

Russian Kettlebell Training: Looking Backwards into the Future of Strength and Power Training

By Mike Smith, M.S.

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Kettlebells are a great way to train for strength, cardiovascular fitness and flexibility with one apparatus. The kettlebell resembles a miniature cannon ball with handles and can range in weights from 10 to over 100 pounds. You may have only heard the term in passing but the kettlebell has recently made a comeback in popularity in the fitness world. Although in the not too distant past these things were only prevalent in Russian culture. The first mention of the kettlebell in recorded history is from a Russian dictionary published in 1704. The “girya” as it was called, was lifted by men named “gireviks”. They took pride in being the strongest men in the village and competed amongst each other for crowds of onlookers.

“One of the most effective means of strength development representing a new era of human strength potential.”

-Solider be Strong! - Soviet Armed Forces Strength Training Manual

Eventually, the kettlebell was adopted by Soviet special forces and recently, one of those trainers named Pavel Tsatsouline has brought this technique to America, which ironically, is now almost forgotten in Russian culture. Pavel eventually began teaching American special forces in this unique style of training and has published many videos and books on the subject for the extreme power athlete as well as the everyday fitness enthusiast. The native born Russian has a striking charisma in the way he addresses the audience as “comrade” and then proceeds to demonstrate perfect form with efficiency and focus.

Kettlebell training involves much more than just throwing a big ball of iron around in the air. Power training, or how fast one can move the weight over a defined distance, is definitely required in a good number of kettlebell exercises but so is balance, mental toughness, strength endurance, focus and flexibility. For example, some variations require the switching of left to right hands with each repetition while the kettlebell is momentarily suspended in mid-air. This type of controlled ballistic training is obviously very dangerous and with poor form the low back can be put in jeopardy. For this reason, it is not recommended that beginning or even experienced weightlifters go and attempt any type of ballistic power training without proper instruction and initial supervision. However, when implemented correctly kettlebell training is some of the most efficient training which yields a focused mind, favorable changes to body composition and a powerful, functional body.

The core of kettlebell training is the kettlebell swing. In this exercise the weight is grasped with both hands between the legs and from a starting position resembling that of a squat, the hips are

thrust forward and the power is transferred through the upper body to swing the kettlebell up and out to a point which the arms are parallel with the floor. The weight is then allowed to drift down with gravity as the hips are reset and drop back into a half squat, the torso is vertical with a neutral spine and “braced” (bracing refers to activating the core muscles in an isometric contraction) and the kettlebell drifts as far back under the hips as flexibility will allow. This process is then rhythmically repeated for as few as 20 repetitions or as long as 5 minutes, depending on the specific goal of training.



Much of human movement requires power to be transferred through the hips and when kettlebell training is done correctly, this can safely augment power production and conservation at this key joint that is left to atrophy in those of us seated at a desk all day. I’ve also used kettlebell training to aid in learning Olympic style weightlifting for this reason: power originates from is transferred through the hips and as chair dwellers, most of us have forgotten how to use this powerful set of muscles.

A quick Google of kettlebells yields many results, but as is the case with many advanced strength training techniques, the scientific community has been slow to get on board studying this unique form of exercise. Since the kettlebell swing generally involves what could be referred to as a “dynamic eccentric” phase of the lift (rather than the controlled eccentric phase of the lift most forms of weigh training use) the effects on our human physiology could be quite different from that of other forms of exercise, much like riding a bike provides much different metabolic adaptation than does bench presses. To date, I am only aware of two scientific papers on the subject, one of which is published and the other in review. The article published in the Journal of Strength and Conditioning Research by Koch et Al. tells us that kettlebell swings use around 65% of our ability to use oxygen for metabolism (Vo2) and up to almost 90% of maximal heart rate, which reflects an anaerobic or strength metabolism contribution (1). This study also showed that kettlebell training can burn 50-75% more fuel than traditional circuit training (1). The unpublished article has found that kettlebell training over time might provide adaptations in blood vessels that allow for greater blood pressures during work than traditional power training and that rate of perceived exertion is statistically the same as traditional power training (2).

While gireviks still exist today in Russia, you won’t need to go that far to learn this unique form of exercise. A quick YouTube search can give you an idea of what kettlebells look like in action and how amusing Pavel Tsatsouline can be demonstrating technique. There are also many strength coaches who teach this type of training in gyms and parks around the country. These techniques can serve as a great addition to your fitness regimen and provide tons of variety and excitement to keep you motivated towards your fitness goals.

1. Farrar RE, Mayhew JL, Koch AJ. Oxygen Cost of Kettlebell Swings (2010) J Strength Cond Res. 2010 Apr;24(4):1034-6.
2. Smith MM, Fahey TD. Effects of Kettlebell Training on Autonomic Function, Blood Pressure Responses and Rate of Perceived Exertion. (In preparation)

Up Close and Personal with Rob Reed

By Nate Saunders

Rob and his wife Katie have both been members of FSFP for more than a year. Rob studied Integrated Social Studies as an undergraduate here at OSU and is now working toward a masters in Public Administration. In addition to his graduate studies, he works in Undergraduate Admissions. Even with the extensive time commitment to school and work, he finds the time to exercise at 6:30am every MWF. Rob grew up playing soccer in Piqua, OH and still enjoys being pushed to his athletic potential by his “free” personal trainers in FSFP. His workouts generally consist of treadmill running at various intensities, followed by a very diverse strength training routine. In



his free time Rob likes to display his vocal talents at Karaoke bars, play video games, and watch his favorite movie, “Conan the Barbarian,” with his two cats, Mocha and Emma.



IMPACT study

By Alexander Lucas, M.S.

The prevalence of knee osteoarthritis is on the rise. This is an extremely painful and a disabling chronic condition. In what seems like a counter intuitive sense, many of the crippling effects of arthritis are due to a lack of physical activity. It is through structured exercise as well as simple daily activities such as walking that the muscles of the legs are strengthened. It is muscle strength which stabilizes the knee joint, and reduces the direct impact the bones must sustain. Importantly, exercise is additionally beneficial in helping control body weight. Increased body weight can directly affect the load the knee joint must support, and when we carry too much weight an already compromised joint is worsened. This pain and lack of confidence in movement only serves to further reduce the likelihood of a person with arthritis becoming physically active. Previous research has confirmed the important effects of exercise on the management of knee arthritis, however it remains a significant challenge to both educate and motivate affected persons to engage in exercise programs.

The IMPACT study, which stands for Improving the Maintenance of Physical Activity Trial, is a research study sponsored by the National Institutes of Health (NIH). Whilst the majority of usual care includes exercise as part of the long term treatment, often patients who have started a prescribed exercise program do not maintain the exercise regime for long. The reasons for this inability to continue treatment ranges from lack of time to low motivation, which are barriers (perceived or actual) to exercise. The primary aim of the IMPACT study is to examine whether by teaching participants behavioral techniques, the success of a typical exercise program for arthritis may be enhanced. In other words, do people who understand what difficulties they may encounter during their own treatment, cope better with those difficulties and therefore stay active, ultimately improving their arthritis?

The current IMPACT trial is a pilot study which will take valuable information learned at the Ohio State University and attempt to apply it to a larger scale trial and ultimately ensure that it becomes part of usual practice for treatment of this condition.

Dr. B. Focht, jointly of the School of Physical Activity and Educational Services (PAES) and the Cancer Institute, is the primary investigator on the IMPACT trial. Dr. Focht’s research interests involve exercise across the lifespan, behavioral and health correlates of physical activity behavior as well as Quality of Life in aging. A number of graduate and undergraduate students within the school of PAES are also involved with the trial across a number of different levels. Should you have any questions and/or are interested in becoming part of this research please ask for a brochure or information from Kay. Please pass this information on to any friends or family should you think you can help them cope with their arthritis.

“...do people who understand what difficulties they may encounter during their own treatment, cope better with those difficulties and therefore stay active?...”



Featured Exercises using the BOSU

By Alisa Blazek, M.A.

Use of the BOSU can help improve core stability and balance as well as challenge the proprioceptors. These exercises might look easy, but they are tough! Try to incorporate these exercises after your regular workout each time you use the gym.

Place both hands on the floor and center one knee on the BOSU with bent leg (Fig. 1). Extend opposite leg behind, keeping the foot off of the floor. Extend arm that is opposite the extended leg. Flex elbow of extended arm and knee of extended leg at the same time, moving arm and leg towards the center of the body. Then, return to extended arm and leg position. Perform 8 to 12 repetitions on each side.

Figure 1. Quadruped Alternating Flexion/Extension



<http://www.bosu.com/scripts/cgiip.exe/WService=BOSU/story.html?article=4680>

Stand or kneel on the BOSU (Fig. 2) with arms extended to the sides. Turn your head to face your right hand, and stare at your fingertips. Slowly bring your right hand around to the front of your body, keeping your arm extended. Turn your head along with your hand, and keep your eyes locked on your fingers the entire time. Return your hand back to the side, keeping your head turning and eyes locked on your fingers. Repeat 8-12 times on each side.

Figure 2. Proprioceptor Challenge



<http://www.karenvoight.com/kvbosu.htm>

Tips for Winter Exercising

By Cory Scheadler, M.A.

Winter is just around the corner. Colder temperatures and snow and ice will be barriers you'll have to overcome in order to pursue your outdoor physical activities. Exercising outdoors in the winter can be as pleasant as summer, so long as you keep a few important tips in mind.

- 1. Plan your route wisely.** With the colder temperatures, it can be dangerous to be stuck outside for prolonged amounts of time. You do not want to be 15 minutes from home and experience exhaustion or injury. This could mean a long trip and a chance for hypothermia or frostbite. So plan a route that includes public places that you could stop to warm up if necessary. Bringing a cell phone along is also a good idea if exercising alone and under conditions you may not be used to.
Also, know the direction that the wind is blowing that day and choose your route accordingly. Exercise into the wind for the first half of your workout and with the wind the second half. This ensures that you do not get too hot the first half and sweat, then have to deal with cold wind when you're wet.
- 2. Stay dry.** Sweating a little is a sign your body has warmed up and the muscles are probably at their best for exercise. But just like too much sweating can be bad in the summer (dehydration), it is also bad in the winter. Wearing too heavy of clothing, or clothing that doesn't breath well, can result in too much sweating. This puts you at risk for cooling down too quickly when the cold air hits you. You could even become hypothermic if the wind chill is very low and you have a lot of moisture close to your skin. Try using a technical shirt that is designed to wick the sweat from your skin as a base layer.
- 3. Dress for 20° warmer than it is.** One way to ensure you don't get too hot is to add 20° to the current temperature and dress to that new temperature. Because exercise produces metabolic heat, this correction will ensure you are wearing enough clothing to stay warm but not too much that you sweat excessively. You may feel as though you are not wearing enough once you step outside but after 10-15 minutes you will be pleased that you didn't wear more.
- 4. Wear layers.** At first it is hard to figure out just how much clothing is enough. The best thing to do is always wear layers. This accomplishes two things: you will be warm at the beginning of exercise before your body is producing more heat and as you warm up you can shed the outer layers so that you aren't sweating excessively.
- 5. Watch your step.** Winter means ice and sometimes it sneaks up on us at the worst possible moment. Slipping and falling can lead to injury causing you to cease your physical activity, decrease your heat production and risk hypothermia. Not a good combination. Luckily, there are special accessories available (like YakTrax) for you to slip over your shoes that increase traction. From self-experience, these things work wonders for winter running.
You should also be aware of water puddles. This seems common sense but I felt it was worth stating. The extremities are the first place blood stops flowing to when it is cold. If your toes are wet and there is no blood flow then the chance of frostbite is very real. The last thing you want to do is get your feet wet.
- 6. Wear reflective gear.** The amount of daylight has dropped dramatically and you may find yourself exercising in the dark because it is the only time you can. Be safe and wear clothing that is reflective. There are cheap sashes and jackets that you can buy that will increase your visibility to cars and other exercisers.
- 7. Stay hydrated.** Believe it or not, you can lose a fair amount of body water during the winter. The air tends to be drier in the winter, which causes a greater respiratory water loss. Just because you might not be sweating doesn't mean you don't need to rehydrate properly.

Other advice: Smartwool is a brand of wool sock designed for exercising in. They will keep your toes nice and warm. Mittens are much warmer than gloves and are a necessity when it gets well below freezing. Stop by a running specialty shop for more advice on exercise specific gear for winter, like wind and water proof shoes, jackets, pants, etc. Begin to experiment and learn how much and what types of clothing to wear now while the temperatures are still mild.

Be safe and we'll see you out there!

Ask the Expert

Question:

Over the last number of weeks I have felt my IT band acting up and some days it is very painful and prohibits me from running even one step. Do you have any suggestions for other aerobic activities I could do to help me work through this and let me not lose all of my running fitness?

Answer:

Steven T Devor, Ph.D., Director

There is no question that if you train long enough as a runner, you will almost certainly develop some sort of overuse injury in your lower body. Whether it is an IT band injury as you describe or plantar fasciitis, Achilles problems, or maybe piriformis syndrome, our legs take a lot of pounding as runners and we are not always the best at learning to listen to our bodies when we get little warning signs that an injury may be coming. When an overuse injury does occur it can be quite painful, debilitating, and frustrating. One of the most frustrating parts of being injured is realizing the fitness you worked so hard to obtain may decrease or completely vanish if you do not do something to maintain your aerobic base. Indeed, the fear of losing fitness can be such a motivator to train again that runners are often unwilling to take time off or are tempted into resuming training too soon. When this happens, almost always the result is an injury that lasts much longer than it should or gets even worse.

Perhaps the best way to steer clear of overuse injuries is to build some cross training into your weekly routine, *every* week. Not just when you feel an injury coming on. If an injury still does occur you will already have a few "go to" activities you are proficient at, and will be able to maintain much, if not all, of your aerobic fitness.

Clearly, there is no better option than running, when it comes to building and maintaining running fitness. But there are some great alternatives that come relatively close, and the best running alternatives are those that are most similar to the motion of running itself. Aerobic activities like swimming and rowing will help to maintain your aerobic fitness, but they are so unlike running in their movements as they are upper body dominant sports, not lower body dominant like running. Below are some of my favorite choices for training through an injury:

Pool Running

Pool running is the most common alternative to normal running, and many professional runners practice pool running exclusively when injured. There are two types of pool running: deep water running, where the feet do not make contact with the bottom of the pool (thus no impact), and shallow water running (usually waist high), where the feet do make contact with the bottom of the pool. When deep water pool running an individual will frequently wear a floatation vest that allows them to stay upright in the water in a more natural running position. I believe shallow-water running is preferable because it enables the runner to better maintain the adaptations to the repetitive impact of normal running (but significantly lower impact than being outside running or using a treadmill), thus reducing the risk that new injuries occur after the runner returns to normal outdoor running. However, because shallow pool running is a low impact (versus a non impact) activity, it may not be possible to be pain free for all types of overuse injuries, particularly plantar fasciitis and Achilles problems.

Steep Uphill Walking

A number of research articles published in the last decade have clearly demonstrated that the brain uses precisely the same motor pattern to run or walk briskly on steep gradients. So the way to think about this is that when you are walking on a very steep incline (at least 12%) from a motor nerve and muscle firing pattern perspective running is the same as walking, and walking the same as running. Therefore, walking on a steep incline is a highly specific way to maintain running fitness. However, the impact force is greatly reduced compared with running, so steep uphill walking is possible with most injuries.

For many runners the idea of merely walking on a treadmill is equivalent to a day off, and in no way do they think their fitness could be maintained. However, set the treadmill to 4.0 miles per hour, and put the grade on at least 12%, and check your heart rate monitor. You will little problem being in a heart rate zone that is necessary for fitness adaptations, and your impact will be very low.

The only limitation of steep uphill running is that like shallow water pool running, while it is a low impact activity, it is not a non-impact activity. Thus it may not be done pain free with all injuries. For example, I would not advise someone with Achilles problems to engage in steep uphill walking.

Elliptical Training

The idea behind the many and varied elliptical trainers that now populate all fitness centers is that their motion mimics that of running with almost no impact whatsoever. Therefore you are able to maintain running fitness and the running motion effectively.

Cycling

Cycling may seem less running specific than the other running alternatives I have mentioned but there is no question it offers an alternative that is completely no impact and provides a break from the pounding of daily running. A number of high profile professional runners have incorporated cycling successfully into their training programs when injured, or simply as an effective way to cross train once per week. In 2004, while training for the New York City marathon, Meb Keflezighi relied a great deal on bike training to build and maintain fitness because of injury troubles. In that race he still finished second.

Best wishes for your continued training success.

Childhood Obesity

By Brooke Starkoff, MEd

I'm sure by now you have heard that rate of obesity is on the rise in the United States. With 29% of the population being obese, Ohio was ranked the 13th most obese state in the nation in the annual report *F as in Fat: How Obesity Policies are Failing in America*, issued by Trust for America's Health. Even more alarming, is the recent trend in rising levels of childhood obesity. Once again, Ohio was ranked 12th on the same list for childhood obesity rates, with 18.5% of children 10-17 years old being classified as obese.

Now, the issue facing parents, teachers, exercise professionals, and concerned citizens is how to stop this growing problem. A great place to start would be with a few simple tips that follow the numbers 10-5-2-1-0.

10 hours of sleep every night:

Depending upon their age, children should be getting in 9-11 hours of sleep every night, including weekends! Sleep greatly affects behaviors throughout the day including the types of foods we choose to eat and how much of it we consume. With proper sleep, children can make healthier choices when it comes to nutrition and physical activity.

5 servings of fruits and vegetables every day:

Incorporate a variety of fruits and vegetables into your child's daily routine. Pack a colorful assortment of carrots, peppers, apples, and any other fruit or veggie they love with their lunch. Choose a bowl of fresh strawberries or grapes as a dessert to hit your sweet tooth instead of cakes or cookies.



2 hours of screen time or less per day:

Limit TV, video games, and computer time to 2 hours per day. The more time spent watching movies and playing on the computer is less time spent moving! Eliminate TV from the bedroom and try to replace TV time with moving time.

1 hour of physical activity or more per day:

Children require AT LEAST 60 minutes of physical activity 7 days per week. Pick various activities that they enjoy doing and do them as a family. Go for walks, play tag, go skiing...just MOVE! If your child doesn't enjoy traditional sports try martial arts, rock climbing, or hiking. As long as they can accumulate at least 60 minutes of physical activity daily, they are on the right track!

0 sugary beverages:

Children these days are inundated with beverages that claim to make them faster, stronger, and healthier. Besides low-fat milk and water, none of those other beverages are necessary in a child's diet. Sports drinks and energy drinks are mainly sugar and offer almost zero nutritional benefits. Even juice should be limited in most cases.

It's important to remember that you are the biggest role model in your child's life. Set a good example by making healthy choices and being active every day. Now GO PLAY!