways—and training for them—as compartmentalized. Aerobic training was largely long slow distance (LSD) work, and anaerobic training was typically regarded as some hard-to-measure dark component left to the explosion sports.

1 of 3

## Dr. Tabata and the Dumbbell (continued...)

Dr. Tabata examined several different protocols but settled on eight sets of twenty-second work intervals alternating with ten-second rest intervals as the most effective interval times for improving  $\text{VO}_2$  max. In the original study the intervals were performed at a quantifiable 170 percent of  $\text{VO}_2$  max. (Just think max effort.) In the field, where measurements are more subjective, the effort should be such that on the eighth set the trainee is nearing exhaustion. In the original study, the test subjects doing 4-minute “Tabata” intervals saw greater  $\text{VO}_2$  max improvement than the control group that did 60-minute sessions of moderate-intensity exercise. Moreover, as Greg Glassman points out, these high-intensity efforts produce this dramatic aerobic benefit without the muscle wasting brought about by endurance training.

Dr. Tabata’s research tested subjects on stationary bikes, but in the CrossFit world his protocol is applied to all variety of functional movements. The Tabata protocol is applied to exercises including squats, pull-ups, push-ups, sit-ups, rowing, and, in my practice, dumbbell moves. We generally score Tabata intervals based on the lowest number of reps completed in any one of the eight twenty -second work intervals. (For more on Tabata intervals and their relevance to aerobic conditioning, see Glassman’s article “[Metabolic Conditioning](#)” from the June 2003 issue of the *CrossFit Journal*.)

The following template lays out an implementation of Dr. Tabata’s findings for dumbbell moves specifically. The template (next page) outlines one possible structure for a set of Tabata sequences that makes up a very effective CrossFit workout. I’ve used this regularly in my training practice, and it has borne solid outcomes for the past four years. However, there is nothing sacred about the exact sequence, and I offer it merely as one model for putting together a good dumbbell workout with Tabata intervals.

To begin, select a moderate load: something the athlete can manage without too much trouble for twenty repetitions. I begin by assigning a total-body movement for the first eight work-rest intervals, with that whole sequence followed by one minute of rest. I move then to eight intervals of an upper-body movement, and then a third set of a lower-body squat variant, and a fourth

of some sort of midsection work, with or without dumbbells. The template below lists some of the moves you might choose from in each category. Quantify performance on each set by scoring it with the lowest number of repetitions in any of the work intervals.

I always have my athletes rest one minute between movement blocks. One minute is not long, but even the short break improves the quality of the entire workout, it gives them time to transition from one move to the next. Remember, the objective is to stimulate, not annihilate.

All-out effort on Tabata intervals will be too much work for most novice trainees. However, you can give them a conservative number to shoot for, but not exceed, in each interval (for Tabata squats, for example, a newbie might shoot for six to ten well-executed squats in each work interval—depending on their individual fitness levels and their squat mechanics—and then rest for any remaining time. Another approach would be to have them perform just three to six of the intervals, rather than the full eight, both to maximize biomechanically correct form and to limit the intensity and total number of reps to something their bodies can handle.

Regardless of your mix or selection I believe you find applying the Tabata protocol to dumbbell moves an excellent conditioning experience with a big return on your investment of time.

## Dr. Tabata and the Dumbbell (continued...)

### Tabata dumbbell template

#### 1. Total body

- Swings
- Snatch variants (CFJ issue 54)
  - One arm or two
  - From the hang or from the deck

-- 1:00 rest--

#### 2. Upper body

- Vertical presses (CFJ issue 53)
  - Standing press
  - Push press
  - Push jerk or split jerk
- Horizontal presses
  - Bench press
  - Push-up variations (CFJ issue 56)

-- 1:00 rest--

#### 3. Lower body

- Squats, with dumbbells (from CFJ issue 49):
  - Low, at the sides
  - Racked, at the shoulders
  - Overhead (one arm or two)
- Lunges, with dumbbell(s) (from CFJ issue 49):
  - Low, at the sides
  - Racked, at the shoulders
  - Overhead (one arm or two)
  - Extended in front or to the side(s)

-- 1:00 rest--

#### 4. Midsection

- Sit-ups
- Knees to elbows, hanging from a bar or rings
- [Glute-ham sit-ups](#)



---

*I always have my athletes rest one minute between movement blocks. One minute is not long, but even the short break improves the quality of the entire workout, it gives them time to transition from one move to the next. Remember, the objective is to stimulate, not annihilate.*

---

Michael Rutherford (a.k.a. Coach Rut) is the owner of [CrossFit Kansas City/Boot Camp Fitness](#). He has over a quarter-century of fitness coaching experience with athletes of all ages. He has also worked in hospital wellness environments and rehabilitation clinics. Coach Rut holds academic degrees in biology, physical education, and exercise physiology and sports biomechanics. He is a USAW-certified Club Coach and is a CrossFit level 3 trainer. He is also the current national Masters Champion in weightlifting at 94 kg. You can learn more dumbbell exercises from his DVDs [Dumbbell Moves Volume 1](#) and [Volume 2](#).