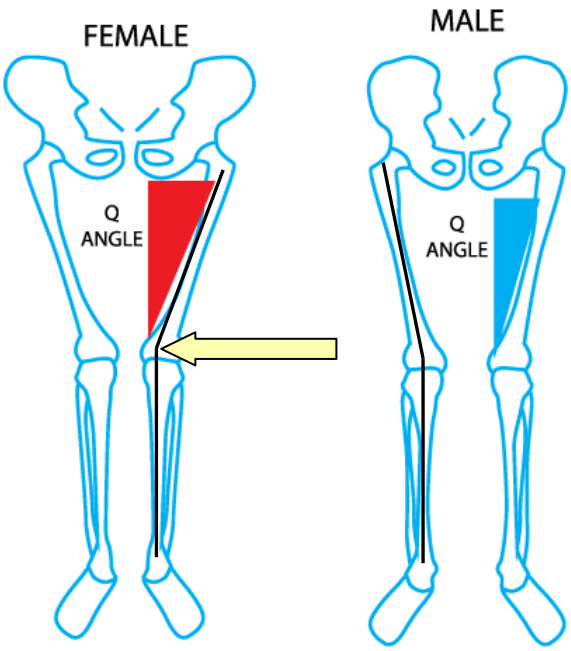
# Save your Knees! Strength Training for the Female Judoka

*by Jeremy Bushong*

Knee injuries are prevalent in sports due to the nature of the quick movements and the structure of the joints. Because judo is such a fast and dynamic sport, the force produced by the muscle is often quick and powerful. This means that force must travel through the supporting structures (joints), and the athlete must have the muscular fitness to transfer and mitigate this force. Like shock-absorbers on a vehicle, if the supporting musculature is weak, the force will go right into the structure (bones & ligaments) causing damage.




Women are eight times more likely to experience a knee injury during dynamic sports. This is particularly true for the ACL (the most commonly torn ligament) due to the structure of the hips which creates a large angle between the knee and the hip (known as a Q-angle). Women have, on average, wider Q-angles than males. This increased angle creates more torque in the knee during force production, especially with quick changes in direction.

Strength training helps improve force production, absorption, and proprioceptive awareness in the joints, creating a quicker stabilizing response under moments of instability. In addition, properly selected strength exercises help improve the ratio of strength between opposing muscles, which further improves stability. While there is no way to completely eliminate the threat of injury, the following exercises will go a long way into improving the stability of the knee, and improve the overall strength and well-being of the athlete. This is by no means a comprehensive list. It does, however, highlight the most effective exercises that can be performed with minimal instruction. These following exercises should not be used as a stand-alone strength & conditioning program. Rather, the exercises listed here are to be added into one's current exercise regimen.

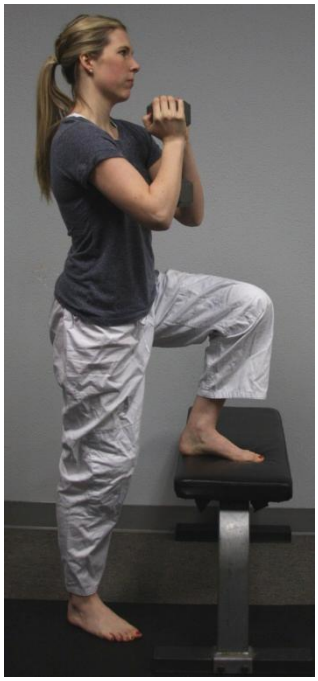
## Bodyweight Squats (Full Range of Motion)

The squat is an excellent exercise to improve total lower body strength and stability. It incorporates the proper balance of anterior muscles such as the quadriceps and hip flexors, as well as the posterior muscles such as the glutes and hamstrings. Full range of motion is required for the effectiveness of this exercise. Feet should be shoulder width apart or slightly wider. Toes should be forward facing or slightly turned out. Hips must be "at or below" the knees. Make sure your bodyweight remains in your heels and the knees are forcefully pushed out. Pushing the knees away from each other engages the gluteus muscles and ensures proper balance between the front and back of the legs. Don't round your back.

*Key Points:*
-Hips Low
-Knees Out
-Straight Back
-Feet Shoulder width apart. Longer legged athletes can widen the stance as needed

*Recommended Training:* Approximately 50-100 reps per day. This will not cause cumulative fatigue or overtraining unless done with additional weight.

**Single Leg Step-Ups (With Weight)**



This is another exercise which targets the posterior chain (glutes / hamstrings) and helps develop the stabilization of the knee. Ideal box height should be so that the knee comes to the level of the hips. Holding a heavy dumbbell, choose a significantly heavy weight so that full extension at the top requires effort. Basically, make sure this isn't too easy. This exercise is **not** done for speed (as in step-aerobics), but rather a slow and concentrated effort.

*Key Points:*
-Choose a high box
-Extend fully at the top (don't cheat by putting both feet down early)
-Don't worry about speed
-Choose a heavy weight

*Recommended Training*: Once per week, approximately 4 sets of 6 reps (per side).

**Partner Glute/Ham Raises**

This is a difficult exercise to perform, but many powerlifters, strongmen, and other athletes use it to improve the strength of their squat and other leg exercises. It improves the strength of the hamstrings, but also improves the way they are *recruited* during exercise or movement. Basically, it makes them better at handling dynamic movements and helps prevent injury to the knee. Use a rolled up gi or crashpad for the knees while a partner holds the ankles. Most athletes are unable to do this for many repetitions in the beginning, and have difficulty doing it even once. To build up strength, slowly lower yourself down toward the ground. If you need assistance coming back up, use your hands.

*Key Points:*
- Preserve your knees by using a rolled gi or crashpad
-Slowly lower down if unable to do multiple repetitions
-You should feel the majority of the movement in the hamstrings and glutes. Don't cheat it by swinging your back!

*Recommended Training*: Twice per week, as many reps as possible.

## Hip Bridges

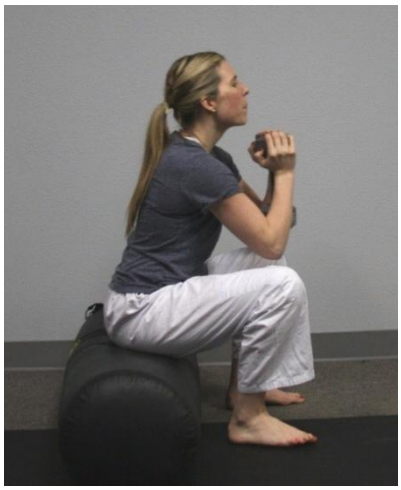
This is an excellent exercise to improve glute / hamstring strength, and can be performed anywhere with minimal equipment. Feet should be shoulder width apart with the hands down creating a solid base. he hips will come high as the shoulders stay on the ground. This can be done on the ground with an exercise ball to increase difficulty. To further increase resistance, use one leg at a time.

*Key Points:*
-Hips High
-Focus on using your hamstrings and glutes.

*Recommended Training*: Once or twice per week, beginning with 2-3 sets of 12.

## Explosive Box Squats

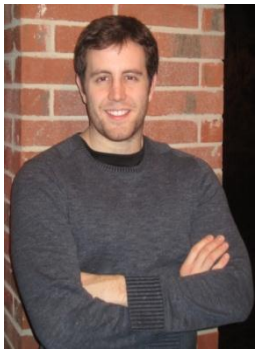
Sit on a low box that allows your knees to be at the level of your hip. Holding a weight, explode up to a standing position. Just like bodyweight squats, focus on pushing your knees out and keeping a straight, tight lower back. This exercise is done for speed, but only during the stand-up phase. Slowly and carefully sit back and prepare for another repetition. Think about the speed of the individual repetition, not the whole set.



*Key Points:*
-Explode from the box up to a standing position
-Choose a weight that is challenging, and only allows a few repetitions
-Push your knees out as you come up
-Maintain a tight, straight lower back.
-Keep your weight in your heels, even as you stand

*Recommended Training:* Once per week, 10-12 sets of 2-3 repetitions with a 30 second rest.

As mentioned before, these exercises are not a comprehensive strength training program. You'll want to also focus on increasing core strength and upper body strength and support. Combat sports such as judo, kickboxing and grappling are very dynamic and intense. If you do not prepare your body to handle the intensity of the sport, injuries can accumulate over time. It's important to train your muscles and supporting joints to handle the forces produced. While these sports are a great way to get in shape, they should not be your only source of fitness or physical preparedness.



***About the Author***

*Jeremy Bushong is a published author, strength and conditioning coach, and personal trainer to athletes in the Northwest Arkansas area. He is also the head coach of the Judo program at TK Martial arts. With a Master's Degree in Exercise Science from the University of Arkansas, Jeremy spends his time find ways to improve strength, conditioning, and sport performance. He has also spent several years working in the rehabilitation field and knows how to improve performance despite physical limitations or injuries.*

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