

The New Science of Training Female Athletes



Coach Paul Gagné working with Chloé Dufour-Lapointe. Chloé is only 18 and placed fifth at the Vancouver Olympics in freestyle mogul skiing.

The important gender differences we must understand

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Perhaps stemming from the belief that there should not be any limitations in what women are able to do, many coaches believe that there are no differences between training women and training men. After all, women can perform the Olympic lifts and run marathons and can certainly play any sports that men can – although for some odd reason professional tennis organizations still don't believe that women can play five sets of tennis. But in training women to play their best with minimal risk of injury, coaches must consider some factors relating to the differences between the sexes.

Let's start with anatomy. Because they have wider hips that are designed for childbirth, women have a lower center of gravity than men. So it's not so much stability that coaches need to be concerned about when working with women but mobility.

To be more specific, a women's wider hip structure affects the relationship between the femurs and the knees so that the upper thighs are not as parallel compared to a man's – the so-called Q-angle. To address this inherently more mobile albeit weaker structure, women need to spend more time on exercises that teach body awareness. A BFS dot drill is an example of a valuable exercise to develop body awareness. In past decades, many girls would spend a lot of time skipping rope and playing hopscotch; these girls tended to become better athletes, and their learning curve for learning new skills was much faster. Times have changed, with young girls being overall less active; and as a result, in the two decades that I have been a coach I have seen an overall decrease in

athleticism in young female athletes I've worked with – not just in Canada, but across the globe. I just came back from working in the Czech Republic and saw the same problem.

Among the best exercises for developing body awareness in the lower extremities are single-leg squats, lunges and what BFS calls *power balance drills*. For those athletes who cannot get into a full squat to perform the power balance drills, I use several boxes of various heights and have them squat to a box height that enables them to perform that segment of the movement properly. As they progress, I use a smaller box. I should mention that I have a BFS 3-in-1 box, and this works perfectly, as I can quickly and precisely adjust the height of the box.

A Question of Muscle

In looking at a given muscle's strength curve, the *external range* is considered the range from the fully stretched position to the point of half contraction. The *internal range* is the fully contracted position to the point of half contraction. Performing a Swiss ball sit-up in which you bend backward and come partway up would be considered an external-range exercise for the rectus abdominus; lying on your back and performing a pelvic tilt would be considered an internal-range exercise for the same muscle. Overall, women tend to be more hypermobile than men; hypermobility may increase the risk of injury and affects performance, as it tends to make one hyperlax. One way to help control hypermobility is to perform more internal-range exercises.

In their early stages of development,

girls tend to avoid sports and strenuous physical activities that use the upper body. Whereas you see boys doing push-ups and chin-ups and playing on the monkey bars, you see fewer girls attracted to these activities. As a result, many women I work with tend to have extreme discrepancies between their upper and lower body strength.

With the female Olympic skiers I've trained, I found that placing extra emphasis on upper body work when I first start working with them makes a dramatic difference in their sports performance. If you follow through with this idea in the BFS program, the majority of the auxiliary exercises you do with women should be upper body exercises. Of special importance would be the muscles of the upper back that help stabilize the shoulder, such as the serratus anterior, which pulls the shoulder blades forward (such as when a boxer throws a punch). If you see a woman performing a push-up and her shoulder blades flare out abnormally (i.e., winged scapula), this may be a result of weakness in the serratus anterior muscle.

If a woman's arms are not as strong as she desires or as her sport requires, she will benefit from specialized exercises for the biceps and triceps – especially the biceps, as the long head of the biceps plays an important role in shoulder stability. This brings a whole new meaning to the expression "Curls for the girls!"

A Question of Balance

One disturbing trend I've seen in Canada is the opening of many "boot camp" types of workout facilities that focus on very short workouts of high-repetition Olympic lifting movements,



The Dufour-Lapointe sisters (l-r), Chloé, Justine and Maxime. All have competed in World Cup freestyle mogul skiing events. Photos by Mike Ridewood.



multi-joint exercises such as squats and plyometrics with short rest intervals, and short sprints. If you're already a good athlete and have no muscle imbalances, then you might do just fine with these types of workouts, especially if your primary goal is to improve body composition. But the fact is many of these programs have a high risk of injury. The facility where I train athletes is called the Sports Performance Center, which is located in Westmount, Canada. We recently had to hire two full-time physical therapists because we've been getting so many new patients among people who have been injured during these boot camp types of training programs.

There are many reasons why these workouts can be harmful, especially for untrained women. First, Olympic lifting is a sport; it's not training, and the movements are complex. It develops explosive strength, and its energy system is anaerobic/lactic power. The lifts

should be performed for low reps, with sets maybe taking only five seconds to complete. Performing 10 reps in a snatch or clean is not going to develop power – you could measure this decrease in power with each rep on a force platform such as the BFS Just Jump and Run system. Further, the complex nature of these lifts will cause the lifter's form to break, and this can be very dangerous, especially in regard to the health of the spine. Treat Olympic lifting as a sport, not conditioning. Just as you wouldn't take a



Coach Gagné uses a variety of training methods with his athletes. Shown on left is Chloé, performing overspeed training, and on right is Justine, performing sled work.

baseball bat and try to hit 300 baseballs within an hour, you shouldn't perform snatches, clean and jerks and their related exercises with high reps.

A major selling point of these boot camp programs I've seen is that they suggest that effective workouts can be completed quickly, such as within 20 minutes. This means that there is virtually no warm-up and no concentration on special exercises to correct muscle imbalances. Also, too often I've seen lazy coaching in which the participants could get away with poor form. This is a serious problem, especially for women. If a woman athlete lacks shoulder stability and performs multiple sets of high-rep burpies, it's very easy for her to dislocate her shoulders.

My workouts take an hour; and if I am training a young woman, the first 40 minutes might be spent on performing segmental exercises for the shoulders and abdominals, body awareness exercises for the lower body such as single-leg squats and power balance drills, and some medicine ball drills. Only then will I go into 20 minutes of energy system training

that these boot camp workouts focus on. Just because a strength coach can get an athlete to sweat and even puke doesn't mean that individual is a good strength coach.

A good strength coach, or "physical preparator," as I like to refer to us, focuses on ways to increase performance and also minimize the risk of injury during training and during an athlete's sport. BFS has put together a good model of training for young athletes with a balance of work for all athletic and physical fitness qualities. Plus, there is flexibility in the program to include special auxiliary work, such as the special segmental exercises I would have girls perform.

What about stretching? Because women tend to be more flexible than men, there is a common, but entirely mistaken, belief that women do not need to stretch. Let me just say that women as well as men need to stretch to maintain healthy joints and achieve maximal performance.

Women need strength training as much as men do, perhaps more, but when you're designing and supervising

workouts, consider that girls mature sooner than boys. This means that they should be able to start handling maximal weights at a younger age. As a general rule, about 18 months after a girl has her first period, her growth plates are pretty much closed and there is little risk of causing damage that could affect growth. I should also mention that during the menstrual cycle an athlete may need to back off the volume of their energy system training due to changes the body goes through during this cycle.

I'll conclude by saying that one of the biggest problems I see with the American coaching system is that sport coaches often don't let strength coaches do their jobs. Just as I don't tell my hockey players how to modify their technical skills for their sport, a sports coach should not be telling me how to design my workout programs. When we are dealing with the special needs of women athletes, it is particularly important that sports coaches and strength coaches work together as a team to help our athletes achieve physical superiority. **BFS**