

Zone on the Rocks

...continued

Is it strange that I know exactly how many grams of protein, carbohydrate, and fat I'm eating at every meal and snack?

It was at one time.

Now, even when I'm not actually weighing and measuring my intake, I know how much of each macronutrient I'm putting into my body. It's second nature now. It required only two weeks of strict measuring before I had the clear understanding of exactly what to do to increase athletic performance with the food I was already eating.

The realization that I needed to fuel my body differently began on a stationary bike. Spinning away, getting warm for the day's workout, I heard Coach over the drone of the bike, "We can keep working out like this Robbie, and we'll achieve some results, but it will take us only so far."

I was intrigued. Three weeks earlier I was more debilitated from a twenty-minute workout than I had been from climbing twentyone hours straight on the two largest cliffs in North America: the Nose route on El Capitan and the Regular Northwest route on Half Dome. As long as I was doing this CrossFit thing I was interested in going all the way, and willing to make the changes required for total success. Coach's voice continued, "If you give me your diet, I can guarantee results for another seven to eight years."

The workouts were hard. I wasn't interested in experiencing the pain of exertion and the nausea of metabolic duress without getting the absolute maximum possible benefit from it.

"You can eat whatever you want Robbie, you'll just need to become aware of the protein-to-carbohydrate ratio. If you're exacting and make sure you get the right amount of fat to accompany the 7 grams of protein for every 9 grams of carbohydrate at every meal, we'll be able to take this all the way."

That was over three years ago, and since then I've persisted in following Coach's advice. You'll never find me very far from the Zone and that balance any more.

Just do it

It's surprising to me how few CrossFitters take the suggestion for a balanced diet to heart. It's as much a part of the program as the workout of the day. Food fuels the intensity expressed in workouts and underlies our recovery. It's utterly *foundational* to all the rest, yet very few CrossFitters follow through with a commitment to do it.



Zone on the Rocks

...continued

The resistance is real—and understandable, to an extent. The word "diet" is loaded with assumed infringements on personal freedom. True, discipline is required to change habitual eating patterns, but what about the effort and fortitude to face the WOD with all that you have? Apply what you've learned and practiced on the gym floor to your eating. They're pieces of the same puzzle—complementary, intertwined, and essential to the pursuit of true fitness.

It's about lifestyle. For a CrossFitter, it's about intense physical movement and the food that fuels those rigorous demands. As the puzzle starts to take shape, other choices become easy: what we purchase at the grocery store, what we pack for lunch, how and what we prepare for dinner. Actually, things are simplified with the Zone. Knowing the priorities and realities is clarifying, not complicating.

Whether you're seeking the best possible performance as an athlete, intending a long healthy life, or wanting children or clients to learn by example and experience something valuable about nutrition—whatever motivates you—simply try it.

Taking it to the rocks

If making these kinds of exacting changes to the portions of protein, carbohydrate, and fat in our meals at home can be difficult, how is the Zone feasible while on vacation or in the field? What's the plan when refrigerators, stocked cupboards, and fresh groceries aren't at our convenience? How do we pack for that kind of situation? What do we pack? Is it even possible?

For those who are savvy enough to have already implemented the Zone template for day-to-day intake but have trouble taking it out into weekend adventures or duties in the field; I've written out a seven-day Zone menu for two. It's simply the list of foods my partner and I ate while establishing the first free ascent of the PreMuir route (grade VI 5.13d, in climber lingo) on Yosemite's El Capitan in May of 2007.

If eating within the parameters of the Zone can be done on a vertical camping trip up the side of a cliff with no cupboard, fridge, or grocery store, than surely it can be done within the convenience of your day-to-day life. Perhaps it could convince you to try it for two weeks.

For a CrossFitter (i.e., one who eats for athletic performance) the Zone ranks up there with some of the other "must do's" in life—things like seeing the Grand Canyon, visiting the Louvre, scuba diving, or skydiving. At some point in your life you just have to do it. If you haven't sincerely tried committing to good nutrition, maybe it's time you looked at your reasons. What are your excuses? How valid are they, really? Are you so invested in them that you're willing to sacrifice your potential?



Rob Miller counts his nuts.

As an example of the kind of challenge the PreMuir climb represents, let's translate it into CrossFit workout terms. If the PreMuir were a "thruster" workout, let's say it would be 30 thrusters in length. Fifteen of them are at 185 pounds, ten are at 155 pounds, and five are at 135 pounds. If we turned The Nose, another free route on El Cap, into a thruster workout, it would also be 30 thrusters. But only two would be at 195 pounds, one at 185, seven at 135, ten at 95, and ten would at 65. These are two totally different workouts.

Even though the Nose workout has a couple thrusters that are significantly heavier, seventy-five percent of the work is done at very manageable loads. Comparatively, we maintained a very high level of power endurance, which was sustained for an entire week in relation to a route like the Nose. The food we were eating was critical to fueling our stamina and success.

Zone on the Rocks

...continued

Every situation has its own specific demands. The menu offered here is specific to the needs of two climbers spending seven days on the side of a cliff where the possibility of replenishing our water supply is next to none. The water we leave the ground with is the only water we get! Despite our taste buds, we favor canned food, especially milk, soups, and meats. They're a lot heavier than dehydrated foods but cans include water, they aren't perishable, and they protect the food in the bags we haul, which often get slammed into corners as they're dragged up the side of the cliff.

If eating within the parameters of the Zone can be done on a vertical camping trip up the side of a cliff with no cupboard, fridge, or grocery store, than surely it can be done within the convenience of your day-to-day life.

Access to fresh running water would certainly change my menu choices, but the beauty in this menu is that it actually fueled a reallife athletic feat—two people scaling a cliff 3,000 feet tall using only their gymnastic skills (imagine Spiderman without radioactive powers) while facing the inherent risk of falling. Ropes and safety gear came into play only in the event of a fall; they did not provide any upward assistance. Mental acumen over all seven days had to be maintained not only for the physical success of the ascent but, more importantly, to insure our combined safety on the wall.

I have many a blurry memory from pre-Zone days on the wall. They include bad choices, slow vertical progress, nodding off at belays, and having partners hitting the figurative wall, whacked-out on Jolly Ranchers and Power Bars. I also have vivid memories from those days of being back on the ground after days of climbing and camping on the side of the wall. I remember an overwhelming craving for whole milk and cottage cheese that would last for just as many days as we had been on the wall.

Packing for a multi-day wall climb is much easier after discovering the Zone. No more waffling choices because I now know what works while on the wall: 18 blocks of protein, 18 blocks of carbohydrate, and 90 blocks of omega-rich fats per person per day. (My normal at-home block prescription is 16 blocks of protein, 16 blocks of carbohydrate, and 64 blocks of fat for day-to-day training and living.) I used to labor over menu content for climbing trips. I would pack and repack several times before settling on the food I would bring. Precious time and needless stress is omitted by employing the simple parameters of knowing how to eat a balanced meal.

At home

No one appreciates limitations or restrictions being placed upon them. In fact, my favorite climbing partner hates the word "diet" so much (because of those very restrictions), that he's offered endless banter and ridicule to my well-Zoned meal every time we eat. Sarcastic as it is, I've confessed to him that I do count my nuts...every handful. Luckily, sarcasm need not get in the way of what works. As it turns out, because he's experienced the benefits of proper fueling firsthand—in a very demanding environment he's a reluctant believer. Consequently, I no longer feel that I have to dine defensively around him.

The next time you're at the grocery store picking up steaks, simply grab some black beans, peppers, and an avocado to go with them. Maybe you want steel cut oats for breakfast. Just buy some eggs or cottage cheese to help it burn a little further into the morning. If you add some slivered almonds to your bowl of oats, you will feel nourished and energized as long as you should.

If you're packing for a backcountry adventure or long ruck and concerned that you can't go Zone, perhaps you're missing something about how to do it. It actually makes things easier, not more difficult. Got a packet of tuna? Stir it in with a can of soup.

Whether you're carefully building a meal, planning snacks for your workday, shopping for the fridge at home, or packing for a sevenday climb up a 3,000-foot wall, consider building your meals for performance. It improves your health, saves you time, and provides simplicity to your life. It's as easy as counting your nuts.

Rob Miller has been investigating the art of human movement through two decades of extreme sports experience, from snowboarding the backcountry to climbing vertical cliffs over a half mile high. He is internationally recognized for his pioneering free-ascents on many of Yosemite Valley's big walls, including Washington's Column, Higher Cathedral Spire, and El Capitan.

Since finding CrossFit several years ago and delving further into the art of human performance, he is climbing less but getting stronger as a big-wall free climber, his passion in life. He maintains that he's simply training smarter. As a trainer with CrossFit HQ and *CrossFit Santa Cruz*, he is committed to < teaching other climbers—and folks from all walks of life—to train more effectively to reach their goals. He is particularly invested in seeing the next generation learn to optimize their health and performance via the *CrossFit Kids* program.

"Zone on the Rocks" continues on the following pages with "PreMuir Zone Menu"...

| PreMuir Zone Menu | | |
|---|--|--|
| | | |
| | Day I | |
| <u>Rob</u> | Justen | |
| Snack #I | Snack #I | |
| Think Thin bar (20g P, 27g C, 7g F) | Builders Bar by Clif (20g P, 30g C, 8g F) | |
| 12 macadamia nuts | 12 macadamia nuts | |
| | | |
| Snack #2 | Snack #2 | |
| Think Thin bar | Balance Bar -Honey Peanut (15g P, 20g C, 6g F) | |
| I2 macadamia nuts | 8 macadamia nuts | |
| | | |
| Snack #3 | Snack #3 | |
| I precooked basil pesto sausage (21g P) | I precooked basil pesto sausage (21g P) | |
| I/3 bag snap peas (9g C) | 1/3 bag snap peas (9g C) | |
| I apple | 2 Ryvita rye crackers (16g C) | |
| 36 salted cashews | 36 sweet & spicy cashews | |
| | | |
| Dinner | Dinner | |
| Chicken (broth) noodle soup (28g C) | Chicken (broth) noodle soup (28g C) | |
| I precooked basil pesto sausage (21g P) | I precooked basil pesto sausage (21g P) | |
| 36 Marcona almonds | 36 Marcona almonds | |
| | | |
| Snack #4 | Snack #4 | |
| I string cheese (8g P) | Soft cheese (Betabel) (7g P, 9g F) | |
| 4 macadamia nuts | 1/4 bar dark chocolate (10g C) | |
| 1/4 bar dark chocolate (10g C) | w/ evening tea | |
| w/ evening tea | | |
| | | |
| | Day 2 | |

| Day 2 | | |
|--|---|--|
| Rob | Justen | |
| <u>Breakfast</u> | <u>Breakfast</u> | |
| I cup cottage cheese (28g P) | I cup Greek strained yogurt (13g P, 6g C, 18gF) | |
| I apricot-mango bran muffin (35g C) | I Cup GoLean high-protein cereal (13g P, 30g C, 1g F) | |
| I/4 cup canned milk (in coffee) 6g P, 9g C, 2g F | 1/4 cup canned milk (in coffee) 6g P, 9g C, 2g F | |
| 25 macadamia nuts | 20 macadamia nuts | |
| | | |
| Snack #I | Snack #I | |
| Builders Bar by Cliff | I string cheese | |
| 12 macadamia nuts | I ProMax Bar (20g P, 38g C, 8g F) | |
| | 16 macadamia nuts | |
| | | |
| Snack #2 | Snack #2 | |
| Think Thin Bar (add 12 Mac Nuts) | Honey Peanut Balance Bar (add 8 Mac Nuts) | |

5

Zone on the Rocks ...continued

| Snack #3 |
|--|
| Honey Peanut Balance Bar |
| 8 macadamia nuts |
| |
| |
| Snack #4 |
| Miso soup (8g P, 18g C, 6g F) |
| 1/2 can smoked trout (6g P) |
| 24 salted cashews |
| |
| Dinner |
| 1/2 can premium chicken stew (17g P, 24g C, 21g F) |
| |
| After Dinner |
| 4 oz beef summer sausage (18g P, 20g F) |
| I/2 bar milk chocolate (22g C) |
| w/evening tea |
| |

Day 3

| Rob | Justen |
|---|---|
| <u>Breakfast</u> | Breakfast |
| I cup high-protein cereal | I cup high-protein cereal |
| I/4 cup canned milk (with cereal) | I/4 cup canned milk (with cereal) |
| I string cheese | 2 soft cheese (10g P, 20g F) |
| I/4 cup canned milk (in coffee) | I/4 cup canned milk (in coffee) |
| 25 macadamia nuts | 10 macadamia nuts |
| | |
| Snack #1 | Snack #I |
| 2 string cheese | I/2 small bag jerky (16g P) |
| I apple | 3 pieces dried & sweetened mango (21g C) |
| 10 macadamia nuts | 10 macadamia nuts |
| | |
| Snack #2 | Snack #2 |
| Think Thin Bar (add 12 Mac Nuts) | Honey Peanut Balance Bar (add 20 Cashews) |
| | |
| | |
| Snack #3 | Snack #3 |
| I can kippered snacks (herring) (12g P) | 4 Mini Cheeses 20gP/40gF |
| I small pita pocket (I3g C) | I small pita pocket (I3g C) |
| 10 mini carrots (3-4g C) | 40 mini carrots |
| 10 macadamia nuts | |
| | |

| Dinner | Dinner |
|---|---|
| I/2 large can minestrone soup (28g C) | I/2 large can minestrone soup (28g C) |
| I/2 large can premium white chicken (36g P) | I/2 large can premium white chicken (36g P) |
| 20 mini carrots | 20 mini carrots |
| 48 Marcona almonds | 48 Marcona almonds |
| I oz Jameson Scotch whiskey | I oz Jameson Scotch whiskey |
| | |
| Nightly tea | Nightly tea |
| | |

Day 4

| Rob | Justen |
|--|--|
| <u>Breakfast</u> | Breakfast |
| I bagel (36g C) | I bagel (36g C) |
| 15 slices low-fat salami (21g P, 16g F) | 15 slices low-fat salami (21g P, 16g F) |
| I oz Vermont sliced cheddar (7g P) | I oz Vermont sliced cheddar (7g P) |
| 2 tbl cream cheese (18g F) | 2 tbl cream cheese (18g F) |
| 5 macadamia nuts | 15 salted cashews |
| I/4 cup canned milk (in coffee) | I/4 cup canned milk (in coffee) |
| | |
| Snack #I | Snack #I |
| Builders Bar by Clif | Honey Peanut Balance Bar |
| 36 almonds | 8 macadamia nuts |
| | |
| Lunch | Lunch |
| Miso soup | Miso soup |
| I/2 bagel | I/2 bagel |
| 2 tbl cream cheese | 2 tbl cream cheese |
| 10 slices low-fat salami | 10 slices low-fat salami |
| 12 salted cashews | 12 salted cashews |
| | |
| Snack #2 | Snack #2 |
| Think Thin bar | ProMax bar |
| 36 almonds | I string cheese |
| | 16 macadamia nuts |
| | |
| Dinner | Dinner |
| Italian sausage soup (16g P, 30g C, 12g C) | Mexican tortilla soup (8g P, 28g C, 14g F) |
| I string cheese | 10 slices low-fat salami |
| 15 macadamia nuts | 15 salted cashews |
| | |
| Evening tea | Evening tea |
| | |

Zone on the Rocks ...continued

12 macadamia nuts

| Day 5 | | | | |
|---|---|--|--|--|
| Rob Justen | | | | |
| <u>Breakfast</u> | Breakfast | | | |
| I cup cooked oats (27g C) | I cup cooked oats (27g C) | | | |
| 1/4 cup canned milk (with oats) | I/4 cup canned milk (with oats) | | | |
| 1/4 cup canned milk (in coffee) | I/4 cup canned milk (in coffee) | | | |
| I mini soft cheese (5g P, 10g F) | 4 mini soft cheese (20g P, 40g F) | | | |
| 1/2 small bag beef jerky (16g P) | | | | |
| 20 macadamia nuts | Snack #I | | | |
| | Honey Peanut Balance Bar | | | |
| Snack #I | 8 macadamia nuts | | | |
| l ProMax bar | | | | |
| 36 almonds | Snack #2 | | | |
| I string cheese | Honey Peanut Balance Bar | | | |
| | 8 macadamia nuts | | | |
| | | | | |
| Lunch | Lunch | | | |
| L bagel | L bagel | | | |
| 15 slices low-fat salami | 15 slices low-fat salami | | | |
| l oz cheddar cheese | l oz cheddar cheese | | | |
| 2 tbl cream cheese | 2 tbl cream cheese | | | |
| | | | | |
| Snack #2 | Snack #3 | | | |
| Think Thin bar | Think Thin bar | | | |
| 36 almonds | 12 macadamia nuts | | | |
| | | | | |
| Dinner | Dinner | | | |
| I/2 large can lentil vegetable soup (32g C) | 1/2 large can lentil vegetable soup (32g C) | | | |
| 1/2 can tuna in olive oil (18g P, 14g F) | 1/2 can tuna in olive oil (18g P, 14g F) | | | |
| I oz cheddar cheese | l oz cheddar cheese | | | |
| 20 salted cashews | 20 salted cashews | | | |
| | | | | |
| | Day 6 | | | |
| Deb | | | | |
| | Justen | | | |
| Breaktast | Breaktast | | | |
| I cup cooked oats | I cup high-protein cereal | | | |
| mini soft cheeses | Letring chaose | | | |
| 1/4 cup canned milk (with oats) | 1 string cheese | | | |
| 1/4 cup canned milk (in coπee) | 20 macadamia nuts | | | |
| | 1/4 cup canned milk (in coπee) | | | |
| 0 | | | | |
| | | | | |
| 2 since avectors of a divid as a set | 1/2 small bag beer Jerky (1/g P) | | | |
| s pieces sweetened & dried mango | o pieces sweetened & dried mango | | | |

12 macadamia nuts

| Snack #2 | Snack #2 |
|--|---|
| Think Thin bar | Cookies and Cream ProMax bar |
| 36 almonds | I string cheese |
| | 16 macadamia nuts |
| | |
| Snack #3 | Snack #3 |
| Miso soup | Miso soup |
| I/2 can smoked trout | 1/2 can smoked trout |
| 24 salted cashews | 24 salted cashews |
| | |
| Dinner | Dinner |
| I can southwestern vegetable soup (23g C) | I can southwestern vegetable soup (23g C) |
| I can tuna (32g P) | I can tuna (32g P) |
| Rye cracker crumbs (from hauling bag; 10g C) | Rye cracker crumbs (from hauling bag; 10g C) |
| 20 macadamia nuts | 20 macadamia nuts |
| I oz Jameson Scotch Whiskey | I oz Jameson Scotch Whiskey |
| | |
| Snack #4 | Snack #4 |
| 2 mini soft cheese | 2 mini soft cheese |
| I/4 bar milk chocolate | I/4 bar milk chocolate |
| w/ evening tea | w/ evening tea |
| | |
| | |
| D | ay 7 |
| Rob | ay 7 Justen |
| D <u>Rob</u> Breakfast | ay 7 Justen Breakfast |
| Rob Breakfast I small can pineapple (28g C) | Justen Breakfast I cup cooked oats |
| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses | Justen Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) |
| RobBreakfastI small can pineapple (28g C)3 mini soft-cheeses3/4 oz beef jerky | Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky |
| RobBreakfastI small can pineapple (28g C)3 mini soft-cheeses3/4 oz beef jerkyI0 macadamia nuts | Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese |
| RobBreakfastI small can pineapple (28g C)3 mini soft-cheeses3/4 oz beef jerky10 macadamia nuts1/4 cup canned milk (in coffee) | Justen Justen Breakfast I cup cooked oats I /4 cup canned milk (with oats) I /2 small bag jerky I string cheese I /4 cup canned milk (in coffee) |
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| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) | Justen Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese I/4 cup canned milk (in coffee) 25 macadamia nuts |
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| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) Snack #1 Think Thin bar | Justen Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese I/4 cup canned milk (in coffee) 25 macadamia nuts Snack #I ProMax bar |
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| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) Snack #1 Think Thin bar 12 macadamia nuts Snack #2 Honey Peanut Balance Bar | Justen Justen ProMax bar for mark fast for mark fast Justen Justen Justen Justen Justen Justen Justen Justen Justen Justen |
| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) Snack #1 Think Thin bar 12 macadamia nuts Snack #2 Honey Peanut Balance Bar 24 cashews | Justen Justen Preakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese I/4 cup canned milk (in coffee) 25 macadamia nuts Snack #I ProMax bar I6 macadamia nuts Snack #2 Builders Bar I2 macadamia nuts |
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| Rob Breakfast I small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) Snack #1 Think Thin bar 12 macadamia nuts Snack #2 Honey Peanut Balance Bar 24 cashews Snack #3 | Justen Justen Freakfast Cup cooked oats I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese I/4 cup canned milk (in coffee) Smack #I ProMax bar I6 macadamia nuts Smack #2 Builders Bar I2 macadamia nuts Smack #3 |
| Rob Breakfast 1 small can pineapple (28g C) 3 mini soft-cheeses 3/4 oz beef jerky 10 macadamia nuts 1/4 cup canned milk (in coffee) Snack #1 Think Thin bar 12 macadamia nuts Snack #2 Honey Peanut Balance Bar 24 cashews Snack #3 Rocky Road Balance Bar | Justen Justen Breakfast I cup cooked oats I/4 cup canned milk (with oats) I/2 small bag jerky I string cheese I/4 cup canned milk (in coffee) I/4 cup canned milk (in coffee) I/4 cup canned milk (in coffee) I/5 macadamia nuts Snack #1 ProMax bar I 6 macadamia nuts Snack #2 Builders Bar I 2 macadamia nuts Snack #3 Rocky Road Balance Bar |

Meat Lover's pizza and beer upon arriving back on the ground!

Jiu-Jitsu Journey How Valerie Worthington Found CrossFit and Won the Gold Medal

Becca Borawski

Just a couple months ago, in September 2007, Valerie Worthington stood on top of a podium in Turkey, accepting the gold medal for the Grappling World Championships. She was there representing the United States and joining her teammates in their sweep of the gold medals in all nine weight classes.

A little over one year earlier, in June of 2006, Valerie had stood in her empty condo in Chicago, finalizing its sale and officially making herself homeless. It was the beginning of what was intended to be a three-month trip around the country to train in Brazilian jiujitsu. With the money from her condo, she intended to buy a car, pack up her remaining belongings, and hit the road.

Like many young professionals, Valerie reached a point in her life where she realized she had the car, the home, the job, and everything she was "supposed" to have, but it no longer felt satisfying. A graduate of Dartmouth and Michigan State University, Valerie was putting her doctorate in educational psychology to use working with the state of Illinois and an education corporation. Outside of work she had run marathons, trained in Muay Thai, and finally settled into training Brazilian jiu-jitsu with Carlson Gracie and Carlson Gracie, Jr., eventually earning her purple belt.

Despite all that, she felt a growing discontent and that perhaps the ambitions she had been fulfilling were not really her own. She

took a close look at her life and desires and made the decision to start over, without knowing exactly where it was she was headed.

So, on July I, 2006, Valerie left Chicago in her newly purchased car and began her journey. Her original intention was to travel around the country for three months visiting various jiu-jitsu and grappling schools. For her, jiu-jitsu was not only physically challenging, it presented something deeper. "There's just something about pushing yourself physically that I think brings out a lot of mental, psychological, and emotional issues and fortitude," she says.

A couple months into her journey, Valerie arrived in Los Angeles. Her intention was to train for two weeks and move on. The first school she trained at was the New Breed Academy, with instructors John Ouano and Johnny Ramirez. When Ramirez asked Valerie where she was staying and she had no answer, he offered up the academy as a place to stay.

For the next three months, the academy was Valerie's home, and also the link that brought her to CrossFit. Fellow grappler Sean Robinson also trains in jiu-jitsu at New Breed and in CrossFit at Petranek Fitness/CrossFit Los Angeles. Intrigued, Valerie came to a CrossFit class with him one morning. "I came in and I thought, maybe I know some things, and then I thought, wow, I really don't even know how much I don't know," she says of her first experience. "CrossFit is a lot like grappling and jiu-jitsu, and what I mean by that is, first of all, there's always something to work on, always something more to challenge you, and, second, it's always extremely humbling." Like jiu-jitsu, CrossFit presented an arena in which to challenge herself, physically and psychologically.

Now, Valerie has been training at Petranek Fitness regularly since April 2007 and used it to prepare her for her grappling competitions. Having tried competing years earlier, Valerie at first shied away from another go at it. "I didn't have the realization until more recently that skill in jiu-jitsu and skill in competing are two different things." Her initial lack of success in competition as a blue belt had turned her off because she equated it with shortcomings in her jiu-jitsu and was not quite ready to face that.



The U.S. team showing off their sweep of the golds at the 2007 World Grappling Championships in Turkey. Valerie is second from right in the front row. - Photo courtesy of USA Wrestling

Jiu-Jitsu Journey

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Being in the highly competitive jiu-jitsu environment of Southern California, however, drew Valerie to try competition again. As a more mature athlete, and now a purple belt, she actively wanted to improve her jiu-jitsu and knew that competition was a way to do so. In competition there are unknown elements of the competitors, mental stressors, and great physical demands—the same things her CrossFit training was helping her to develop.

Competition was also scary. That's where Valerie's personal philosophy kicked in once again. "My philosophy these days, or the way I live my life these days, is that if someone suggests something and my immediate reaction is, oh, I could never do that, then I have to do it." She explains this philosophy was the root of her journey and of her exploration of jiu-jitsu, "That's why I ran a marathon, why I started to compete, why I started jiu-jitsu to begin with. The more I said to myself, I can't do this, I can't leave, I can't up and move and sell, the more I said, well there's clearly something here that I have to explore."

This second time around,Valerie found great success in competition. She competed and won at local and national levels and earned herself a spot on the U.S. team headed for the World Grappling Championships in Turkey.

CrossFit was an essential part of Valerie's preparation for her journey to Turkey. "When I started to compete halfway seriously I was really concerned about conditioning, about my ability to last throughout however many matches I would need, and to have explosiveness when I needed it. It's something that I felt the lack of when I first started competing, because I thought, like a lot of grapplers do that I already train all the time." Many grapplers will argue that if they want to have the conditioning to do jiu-jitsu, they should just do jiu-jitsu all the time. "But you're not training all the time the way you compete," says Valerie. "Training and competing are two different skill sets and require two different types of energy and strength and focus." It's the difference between a skill-based workout and a metabolic conditioning workout in CrossFit—you need the skills to be able to do the metabolic workout effectively and efficiently, but you can't be prepared for the metabolic workout if you never train under those conditions.

"A really huge part of the skill set of being a competitor is feeling prepared," states Valerie. Since doing CrossFit, her feeling of preparation and confidence has been higher than ever before. "When I went to Turkey, when I went to the Mundials, when I've done different competitions since I started CrossFit, I've never worried that I'll gas before my opponent." Valerie speaks often of the tremendous confidence that knowledge has given her and the competitive edge it brings to a match.

If you can get out of your own way, then you can end up in a pretty cool spot.

Her teammates speak of her noticeably increased strength. When Valerie began CrossFit, she could not do a single unassisted pullup; now she can do eleven at once, and has done up to sixty-five within a single workout. In regard to the application of pull-ups to jiu-jitsu, Valerie says, "Those may not seem directly applicable to BJJ, but, for instance, they give me more power in my arm drags, which is an important BJJ movement. Ideally you put your whole body into arm drags, but the arm strength is important too."

Since Valerie began CrossFitting, her squat—and her hip strength and comfort in a fully flexed hip position—have also vastly improved. She began in what she describes as "remedial squat class." Now, she knows from experience what improving her squat can do for her. "In no-gi class a month or so ago, the instructor had us do as many double-leg takedowns as possible in a minute. Double-legs rely on that core strength that comes from the squat. I did the whole minute without stopping (pausing only as long as it took my partner to stand back up), and felt fine afterward. [My



Valerie on top against Milda Shibonis at the World Team Trials. - Photo courtesy of AliciaPhotos.com



Jiu-Jitsu Journey

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partner] and the other students in the class, on the other hand, were gassing pretty hard. And before Petranek Fitness, I would really have felt a drill like that the next day in my glutes and hamstrings. This time, the next day I felt... nothing."

Valerie works hard to strike a balance between her CrossFit training and her grappling and jiu-jitsu training. She trains at Petranek Fitness three times a week and trains in grappling and jiu-jitsu up to six times a week. At times she is aware that she is training more efficiently than others and is taking a lesson from CrossFit and learning to take rest days and make her work days more effective and efficient.

Prior to a competition, Valerie tries to train lighter. If a competition is on Saturday she will train lightly from Tuesday forward, and usually take a couple days off prior to the tournament. She finds the challenge in tapering is not a physical one, but learning to balance the psychological fear of losing her knowledge with being properly rested.

On the days she does not train grappling, Valerie has begun teaching beginner classes at New Breed Academy. She has an apartment now and no longer lives in the gym. The competition in Turkey, in some ways, has been the culmination of Valerie's journey. It is the validation of her philosophy and her training. It is the answer to the many voices that said, "What are you going to do? Why are you doing this?" Had Valerie tried to plot a course for herself, the destination of standing on the podium in Turkey listening to the National Anthem while watching her flag being raised would not have been on the map. Of her accomplishments, Valerie says, "If you can get out of your own way, then you can end up in a pretty cool spot."

As Valerie contemplates what may happen next, she continues her journey. Perhaps not geographically, but she continues to explores the worlds of jiujitsu and CrossFit. She finds they intersect in both physical and psychological ways. There is a stripping-down of the ego that happens in both worlds. "If you come in and you think you want to be an ultimate fighter and then some chick who's smaller than you triangles the crap out of you and you have to tap to her, you have a decision to make at that point: you can either see the value of the art, or you can let your ego get in the way."

For those who choose to let the ego go, the rewards of physical challenge can be immense. "While I'm being humbled, I'm still being encouraged," says Valerie of her CrossFit training. "Even though I may not be able to do as many unassisted pull-ups as somebody else, when I get a personal record other people are happy for me, and that makes me happy for myself, because I realize it's not about comparing myself to somebody else, it's about comparing myself to who I was yesterday and being better than that."



Photo courtesy of AliciaPhotos.com



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Tony Leyland

Anyone who has watched CrossFit instructional videos and read *CrossFit Journal* articles focusing on lifting technique will know the importance of maintaining a straight torso with normal lumbar curvatures. This month I want to briefly discuss lumbar spinal anatomy and mechanics.

I believe that being able to express mechanical concepts (such as different postures during lifting) in numbers provides the strongest possible support for coaching points. Therefore, I have also included a quantitative analysis of the deadlift using a biomechanical computer model.

Mechanical terminology

The three directions in which forces are applied to human tissues are compression, tension, and shear (shown in figure 1). In case you are wondering, bending places one side of the object in compression and the other in shear, and twisting (torsion) is just a type of shear.



on the spine with hundreds of pounds of force to lift common loads (and well into the thousands of pounds when performing heavy deadlifts). Figure 2 also shows that the line of action of these muscles pulls the lumbar vertebrae together and creates compression between them. This can be hard to visualize, but when you effectively stabilize your lower body against the ground, the lower lumbar vertebrae are "pushed upward" from below and pulled downward by the muscles. This creates large compressive forces (again into the thousands of pounds when deadlifting).

In addition to creating a torque that wants to rotate the lifter forward (clockwise in the illustration), the load being lifting and weight of the upper body also act downward (gravitational pull). A component of this force acts as shear across the L4-L5 joint. It is this force that can be particularly problematic, as we will soon see.



Figure 2. Torque and forces acting on the lumbar spine.

Anatomy of the lumbar spine

The anatomy of the spine is guite complex. However, to understand the need to maintain normal lumbar lordosis (curvature), all we really need to discuss is the line of action of the erector muscles and some of the ligaments that connect the vertebrae to one another (interspinous ligaments). Figure 2 shows the line of action of the muscles and you should be able to see that a component of this force acts to counteract the shear force, that is, it balances out the forces acting across the spine. Dr. Stuart McGill, a worldrenowned spinal biomechanist from the University of Waterloo in Ontario, identifies two types of shear. The shear shown in figure 2 is called reaction shear and is the result of gravity pulling the load and the upper body downward. The closer your upper body moves to horizontal, the larger this force will be. However, the true shear on the L4-L5 joint (called the joint shear) is the resultant shear force produced by the sum of the reaction shear and the muscle/ligament shear. It is this value, which includes the effect of muscle/ligament forces, that represents the actual shear

Figure 1. Terminology for directions of force.

For this discussion on lumbar mechanics we do not need to focus on tension as it is as a force that tends to pull a tissue apart and is not relevant to our purposes. Our focus will be on compression and shear. Shear is defined as a force that acts parallel to a surface; in the spine, it can create sliding of one vertebra with respect to another.

Figure 2 is a little busy but it helps illustrate many of the important concepts for this discussion. In a lift such as the deadlift, the weight being lifted and center of mass of the upper body and arms are a relatively long way from the vertebrae, and this creates a huge torque (moment of force) about the lumbar vertebrae. Although the vertebrae are a collection of joints, we can visualize that the disc between lumbar vertebrae 4 and 5 is the center of rotation for this force (the circle in figure 2). The line of action of the spinal erector musculature is a very short distance from the joint center of rotation (2.4 to 2.8 inches) and hence these muscles must pull

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experienced at the L4-L5 joint. And it is clearly the true shear on the lumbar spine that determines whether the spinal loading is manageable or potentially injurious.

Figure 2 does not show ligament forces because if you maintain the natural curvature of your lumbar spine, the spinal erector musculature will create the opposing torque to extend your trunk as you come up from the lift. And, as shown in the figure, a component of this large muscle force will neutralize the shear produced by the load and body mass. The muscle force is predominantly parallel to the spine but also pulls back to counteract the forward shear. This is what Mark Rippetoe explains in the video "Deadlift Alignment, Part I" on the CrossFit.com website on September II, 2007, when he says "Remember, shear on the back doesn't occur if the back is rigid." This may not be particularly intuitive, but as shown above, it is correct, as the muscle forces offset the shearing effect of the weight (force) of the load and upper body.

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So what happens if you do not keep a rigid, straight back? Dr. McGill has shown conclusively with studies analyzing the electrical activity of the spinal erectors that as the lumbar spine becomes fully flexed (rounded forward), the contribution of the muscles to the required torque decreases and the supportive force generated by the ligaments increases. So, in effect, you switch off your muscles and allow your ligaments to support the weight, which is not a good idea. Although the ligaments of a CrossFitter are going to be strong, they're not that strong, and the line of pull of the interspinous lumbar ligaments means they actually add to the shear component. The angle of pull of these ligaments during lumbar flexion is shown in figure 3. In this figure you can see that the muscle force is absent and is therefore unable to help reduce the joint shear. Although the ligaments can counteract the load torque (allowing you to lift with a flexed back), the line of action of the ligament force adds to the joint shear, which becomes very large indeed. The bottom line then is, yes, you can often get away with flexing the spine during a deadlift, but only with a significant risk of damaging the lumbar discs.

In the deadlift alignment video, Rippetoe states that most novice deadlifters (and even some of the more experienced ones) think that their shoulders should be behind the bar and that they should be as upright as possible. This appears to be a natural tendency in an attempt to reduce shear on the back, but, as discussed above, this is a mistaken focus. I am always telling the young athletes I train that a flat back is not the same thing as an upright back. I want a flat, natural spinal posture; it doesn't have to be close to vertical. Your trunk alignment should be decided by your anthropometry (body and limb size and shape) and you should focus on keeping a natural flat alignment, as a more vertical rounded back will result in more joint shear than a more horizontal flat back. (See Rippetoe's article on the deadlift for an excellent discussion of proper deadlift form for all body types.)



Figure 3. Force from interspinous ligaments contributes to joint shear in the lumbar spine.

Biomechanical analysis of the deadlift

As I said at the beginning, if you can put your argument into numbers you can better explain the real danger of bad form. So I modeled the deadlift using a commercially available biomechanical computer modeling program with the not-so-friendly name 4DWATBAK. Most of the literature in the field of spinal biomechanics comes from ergonomics, where researchers, ergonomic consultants, health and safety officials, and union safety committees strive to reduce the incidence of back injuries. Therefore the program I used was developed for ergonomic use.

The model is a static model, which means it calculates the torques due to the load and limb weights about the body's joints with no movement. Because it calculates non-dynamic forces in fixed postures, muscle torques must be of exactly the same magnitude in opposite directions to maintain the posture. Such models cannot be used if loads are accelerating at a reasonable rate, but because the deadlift is a relatively slow lift, the values calculated by the model are close to the actual loads. The model also has to assume average anthropometry for any given height and weight. By this I mean average leg and trunk lengths and average distances for muscle and ligament lines of action (based on MRI studies conducted to assess the deep anatomy of the spinal muscles and ligaments). I entered the subject as a six-foot, 200-pound male; however, the compression and shear values calculated for a lighter subject are not greatly reduced, as the load weight, rather than body weight, is the dominant factor in the calculations. I entered a load of 300 pounds.

Another reason to model the deadlift is that the model is 2dimensional (fore-aft plane, also known as the sagittal plane) and the deadlift movement occurs in that plane. So the model would not be useful to model Olympic lifts unless you knew the acceleration of the load, nor could you model any movement with a rotational component in another plane. Despite these limitations, the model will provide useful data for a slow lift in the fore-aft plane.

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Figure 4

It is universally agreed in the literature that the spine is well designed to withstand compressive forces. A suggested safe cutoff point was established by NIOSH (National Institute for Occupational Safety and Health) in 1981. This is around 760 pounds of force (3,433 Newtons, to be precise). However, this is a standard for an occupational setting where unconditioned workers of all ages and both sexes might have to lift objects. World championship powerlifters can easily generate 20,000+ Newtons (approximately 4,000 pounds-force) of compressive force on their spines with no ill effect. There is much less research on what would, or should, constitute a safe limit for joint shear. The University of Waterloo ergonomic research group has suggested 500 Newtons (approximately 100 pounds-force) as a safe limit and 1,000 Newtons (200 pounds-force) as a maximal permissible limit.

The computer program has a feature that allows you to select either a normal spinal posture or a fully flexed spine. The program then calculates the shear forces based on whether the muscles or ligaments are bearing the load. As the moment arm (the distance from rotation point) of the muscle and ligaments are essentially the same in either case, the compressive force does not change with the change in posture. However, the shear force is greatly affected, as discussed above and shown below in the output values from the program.

Figures 4 and 5 show the two deadlift postures (normal spinal alignment and full flexion), and figures 6 and 7 show the computer model's mannequins of the same two postures, with "force arrows" that represent the load weight. Figure 7 shows the program's output of compression and shear forces in graphical bar chart format. It also shows the accepted ergonomic limit values on the bar graph. As discussed above, these are 3,433 N for compression (NIOSH also has an upper limit of 6376 N as a maximal permissible limit), and 500 N for shear (also with a maximal limit of 1000 N).

Figures 4, 6, and 8 show a deadlift with acceptable spine position, and figures 5, 7, and 9 show a deadlift with a fully flexed spine. I









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used the limb angles to enter values for the model in figure 4 into the program to create the mannequin shown in figure 6. The photo of the poor lift (figure 5) is just an example of what a lift with a fully flexed spine looks like. In the program, I just chose the fully flexed option in and adjusted the hands to be at the same level for the starting position. The two mannequins look somewhat similar, but if you look at the pelvis and lower spine area, you'll see the crucial difference.

You can see on the graphs that lifting 300 pounds results in a spinal compression of around 10,000 N (about 2,000 pounds-force). The slight difference between the two compression values is because as you round your back in the "poor" deadlift, your trunk moves slightly more horizontal and your shoulders drop lower, meaning more torque is require to balance the posture.

The huge difference between these two lifts though is in the joint shear. In the correct form deadlift, the shear is only 699 N (142 pounds-force), which is even below an occupational maximal limit. However, the joint shear in the flexed back position is 3799 N (775 pounds-force). Because the computer program is designed for ergonomic use, this shear force value for the poor lift is literally "off the chart."

Yes, you can often get away with flexing the spine during a deadlift, but only with a significant risk of damaging the lumbar discs.

I also entered a 600-pound deadlift into the program. The values for a correct form lift were: compression 17,000 N (3,500 poundsforce) and shear 1,200 N (240 pounds-force). So even when lifting 600 pounds, with proper form the shear is only 20 percent above what occupational biomechanists suggest as an upper limit in an industrial setting. With the incorrect form of a flexed spine, however, compression is 18,300 N and the shear an amazing 6,700 N. To say this is dangerous to the spine is an understatement.

Believe it or not, the top right figure is a photo of a deadlift from a university biomechanics text I am currently reviewing for the publishers. This is a good text for biomechanics and the photo is part of a sequence of photos used by the authors to discuss lifts for specific movement patterns. But, my goodness, what an example! No wonder Mark Rippetoe emphasized the need for good form in last month's *Journal*. And if any of you felt he was overstating the fact that poor form is common—and that even big flaws are overlooked even by the so-called experts—doubt no longer. It is clearly represented in this photo.

Summary

Although I have used the deadlift to quantify the loading on the spine when the lift is performed with natural lumbar lordosis and when it is done with a flexed spine, the concept carries over to all lifts.

The model calculates forces at the L4-L5-I5 vertebrae because 85 to 95 percent of all disc hernias occur either at the L4/L5 or L5/S1 intervertebral discs. This is because the torques on the spine are greatest in the lumbar region and therefore programs are written to analyze this region. However, it is important that your entire spine be rigid and in a natural alignment to protect all the vertebrae and discs.

In summary, a fully flexed spine inactivates back extensors, loads the posterior passive tissues (ligaments), and results in high shearing forces. In contrast a neutral-to-slightly-extended lumbar spine posture disables the interspinous ligaments and reduces joint shear. So, as you may have heard before, form matters.

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Be Alive. Be Very Alive.

Mark Rippetoe

Speaking of talk radio (which I was last month), Mike McConnell, the best talk show host currently on the air anywhere in the country, has suggested that the single most important contributing factor in the "obesity epidemic" is the relatively recent introduction of air conditioning and heating. This makes a huge amount of sense, given the fact that most of the time we're inside we are sitting on our asses and that air conditioning encourages us to stay inside. Heating used to be accomplished in a more manual fashion, predicated on hauling something inside to burn. People in more northerly climates enjoy a more friendly outdoor experience in the summer, and those of us cursed with a Texas address in the summer get compensated with comparatively mild winters. But the net effect of air conditioning technology is an increased average amount of time spent indoors sitting on our asses.

This leads to problems, because we have not spent the last 65 million or so years finely honing our physiology to watch *Oprah*. Like it or not, we are the product of a very long process of adaptation to a harsh physical existence, and the past couple centuries of comparative ease and plenty are not enough time to change our genome. We humans are at our best when our existence mirrors, or at least simulates, the one we are still genetically adapted to live. And that is the purpose of exercise. But the problems that are created by ignoring this are not just physical. Diabetes, obesity, osteoporosis, heart disease, hypertension, sarcopenia, and bad breath are only a part of what's wrong with the way the twenty-first century treats its precious children.

To a great extent, the health problems experienced by the members of the ridiculous culture in which we live are self-inflicted. They are result of the reluctance of the bulk of the population to do anything that is either physically hard or something that they don't want to do. People seem to have acquired the idea that they have the inalienable right to stroll through life without having sweated, picked up anything heavy, worked hard, or eaten less than they wanted at every meal. This approach is, of course, wrong. And it has resulted in a lot of expensive, unattractive, and entirely preventable problems amongst people who seem puzzled about why things aren't going well.

We have become lazy. I know you've heard this before, and I know it doesn't necessarily apply to you or me in the same way it does to the general public. But I dare you to read Steven Pressfield's *Gates of Fire*, his marvelous retelling of the Spartans' battle with the Persians at Thermopylae, and tell me that you're not a pussy.

It hasn't been that long—just a couple of generations—since life was more physical than it is now. My dad was born in 1920, and his father quite literally walked from Tennessee to Texas when he was ten years old. And probably didn't whine about it at all. You and I, highly evolved specimens that we are, would never be faced with a comparable task because it has been made unnecessary under the normal circumstances of modern existence. We might decide to do something silly like ride our high-tech, lightweight bikes that far for fun, but a mandatory task of that magnitude would never occur in the modern First World. And in one sense this is good, because lots of people died on that trip and the others like it that were made necessary by the transportation technology of the day. Unnecessary death is never good. But it is also bad in that the ability to rise to such an occasion has been essentially lost.

McConnell hates the term "wellness" as much as I do. Wellness is what we say when we mean Ineffective Exercise and USDA Dietary Guidelines, both of which are designed to be easy to do and to pay lip service to a concept that most people know is good and right but don't have the nads to actually follow. "Wellness" means having a salad and a baked potato after your aerobics class. It means enjoying increased longevity—getting to watch more episodes of *Oprah*! It means making an attempt at doing something slightly harder than sitting at your desk, and that the attempt itself is good enough. Mainly it means that just being "well" is good enough. Well, "well" is not good enough, and we need to quit acting like it is.

Granted, modern Western society could benefit immeasurably from a large-scale movement in the direction of even this watereddown version of optimal human existence. But, the general public being what it is, the tide that floats all the boats is going to have to be a pretty big tide, and "wellness" just hasn't got that much water. Those of us who actually train should understand why it's good: that physically—and mentally—difficult tasks are normal and natural to our existence, that they have been since the inception, and that this is the reason they make us healthier. Overcoming the challenges presented by these tasks makes us generally better as humans, and if the task does not rise to the level of a challenge it fails to provide this benefit. It may make you "well," but it won't make you anything more. Maintaining our own high training standards will have the long-term effect of raising those of the general public as well, for which favor they will all owe us a beer.

Hard training does all these fabulous things because physical difficulties are always accompanied by mental and emotional effects that those difficulties create. Finishing a very heavy set of twenty squats, or pushing through "Three Bars of Death" as prescribed, or suffering through "Murph" wearing a weight vest, is as much a mental task as it is a physical. The seventeenth rep is done under conditions of accumulating lactic acid, the inability to satisfy an increasingly severe oxygen debt, blurred vision, aching feet, and a sensation that must be vaguely akin to drowning. And then you have to decide whether to do the eighteenth, which isn't going to feel any better. The nineteenth and twentieth are going to be worse, and most people who have not experienced this before will quit. The ones who don't will learn something about their own limits, and about the temporary nature of such adversity. Amazingly enough, the weight is not that heavy-the first rep and the last rep are both "light" compared to the way a heavy single feels-and the challenge is not really the generation of enough force to get back up out of the bottom. The challenge is doing it when you feel like you are about to die, when things other than making the bar go up would logically seem more important. If you have never done a set of twenty with a weight that you previously thought was a 10-rep max, you should try it sometime.

Be Alive. Be Very Alive.

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Max sets of twenty are nasty, sinister bastards, very hard to do for more than a few weeks at a time because of the mental aspects of the task. Quite literally, you have about five minutes to enjoy the fact that the set is over before the realization dawns that you have to do it again next week. I have often spent days with an awful sense of dread for weeks at a time while I was doing them until, finally, progress on them slowed to a stop and I could honorably change squat workouts to something else. After this, pretty much everything else seemed easy, at least in the weight room. I learned later that there is significant carryover to things outside the weight room.

The two things that most influence our physical appearance, exercise and diet, have in common the fact that doing them correctly means choosing to do things that involve discomfort. It is unfortunately impossible to sit down to the table and eat all you want every time you eat. Jobs that make this possible—like being a galley slave or a field hand—are not terribly common since the invention of modern labor-saving devices like engines and tractors. Leaving the table before you're full involves making a decision not to do something you'd rather do.Whether this rises to the level of actual discomfort depends on your personal relationship with your cheeseburger, but hunger is a powerful sensation for most people who don't suffer from an eating disorder. Try walking into a restaurant sometime and just watching other people eat when you're hungry yourself. Even younger guys trying to gain weight find that the requirementseating more than you want to every time you eat-involve some degree of temporary discomfort.

Eating to obtain a positive result as opposed to mindlessly feeding yourself to satiety requires discipline, although not as much as the last three reps of the set of twenty. And if you can't make yourself stay away from the fourth piece of chicken, you're never going to do the set of twenty anyway. Supper might be a good place to practice setting easy little goals for yourself that require some discipline to accomplish, so you can get in the habit of being in better control of your behavior.

The problem with this is that when we stop expecting things from ourselves, our expectations of other people go down as well. Here's an example of what happens when our expectations get significantly diminished. This unfortunate event recently transpired in England:

Seven schoolgirls have sparked a major search and rescue mission—after being frightened by a herd of cows. The terrified pupils, aged 14 and 15, were on a geography field trip in Swanage, Dorset, when they sent out an SOS. They were dropped off three miles from their outdoor centre and told to find their way back using a map. But the teenagers, from St Albans in Hertfordshire, got stuck on a hill when they came across a herd of cows in a field blocking their way.

A coastguard rescue team, police and an ambulance were scrambled to rescue them after one of the girls called for help on her mobile phone.

I say let the cows eat them. They are already useless, because they've been taught—at home and at their ridiculous school—that they can't do anything for themselves. I say had they been doing PR sets of twenty squats, a herd of English cows would not present so intimidating an obstacle. And at this late date squats may be their only chance at a life free from shame and embarrassment.

Now, I realize that there are hundreds of millions of individual examples of people throughout the U.S. and Europe who have grown to a ripe old age without having engaged in either hard physical work or hard physical exercise. So why does it matter so much that people are out of shape, especially if it has no apparent effect on longevity? Well, I don't know about you, but I'm not interested in being 85 if I have to hire somebody to help me get up off the toilet. Very often in discussions of the public health benefits of exercise, the only consideration is longevity; an 80-year-old man with Alzheimer's might argue that longevity in itself is not always a benefit, if he could.

So let me say something a little meatier: you owe it to yourself and the millions of lives that generated yours to live as though you appreciated it. Over and above the fact that you're healthier—and as a result cost everybody less money and aggravation while you're here—there is just something wrong with getting up every day and moving through your existence with the least possible effort. Doing it this way makes you more than merely less than optimum. It makes you afraid of cows, and unable to understand that you should not be.

If your expectations are always those of someone content to live without physical challenge, then when it comes time for mental, moral, or emotional challenge, you fail to meet it because you are out of practice. Meeting and overcoming obstacles are skills that can be honed, as opposed to talents with which we are born. The best way to prepare for the inevitable shit that life occasionally hands us all is to live in a way that prepares you for it. If you can treat personal tragedy like a heavy set of twenty squats, you'll do better than someone who has never met any challenge. Intentionally placing yourself in the position of having to complete a task when you don't know if you can is the single best way of preparing to be in that position unintentionally. And that, my friends, is the way your training should be approached, so that you get more out of it than just "wellness."

Mark Rippetoe listens to the radio late at night after training hard at his gym Wichita Falls Athletic Club/CrossFit Wichita Falls. He has 28 years experience in the fitness industry and 10 years as a competitive powerlifter. He has been certified as an NSCA Certified Strength and Conditioning Specialist since 1985 and is a USA Weightlifting Level III Coach and Senior Coach, as well as a USA Track and Field Level I Coach. He has published articles in the Strength and Conditioning Journal, is a regular contributor to the CrossFit Journal, and is the author of the books Practical Programming for Strength Training and the just-released second edition of Starting Strength, subtitled Basic Barbell Training.

Nutrition Lecture

Part 2: Optimizing Performance (Video Article)

Greg Glassman



| Online Video Article | Video Article | (13:07) |
|--|---------------------------|---------|
| http://media.crossfit.com/cf-video/CrossFit_ | JournalCoachNutrition2. | wmv |
| http://media.crossfit.com/cf-video/CrossFit_ | _JournalCoachNutrition2.r | mov |

Part 2 of Coach Glassman's discussion of nutrition addresses the refined dietary needs of athletes and what's required to optimize your performance. If you want elite physical output, you must be precise about your intake. "Close enough" won't cut it—or as Coach Glassman more colorfully puts it, "If you want top-fuel-type performance, you need top fuel; you can't just piss into the gas tank."

Most of us are familiar with CrossFit's nutrition prescription: Eat meat and vegetables, nuts and seeds, some fruit, little starch, and no sugar. But to achieve top performance, you have to be specific about the balances of those things and accurate in your macronutrient consumption. You can get far on the workouts alone, but you will not—cannot—reach your true potential without getting particular about your fuel. There's a 1:1 correspondence between elite CrossFit performance and accuracy and precision in your consumption.

For more information on getting specific about your intake, see the following resources:

CrossFit Journal #15 is an annotated reference list of books on nutrition that could keep you reading as long as your heart desires.

CrossFit Journal #21 goes into detail about how to determine whow much of what you should be eating to optimize your performance.

In her journal article "Getting Off the Crack," Nicole Carroll, CrossFitter extraordinaire, tells the inspiring story of her dietary conversion and the results it had for her.

Greg Glassman is the founder (with Lauren Glassman) of CrossFit, Inc., and CrossFit Santa Cruz and is the publisher of the CrossFit Journal.

The New World Order for Endurance Training

🗸 🛛 Brian MacKenzie

The human psyche is a very powerful thing. This same psyche is responsible both for very limiting, self-defeating thoughts and also for strong, self-empowering thoughts that enable us to accomplish great things. For example, how many people believe they can run a marathon, 50 kilometers, or even 100 miles? How about squatting 500 pounds, or even 1000 pounds? Can you do a 10K in less than 40 minutes? If your answer is, "I could never do any of those things," you should stop reading now. You just might not have the psychological freedom to understand this article.

I come from a power sports background where I excelled as a youth and teenager in short-course swimming and water polo. In my early twenties, I was into powerlifting, but I wrecked my back with a poorly done deadlift set, which didn't allow me to do anything for several months after.

In late 2000 I started training for my first triathlon: a sprint-distance race that involved a 500-meter swim, a 13-mile bike, and a 5-kilometer run. My approach to training was "the more, the better." I averaged about six miles per week in swimming, 100+ miles in biking, and 30+ miles in running. I was doing

zero strength training—after all, I thought strength training had nothing to do with what I was doing. I was greatly mistaken! As it turned out, during the race I was passed by several rather obese individuals, who seemed by the looks of things to be very unfit. I was humbled, to say the least, but also motivated unlike any other time in my life.

I climbed up the ranks of the triathlon world shortly thereafter with the completion of an Olympic-distance race, and then a half-Ironman, but I didn't stop until I completed Ironman Canada. This was a great race, and I was thankful to finish. The training, however, was incredibly time-consuming because it was before I knew better so it was purely oxidative and overdone. I probably trained 24 to 30 hours per week, including roughly eight miles of swimming, 200+ miles of cycling, and 50+ miles of running per week. I had no life to say the least; my wife was not happy about things; and I was severely overtrained. Par for the course in the endurance world, but not good for the body and the personal life.

Therefore, after Ironman I started questioning the training. Why was everybody doing all this long aerobic stuff so much? I wasn't out of breath doing these events. More importantly, why was I following their model? Essentially, once you develop an aerobic base and continue with an exercise program, the base isn't going



to diminish. In 2001 I was also introduced to someone who would drastically change my worldview. Dr. Nicolas Romanov questioned everyone and believed there was a shorter, better way than all of these crazy ways athletes were training. I finally shut my mouth and listened in late 2004 and started training with purpose. I will briefly explain below what I mean by purposeful training.

In June of 2006 I ran The Western States 100 endurance run in 26 hours and some change. Temperatures reached 110 degrees in the canyons of this isolated race. I climbed more than 17,000 vertical feet and descended more than 22.000 feet. I started doing strength work and trained an average of 10.5 hours a week for this event (my Ironman had taken me just over 11 hours, not the 26 this one took). I researched training and got to know Jason C. Brown of CrossFit Philly for his incredible knowledge and all-out fanatical training with kettlebells, and made them a part of my plan. I was doing more interval training then I'd ever done and trying (key word) to hold specific paces and avoid the long, monostructural aerobic stuff. But it still wasn't right. Don't get me wrong, the kettlebell stuff was great, but even 10.5 hours of training still left my wife disheartened and wore my body out.

On September 15, 2007, I completed what I am told is the sixth toughest 100-mile run in the world, the Angeles Crest 100 (the Western States 100 doesn't really even qualify in the top ten). I averaged 6.5 hours of training per week. That includes strength training (almost 3 hours), CrossFit, and speed, interval, and pace work. My body learned to become aerobic at the higher paces, and even during the speed work (see next paragraph on the testing). My one-repetition maximum squat at the beginning of this revamping was 250 pounds. Three weeks before the race I could do 240 pounds for six consecutive reps pretty easily. I didn't put on a single pound of body weight, and I set personal records at every distance I ran. I showed up to the race in an almost perfect mental state, not overtrained and broken down. I was positive, and I took care of my body pre-race: lots of fluids, clean nutrition, plenty of myofascial release, and stretching. I went in with the expectation of finishing, and I did just that.

We at CrossFit Newport Beach/Genetic Potential ran some metabolic testing on three of our athletes with the help ofVitality Health and Wellness in Orange County. We had the athletes do hill repeats on a treadmill at 100 meters in length on a 12 percent grade at 8 to 10 mph, recover to a heart rate of 120 beats per minute, and then repeat immediately. We also had them run Tabata intervals (20 seconds of work and 10 seconds of rest in

The New World Order for Endurance Training

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each interval) on the treadmill at a 12 percent grade, at either 8 or 10 mph, depending on the athlete's ability. We tested the athlete's ability to perform eight rounds. Just being able to finish this fourminute workout was the goal. We were looking at the individuals' RQ (respiratory quotient) level, whether or not they were below 1.0 (the level at which you still burn fat but have not really set off any stress hormones), and if they did go above 1.0, how long it took to recover. Of the two athletes who did the Tabata run. only one crossed 1.0 briefly. Both actually dropped after the first couple of intervals from .98 and 1.01 to .96 and .98, respectively. This means they were still aerobic. The individual who did the hill repeats never crossed .96. So we were making the athlete work at all-out speeds/paces during the work cycle, with only 10 seconds of recovery, and they not only still had the ability to recover, but they were in an aerobic state, which means they were adapting to the protocol. So what we were doing not only worked, it worked well!

One of the athletes tested came to us roughly eighteen months ago, tired of having a bulky body type and wanting to run a marathon. He is the owner of a big company, and time was a limiting factor. Despite his initial belief that he could not run much faster (that psyche thing), we got him a lot faster. I knew from his professional career that he could overcome obstacles and achieve success; we just needed to convince him of it. After establishing an aerobic base we commenced interval, speed, and pace training. Nothing was periodized, as that is a complete farce as far as I'm concerned. The only time we backed off was in preparation for time trials, going harder (holding faster than average paces), and races. He did strength training from the beginning. His first marathon was completed in 4:25. Five months later he did another in 4:05, on an average of 5 hours and 17 minutes of training per week. So, he achieved a 20-minute drop in time with zero injuries (he did technique training as well), while never running more than 30 miles per week.

How does all this work?

Let's take a look at what is the most non-limiting factor: $VO_2/$ aerobic/metabolic training. We established this when he ran his first 10K. If you look at runners who make the transition from 10K to marathon, there is no difference in their VO_2 max levels. In other words, if they are already performing aerobically at a level where they complete a 10K, there is nothing more we can do in that realm that will improve their performance.

So where do we go from there? We push the "go" button and work on what limiting factors remain. Have you ever done a triathlon, or run a 10k (or more) and experienced not a lack of breath (cardiovascular endurance isn't the limiting factor), but a soreness in the legs or even other muscles? This is a lack of strength, stamina, and conditioning! Coach Glassman explains this in CrossFit's "third standard of fitness" when talking about the body's three metabolic pathways: "Favoring one or two [metabolic pathways] to the exclusion of the others and not recognizing the impact of excessive training in the oxidative pathway are arguably the two most common faults in fitness training." Favoring one metabolic pathway (the oxidative or aerobic one trained in endurance activity, for example) could not be more wrong in principle and methodology. Having athletes doing 100+ mile bike rides three to four weeks out from the Ironman World Championships, or doing any highly oxidative training for long periods of time, makes zero sense if the athlete has already developed their ability to use oxygen effectively. The solution is to strength train and make them work at faster than normal speeds (i.e., speed training and intervals), while retaining the ability to recover.

When I talk about strength training, here's what I mean. Most of the time, we squat every week, doing sets of ten at 80 percent of max, then adding five pounds for eight reps, then adding five pounds for six reps. This usually scares the newbie endurance athletes to death, but they get over it soon because we won't train them any other way. They learn that the strength training actually speeds up recovery and lets them get back to training much sooner than they thought.

Speaking of recovery, that's the next limiting factor we have to work on with distance athletes. Most of them are training exclusively in the oxidative pathway, and highly overdoing it at that. Even if you are just training this way, would it not behoove you to have the ability to actually recover from these workouts so that you could actually benefit from them? We make each of our athletes recover to a heart rate of 120 in less than two minutes when doing intervals or hill work. If they can't recover, then the workout is done. Walk away! When they run pace work, nothing is more than a half marathon so that they have the ability to go out and actually train the next day with purpose.

Energy is the primary factor in this type of training. We have to be able to look at the individual's energy and see how much they can handle, at what speeds they can handle it, and how much weight they can move. All the while still having the ability to get up the next day and do four to eight one-kilometer repeats at a 5:00 mile pace (if this is what they can handle), and then be able to do "Helen" the next day and at PR or near-PR levels. As I stated in the beginning, much of this is about the psyche and your ability to believe you can handle more (and different) than you ever have. Don't just go out and expect a change tomorrow. This is something that will take learning and patience like anything else. Now if you are convinced you have the ability—oh, the possibilities that await you!

Brian MacKenzie is an expert in strength training for endurance athletes as well as a coach for Multisports Orange County. He currently holds a double certification through the International Sports Sciences Association (ISSA, CFT, and SSC) and is a level-2 POSE-certified running coach. In addition to owning CrossFit Newport Beach/Genetic Potential, Brian founded and operates one of the only internship programs for professional trainers in California.

Training the Front Lever on Rings

Tyler Hass

The front lever is one of the basic strength holds on rings that is most attainable by a non-gymnast. It is an excellent exercise for developing a strong core and powerful pulling muscles. The front lever is also a good example of how gymnasts develop their impressive levels of strength without lifting weights (and it's very popular with rock climbers, as well). Instead of lifting progressively heavier weights to increase their strength, gymnasts work through progressions where they manipulate 1) leverage, 2) range of motion, or 3) momentum. The manipulation of leverage is a pretty well-known kind of progression; the other two are a bit less commonly known but still very useful.

The front lever involves holding your body in a rigid plank in a horizontal position under the rings, with straight arms and your body perfectly parallel to the ground. To "hit" the move in competition, gymnasts are required to hold it for a minimum of two seconds. Deductions are taken if there is any bend in the arms, if the body is not level to the ground, or if the line of the body is not straight. In gymnastics, all moves are assigned a grade from A to F in terms of difficulty. The muscle-up used to be an A-level skill, but it was recently demoted to zero value. The iron cross is a B-level skill. As difficult as it is, the front lever is only an A-level skill. Don't pass up the front lever because of its "easy" rating though. That just goes to show how insanely difficult gymnastics really is. The lever is very challenging, especially if you don't have the body type of a typical gymnast (i.e., small and light). Your reward will be greater upper-body and core strength, which will carry over to pull-ups, L-sits, and a whole variety of other, seemingly unrelated exercises.

The technique of the front lever is simple to describe but difficult to master. The main requirement is total body tension. It is especially important to keep your glutes and abs tight. This not only ensures a straight body line, but it also boosts your strength throughout your body. With a solid platform in place, your lats, shoulders, triceps and back muscles can do their job as the prime movers. A false grip is not necessary for a front lever and can actually make it more difficult for most people. You can just hold the rings normally with a firm grip. Keep constant pressure on the rings by trying to pull them downward toward your hips, which will activate your lats. It can also help to pull the rings together, which will activate the muscles of your chest and help lock your arms into your lats.

Training for the front lever is also considerably safer for your joints than learning some of the other high-level strength skills, such as the iron cross or maltese, because you are not supporting your weight on top of locked elbow joints. The front lever is not too hard on the body. But because training for the front lever means that you will be hanging upside down, I would recommend having something soft underneath you and to make sure your hands and the rings are not sweaty. And *don't let go when you're upside down*. I've never had to tell anyone that more than once!

The leverage progression

The front lever is difficult because you have to support your entire bodyweight at the shoulder joint alone. Your body provides lots of resistance in the form of a very long lever arm; the longer the lever, the greater the resistance. But the opposite is also true. If you shorten the lever, you can reduce the resistance. This is our first method of training for the front lever. By pulling in your legs until your knees touch your chest, into what is called a tucked position, you can significantly reduce the leverage you have to work against (photo 2).



22



Photo 4

Training the Front Lever on Rings

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The next step is to get into the tuck position below the rings and then extend one leg straight out (photo 3). The idea is to create an incremental increase in resistance by gradually extending the one foot farther out from your body. At first, your foot should be close to your hip. Once you can hold this position, try moving the foot our farther, and farther, until eventually you can hold it straight and in line with your body. Then begin gradually moving the other foot out in the same manner, moving the foot closer to the knee of your straight leg, then the calf, then the ankle (photo 4). This is another incremental increase in resistance.

Some coaches use the straddle front lever in the teaching progression instead of the one-leg extended version. Both provide a lower-leverage version of the move you can use to build strength and technique on your way to the full skill. I learned my progression from Brad Johnson, who is a very strong former gymnast. He can hold a one-armed front lever with a dumbbell in the other hand! I prefer this progression for non-gymnasts, because unless you can do the splits, the straddle front lever is more of a hindrance to achieving progress. If you have good flexibility, give the straddle lever a try. If not, you can make good progress without it.

The range-of-motion progression

Another way to train for the front lever is to work in a shorter range of motion. Start in an inverted hang (hanging upside down, with toes pointed toward the ceiling, straight arms, and a straight, rigid body position) and then lower yourself down toward the front lever position with a straight body and legs extended. Go down as far as you can under control and then pull back into an inverted hang. This is one rep. At first, you will probably be able to lower your body a few inches before you have to pull back up into the inverted position. Over time, you will develop the ability to get your body closer and closer to parallel with the floor.

Another method, first taught to me by Coach Glassman, is to work on lowering yourself all the way down as slowly as possible. This is called a negative and it is commonly used to learn the front lever and other, higher-level strength moves. To do it, get into an inverted hang and then, with straight arms, lower your straight, planked body as slowly as possible toward parallel with the ground (photo 5). At some point you will lack the strength and your body will fall back down into a hang. Get yourself back up into an inverted hang in whatever way you can and then perform another full negative. Keep doing reps until you are basically in a free fall on the way down. This exercise also provides a great anatomy lesson: the next day, you will know exactly where your lats are!

The momentum progression

The final method is to use momentum to get yourself into the full front lever position, hold it for as long as possible, and then swing your way back. I learned this exercise from world champion and four-time Olympian, Jordan Jovtchev when I asked if he had any cool front lever exercises. I was pretty amazed with what he came up with. This exercise is cutely named the ice cream maker. A lot of really hard exercises have cute names, because only gymnasts can do them, and most gymnasts (unfortunately) in this day and age are children.

To perform an ice cream maker, first do a pull-up and then, at the top of the pull-up, push your body straight back and you will swing into the front lever position. Hold it for as long as possible and then swing back to the top position of the pull-up. Swing again to the front lever position and hold. To get your swing going, you need to push your upper body away from the rings and simultaneously pull down on the rings (photo 6). It takes a while to get the rhythm of this exercise, but once you do, it is a very smooth movement.

This is a great exercise for doing high reps, especially once you get the rhythm. It can also be a fun substitute for pull-ups in a workout like "Helen" or "Fran."

Training for the front lever

There is no right or wrong way to train for the front lever. For the typical CrossFit athlete, it will be difficult to train the same way as a gymnast would. What I recommend is doing a small amount of work very frequently at the end of your warm-up. On CrossFit's strength days, you can do a bit more work on it after you've done the exercises from the workout of the day.



Photo 5

Training the Front Lever on Rings

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I also recommend working step by step through the three progressions I've outlined. First work with the leverage progression for a month or two. Holds of five to ten seconds are sufficient, although you can go longer earlier on. As soon as you are able to support yourself in a position, move up to the next hold in the progression. Some people recommend not moving up to the next step until you can hold the previous one for 30 to 60 seconds, but I think most people can progress faster than that. Three to five holds per workout is a good amount.

When you get to the point where you can hold the position with one leg extended and the other foot at your knee, then it's probably time to switch over to the momentum progression. I really like the negatives that Coach Glassman recommends. They are a very potent stimulus and you can make great progress with them. It's great for breaking through that final plateau.

Then, after training for two to three weeks on negatives, switch to the momentum progression. The ice cream maker is great because it lets you get the feel of a full front lever, even if it's only for half a second. The key is learning how to generate a high amount of body tension in the front lever position.

Once you are able to front levers, you can maintain the ability by subbing ice cream makers for pull-ups occasionally and by doing front lever holds on strength days and occasionally in your warmup.

Are you ready for the front lever?

I receive a lot of e-mails from people who have followed a front lever progression for several months and made almost no progress. My first question is always "How many pull-ups can you do?" My recommendation is to train the front lever as early as you want, but not to expect great progress until you can do about fifteen kipping pull-ups and one weighted dead hang pull-up with about 20 percent of your bodyweight. This is just basic upperbody strength. Expecting quick progress on advanced gymnastics moves without even a basic foundation of strength is pretty silly. The best correlate I have found for front lever performance is the weighted pull-up. I've seen several people get the front lever on the first try without ever training for it. The one thing they have had in common is training weighted pull-ups. Most of them could do a few pull-ups with an extra 80 to 90 pounds (roughly 50 to 60 percent of bodyweight). If your progress stalls on the front lever, give it a rest and train weighted pull-ups for a while.

I don't want to discourage anyone from getting started with the front lever, though. It's a safe move to train, it's really fun, and it gives you a nice taste of what gymnasts do to get strong.



Beyond the Garage Gym Starting or Expanding a CrossFit Affiliate

Pat Sherwood

It happens to every affiliate after a while: they run out of square footage. It's actually quite a good problem. It means your client base is growing. However, trying to find a suitable new box to call home does present its own set of challenges. I can speak from experience, having recently gone through this very process with CrossFit Virginia Beach (CFVB).

CrossFit Virginia Beach was started in May of 2007 in my two-car garage. The endeavor was more casual than anything else. My girlfriend, Thomi, and I had attended several seminars over the course of the past year. At each seminar we would receive the usual battery of questions relating to starting an affiliate in Virginia Beach. One trainer from CrossFit headquarters whom we love to death, Dave Castro, is unmatched in the arena of peer pressure. He would relentlessly hound us each time. "When are you going to affiliate? What the hell is taking so long out there in VB? Open a gym already, would ya?" Hindsight being 20/20, we owe him a debt of gratitude. He stayed on us until one day we said, "Why not?"

So CrossFit Virginia Beach was under way. I got busy writing an essay for our affiliation application about why we wanted to join the family of affiliates. Thomi, being 500 times more computer savvy than I, handled getting the website up and running. I went to my lawyer and had a Limited Liability Company created. It can cost anywhere from \$500 to \$1000 (or more) depending on your lawyer and how complicated you want to get. We then went down to the City of Virginia Beach offices to check on zoning ordinances and get a business license. The zoning department will look up the whatever address you intend to do business from and tell you how many people can occupy that space, based on the location and the type of business of CFVB was a personal residence, we could legally have no more than one client in our place at a time. We then took the slip of paper they gave us with the permitted

zoning information on it to the business license office. We got our license and paid the necessary fee. It cost around \$50. On our business license it has the name of our LLC, then it says "doing business as CrossFit Virginia Beach." We contacted an insurance company and took out a modest policy. The necessary fees were paid to affiliate, and then one day, boom, "CrossFit Virginia Beach" was listed on the main page under affiliates. We were ecstatic. We thought we had finally arrived! Little did we know that we were just at the base of the mountain, nowhere near the peak.

Our two-car garage, now officially CFVB, was already packed with enough gear for us and our friends to work out. We had three Olympic bars, a 15-pound training bar, a complete set of bumper plates, a pull-up bar, a squat cage, a Concept 2 rower, a glute-ham developer, rings (set at dip height, as the ceiling was too low for the likes of muscle-ups), 35- and 55-pound kettlebells, 20- and 10-pound Dynamax medicine balls, a 20-pound slam ball, some dumbbells, and a set of parallettes.

We scoured websites from other affiliates across the country to help establish what times we would offer classes and what our fees should be. The CrossFit community is special with regard to how we share information. I randomly called other affiliates and asked what they were charging clients, paying for rent, equipment, expenses, how much they paid other trainers, what their clients thought of everything, what was going well, what went wrong, which classes were popular, etc., etc., etc. There was nothing I did not ask someone. Without exception, every person I called was friendly and more than happy to spill their guts to me on the phone. Try doing that in any other business.



This photo shows our entire garage gym, operating at essentially max capacity.

So we set up our class schedule and fees and posted them on our site for the world to see. After speaking to many affiliates we decided to make it mandatory for our clients to attend three



The new CFVB box-more space, high ceilings, all the tools we need.

Beyond the Garage Gym

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personal training sessions before joining classes. Some affiliates do this sort of thing and some don't. During these sessions we cover nine fundamental movements in CrossFit (air squat, front squat, overhead squat, deadlift, sumo deadlift high pull, clean, shoulder press, push press, push jerk). We also go over using the gluteham developer, kettlebell swings, thrusters, use of the AbMat, and maybe a couple other odds and ends. These sessions have been crucial! I can't imagine having a client join a class without receiving this training first. We have found it indispensable.

Our advertising budget remained true to CrossFit principles. It was zero dollars. We had our website; we put links to it on our MySpace pages; we put up a personal training post on Craigslist. com. That was it. We waited. Then one day, less than one week after affiliating, we got an e-mail from some people interested in what we were offering. After a few e-mails and a phone call, they scheduled their first fundamentals class. Our first clients! We were excited and nervous. How would they be? What would they think of working out in our garage? Would they really pay us? How the heck should we run the first fundamentals session?

So, one evening these two people pulled into our driveway. Their names were Penny and Chris. All of us gathered in our kitchen and we just talked for probably thirty minutes. We spoke about CrossFit in general, why it works, how long we have been doing it, what they could expect, etc. In retrospect, I realize now that we were in the kitchen for so long before we started the session because we felt like we had to validate ourselves. I still thought of my garage as just my garage, not as CrossFit Virginia Beach. It can be tough to make that distinction initially. However, we finally got out into the "gym" and knocked out the training. It went great. Everyone learned a lot and we laughed a bunch. Before they left they scheduled their other two fundamentals sessions. The second one took place with no problems. Before the third, Thomi and I started to worry; were certain that they would leave and never return. I would have bet money on it. We still could not believe that someone was going to pay to work out in our garage, especially after the mild beatings they had received from us for workouts. Much to our surprise and delight, they said they wanted to sign up for the three-classes-a-week package. Our first clients!

At this time both Thomi and I had full-time jobs. The nice thing about opening up in our garage was that there was almost no risk involved. If the business grew, then great. If it failed, then no big deal, we were only in our garage. We had two classes in the mornings and two in the evenings on our schedule. Sometimes both of us could be there; sometimes it was just one of us. We went several weeks before getting another client, but eventually we did. Then we got a fourth. Now we were in a situation.

In our garage, two people could train comfortably, but three was tight. Four took serious planning. So if all four of our clients wanted to work out at the same class time, we were in a bad spot. Also, if we gained one more client, we might have to tell someone that they could not attend a class due to limited space. Obviously we did not want to tell a client they could not come to a class. We needed more room.

Thomi and I originally thought we would outgrow our garage in six months to a year. One month after affiliating, though, we saw the writing on the wall and began the search for a box. I didn't think it would be any trouble at all to find a suitable space to move CFVB into. I am a real estate developer by trade and have to deal with this kind of stuff all the time. Let's just say I underestimated how challenging it would be.

We wanted 1,500 to 4,000 square feet for our gym. I did not want to go too small and then have to move again in six months. We wanted high ceilings, at least fifteen feet, for rope climbs, rings, and wall ball. We wanted low rent and low maintenance. We also wanted a big roll-up door. The roll up door is not necessary; it's just damn cool for some reason.

We had to take a leap of faith and spend some money in order to grow our business, be successful, and deliver to our clients the training environment we felt they deserved.

All these requirements are best found in light industrial buildings such as warehouses. As a general rule, commercial spaces that are retail-oriented are much more expensive to lease or purchase than those that are suitable for industrial applications. We never even really considered moving into a retail space, as the cost would have been prohibitive. Also, most retail spaces are not going to have the high ceilings and bay doors we wanted. The most desirable floor plan for a CrossFit gym is lots of open floor space—also found most commonly in warehouses.

So we started our search. We spent about 100 hours on commercial websites such as loopnet.com and driving around in our car visually inspecting locations. Nothing is ever perfect, and this held true for our search for a warehouse. Most warehouses are not designed to be occupied by a business where people show up for the services you are offering. That is a nice way of saying that the parking usually sucks in industrial areas. Zoning regulations are different in each city, but it is not uncommon for a warehouse to have one parking space for every 1000 square feet of floor space. You can do the math, but it's not good. There are warehouses out there with good parking situations, but you need to hunt for them.

So we visited warehouse after warehouse. Some had great square footage but low ceilings; some had great square footage but no parking; some had good parking and square footage but were in a ghetto. Nothing is ever perfect. Patience is a virtue. One warehouse in particular kept popping back into our heads. It was

Beyond the Garage Gym

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huge, with 4,000 square feet of open floor space, two handicapaccessible bathrooms, and 500 to 700 square feet of office space. It was also expensive, almost \$600,000. My initial intention was to buy a space, and then lease it to CFVB. The way it would work is that we would create an LLC to purchase the building. Let's say the address of the warehouse was #I Happy Street. We would name the LLC after the address, so it would have been Happy Street LLC. Once the building was purchased, Happy Street LLC would lease the space to the LLC that is doing business as CrossFit Virginia Beach. To make a long story short, we went down that road for about a month and then the financing fell through.

If you have the resources to make that scenario happen, then I recommend you go for it. You are going to pay rent anyway, so why not pay it to yourself? Also, while you are making money with the gym, you are also paying down the mortgage on a piece of real estate. One day you can own the building free and clear, or lease it to someone else, use the equity to finance another purchase, or sell it for a profit. It's nice to have options, not to mention being your own landlord. There are pros and cons to trying to purchase instead of lease. We'll dive into those so that they become a bit clearer.

If you buy a commercial piece of property the lender will most likely want to see a 20 percent down payment. So let's say you are going to buy a 2500-square-foot warehouse at \$100 per square foot. The cost of the warehouse is \$250,000, and a 20 percent down payment is \$50,000. I am willing to make the assumption that most people opening a CF gym don't have or want to put \$50,000 down. Now, I'm using common Virginia Beach prices when I said \$100 per square foot. Your market may be very different. You also need to bear in mind that price is for what is called a "cold, dark shell," meaning it is just a concrete slab floor, walls, a ceiling, and maybe one small bathroom. That's it. So anything you want to have in your building will be extra-lighting, an HVAC system, additional bathrooms, showers, interior walls, etc., etc. By the way, an HVAC system can easily cost \$7,000. Things add up quick! Now you still need to outfit the gym with equipment and flooring.

The numbers I used in the previous paragraph are rough, and they can fluctuate, but they are generally pretty solid. You may find a lender that will give an 85 percent loan to value on commercial property, but it is not the norm. Commercial properties are income-producing by nature. So the value of a property is directly related to the money it makes each month. The money it makes is from the tenant that occupies the space. If your CrossFit gym is going to be the tenant, then the lender will most likely not smile at this news. Chances are that your CrossFit gym is new and growing, so it will not have two or three years of bank statements, tax returns, and earnings to show the bank. The bank will probably not consider the gym a strong tenant at all. This is another factor that will make getting a loan challenging—not impossible, but likely pretty hard.

So, with all that in mind, we decided to lease. Our search finally paid off after about a month of frustration. We found 2500 square feet with 24-foot ceilings, decent parking, and good accessibility to the highway. It had one handicapped-accessible bathroom and a small 10- by 12-foot heated and cooled office. The main space had lights, but no HVAC system. We entered into a two-year lease, put down two months rent as a deposit, and the space was ours! The rent on warehouse space can be anywhere from \$5 to \$11 per square foot or more, depending on the market, location, and a multitude of other factors. For the purposes of this example, let's just say a typical lease rate would fall in the middle, call it \$8.50 per square foot. That is \$8.50 per square foot for the year, or an annual rent of \$21,250, which comes out to \$1,770.83 per month. So if you had to put down two months rent as a deposit, that would be \$3,541.66 out of your pocket. Not bad compared to having to put down \$50,000 to try to purchase the same space. We did not have enough clients to pay our rent when we signed the lease. It was a catch-22. We felt that not having a space limited our growth. So we had to take a leap of faith and spend some money in order to grow our business, be successful, and deliver to our clients the training environment we felt they deserved. It was the best move we could have made. Whether it is fair or not, sometimes perception is reality. We can turn someone into a world-class athlete in our garage just as well as in our new box. But most people take your business more seriously when you are in a legitimate commercial space. That's just the nature of the world.

Now we had to fill our space. Our goal was to outfit the gym for less than \$20,000. We easily accomplished this task. Thomi is a notorious bargain shopper. She scoured the Internet for the best deals on brand-name equipment. She spoke to companies directly and negotiated prices. The lesson here is *Everything is negotiable*. We designed our own pull-up bar structure based on what we had seen that worked and did not work. We found a welder through Craigslist. He made us a prototype to see if we liked his work, negotiated a price, and got our bars. My advice is to put a lot of thought and time into your pull-up station. I think it is kind of the focal point of a CrossFit gym. CrossFit loves pull ups! We also use the bars for ring dips, muscle-ups, knees to elbows, assisted handstand push-ups, jumping pull-ups, ring push-ups, and many other activities. Okay, I'm getting off topic. I'll save my ideas on outfitting a gym for another article.

If you operate a CrossFit gym and need more space, don't be afraid to take that first step. It's almost always exactly as Coach Glassman says: "You can't afford *not* to expand."

Pat Sherwood is a level-3 CrossFit trainer, co-owner of CrossFit Virginia Beach, and co-owner of Neptune < Development, a real estate development company. His most dreaded workouts are "Fran," "Michael," and "Kelly."

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Back Squat Geometry

Part 1 (Video Article)

Mark Rippetoe



| Online Video Article | Video Article | (12:36) 侯 |
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| http://media.crossfit.com/cf-video/CrossFit_ | JournalRipSquatGeometry | l.mov |

What constitutes good form for barbell lifts is not a matter of opinion or up for debate, argues lifting coach Mark Rippetoe. Rather, proper mechanics are about understanding the relevant bits of human skeletal an atomy and the principles of force and physics. These are what determine the most efficient, strongest, and mechanically sound body positions for all the lifts and these are what we, as lifters and trainers, need to learn to recognize and analyze. In this video article, he explains the skeletal geometry that is the basis for the back squat in particular.

The salient parts for geometric analysis of the squat are the shin, thigh, and back and the three angles formed by them: the knee angle (formed by the tibia and the femur), hip angle (rigid back and the femur), and back angle (the back and the floor). The relationships among these—with the added point that the bar will always be directly over the mid-foot if the system is to be in balance determine the correct position of the bar on the back and of the elements of the body under that bar. Once the pieces are in place, then the force of the bar on the spine (and other joints) and the force generated by the body are applied in appropriate planes and the lifter is poised to be efficient and correct.

Mark Rippetoe is the proprietor of the Wichita Falls Athletic Club/CrossFit Wichita Falls and writes on various aspects of strength training and barbell exercise. He has 28 years experience in the fitness industry and ten years as a competitive powerlifter. He has published articles in the Strength and Conditioning Journal, is a regular contributor to the CrossFit Journal, and is the author, with Lon Kilgore, of the books Practical Programming for Strength Training, and the justreleased second edition of Starting Strength, subtitled Basic Barbell Training.

Science and the Rest Day Discussions

An Interview (Video Article)

Jeff Glassman





Online Video Article

Video Article (15:09)

http://media.crossfit.com/cf-video/CrossFit_JournalJGScienceRestDay.wmv http://media.crossfit.com/cf-video/CrossFit_JournalJGScienceRestDay.mov

Retired engineer, scientist, and frequent CrossFit.com rest-day discussion participant Jeff Glassman talks with Tony Budding about argument, logic, science, and his reasons for engaging in the rest-day discussions. He lays out the following hierarchy of terms for describing and evaluating the validity of statements and arguments, in order of increasing certainty and validity:

- I. A conjecture is essentially a wild guess: "I think x might be true."
- 2. A *hypothesis* adds to a conjecture the requirements that the statement actually fits the known data and makes a prediction about an outcome or outcomes.
- 3. A *theory* is a hypothesis for which some significant predicted outcome has been established empirically. A hypothesis becomes a theory when one of its significant predictions has been tested and shown to be true.
- 4. A *law* is a theory for which all the possible predictions and all the ramifications have been tested satisfactorily, to universal acceptance.

One of the foundations of the scientific method (and other fields based in logic, such as mathematics and law) is precision in language. This is essential; ambiguity and unclear terms muddy the discussion and make rational process impossible. What motivates Jeff is the potential for the quality of discussion that can be created and the influence and reach that sane, logical argument can have—whether you're making (or evaluating) assertions about politics, or fitness, or any other topic.



Jeff Glassman has a B.S., M.S., and Ph.D. from the UCLA Engineering Department of Systems Science, specializing in electronics, applied mathematics, applied physics, and communication and information theory. For more than half of his three decades at Hughes Aircraft Company, he was Division Chief Scientist for Missile Development and Microelectronics Systems Divisions. Since retiring from Hughes, he has consulted in various high-tech fields. He is the author of the book *Evolution in Science: California Dreaming to American Awakening* (1992).

He has also worked as a bush pilot for Alaska Helicopters and was a Naval Aviator in helicopters and single- and multi-engine aircraft, instructor pilot, and maintenance test pilot, making LCDR in the reserves before resigning with a total of 12 years.

Currently, he spends a lot of time researching and writing for his blog, which contains original material dismantling so-called global warming on the highest scientific standards.

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.

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 VO_2 max. In the original study the intervals were performed at a quantifiable 170 percent of 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 VO_2 max improvement than the control group that did 60-minute sessions of moderate-intensity exercise. Moreover, as Greg Glassman point 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

I.Total body

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

-- 1:00 rest--

2. Upper body

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

-- 1:00 rest--

3. Lower body

- Squats, with dumbbells (from *CFJ* issue 49):
 - o Low, at the sides
 - o Racked, at the shoulders
 - o Overhead (one arm or two)

• Lunges, with dumbbell(s) (from *CFJ* issue 49):

- o Low, at the sides
- o Racked, at the shoulders
- o Overhead (one arm or two)
- o 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

Michael Rutherford (a.k.a. Coach Rut, a.k.a "the Dumbbell Coach") 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. 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. You can learn more dumbbell exercises from his three-volume DVD set *Dumbbell Moves*.



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