

# BUILDING THE BIG HOUSE

A guide to lower body strength training  
and injury prevention for women.



# INTRO

“I have been working with James since September 2009, with a history of becoming injured in winter months our main goal was to over come this and help my core/hip area to become more stable thus enabling me to run at my full potential. Not only have I made it through the winter months without gaining the usual knee injuries I have also improved my performance to currently become one of the top ranked athletes.”

—Louise Helyer, Commonwealth games silver medallist.

Imagine going to your local sports club or Gym: big men in wife beater tops, lifting weights for 10 seconds, and then looking in the mirror for 3 minutes.

Hardly inviting for females is it?

It doesn't matter how tough you are as a female in sport, you will be getting the short end of the stick as far as coaching advice, support, equipment and money is compared to men. Dumbbells that are far too heavy, barbells that are designed for larger hands, predominantly male coaches and the worst time slots for exercising are some examples I frequently come across.

Females are instead encouraged to do Pilates, Yoga, “core stability” and jogging.

Guess what?

## **THIS WON'T GET YOU READY TO PLAY SPORT.**

Females should be doing more strength training than men to allow them to play sport safely and effectively.

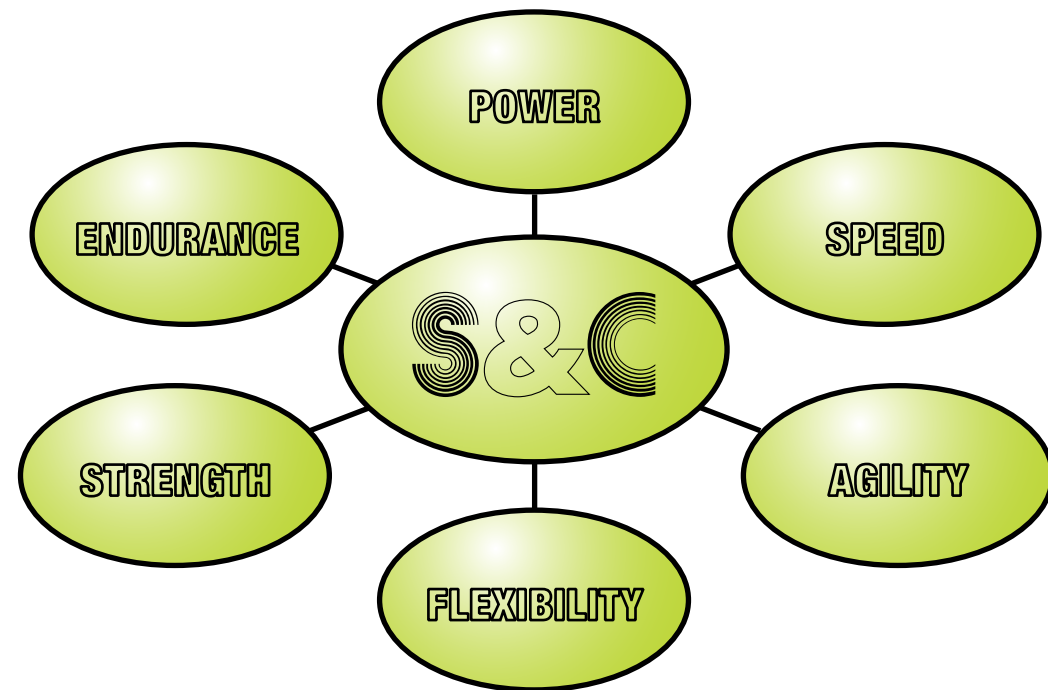
This guide is designed to help sports coaches understand some basic concepts of strength and conditioning and especially how it relates to their female athletes. It is a summation of thoughts and ideas from science, coaching observation and the great experiences I have had working with female athletes over the last 10 years.





## What is strength and conditioning (s&c)?

Strength and conditioning has become a bit of a “catch all phrase”. As you can see it covers many aspects of training for sport. You can not go to an “S&C” class and expect specific results. Nor is doing a “bit of S&C” going to help. Instead, we need to look at the different components and work on them.

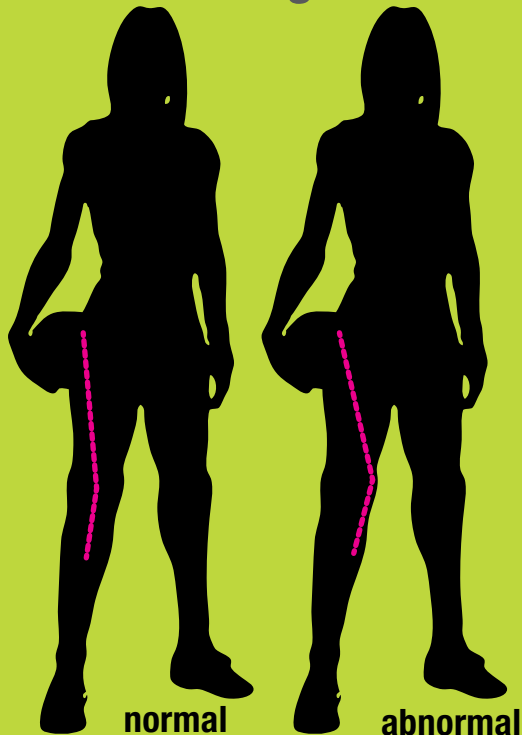


# CONSIDERATIONS

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For the Female Athlete.

## Q Angle



There are many (obvious) differences between the sexes, but in this guide we are looking at the lower half of the body and its relation to sport. Females are 2-8 times more likely to tear their Anterior Cruciate Ligament (ACL) in their knees than Males. There are various factors involved, including:

### Intrinsic differences

#### Hormones.

**Joint laxity:** Some females have too much movement in their joints.

**Lower limb alignment:** See diagram with the Q angle.

**Muscle strength:** Less size overall, and also hamstrings less strong than quadriceps.

**Neuromuscular activation:** How the muscles work together.

#### Ligament size.

Shoe-surface interface friction, equipment, type of sport, training\ conditioning level.

Some sports, and positions within the sports are more disposed to knee injuries than others. Poor shoe choice, or unstable surfaces also lead to injury. Poor overall conditioning leads to poor decision making as fatigue occurs, and the inability to coordinate the body.

**Fitter athletes** make better decisions and can execute them when needed.

**STRENGTH + CONTROL + SKILL = ↓ INJURY**

Having the ability to produce powerful, fast movements, under control, under pressure and at the end of the match or tournament will help reduce risk of injury.

There isn't a lot we can do about lower limb alignment, hormones or ligament size.

# WHERE TO START?

## For beginners we need to look at:

**Posture:** Can the athlete stand upright, sit or walk correctly?

**Balance:** Can the athlete stand and move evenly on 2 legs, then 1 leg?

**Strength:** Can the athlete hold their own body weight in the different positions?

**Control:** Can the athlete do all of the above smoothly, without jerky movements?

## Squat Test:

Before beginning any lower body programme check to see if you can sit down and get up off a chair without using your hands. Ensure that feet are shoulder width apart and knees stay in line with your big toes. If you can do this, then try the same action with no chair. Get your bum down towards the floor.

**Congratulations:** you are now squatting.

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When starting strength training, it is a good idea to start from the centre of the body and work outwards, like the ripples in a pond.

## With the lower body we can progress like this:

2 legs stable (squats, overhead squats)

2 legs different directions (multi directional lunges)

1 leg stable (step ups, 1 leg squats)

2 legs unstable: jumps and landings

1 leg unstable: hops, turns.



# BEGINNER SESSIONS

Try these sessions  
to establish a  
solid foundation.

**Do not try if you have existing pain in the knee. Do 2-3 times a week as a start.**

## Beginners lower body session 1

**Use a broom stick.**

- Hold broom stick above head and squat down and up 10 times (overhead squat).
- Then put stick across back of shoulders and repeat (back squat).
- Then keeping knees slightly bent, bend forward from the hips until back is parallel to the floor and return (good mornings).
- Rest and then repeat, up to 5 times around.

## Beginners lower body session 2

**Squat down and up 10 times.**

- Step out with left foot another shoulder width to the left, keep toes facing forward and squat.
- Return to middle and repeat with right foot to the right. Do that 10 times (lateral lunge).
- Then take a step forward with left leg and bend both knees until they are at right angles.
- Return to standing and repeat on left leg. Do these 10 times, keep knees in line with big toes (lunges).
- Rest and then repeat, up to 5 times around.

## Beginners lower body session 3

**Get a small bench, or a flight of stairs; something just below knee height.**

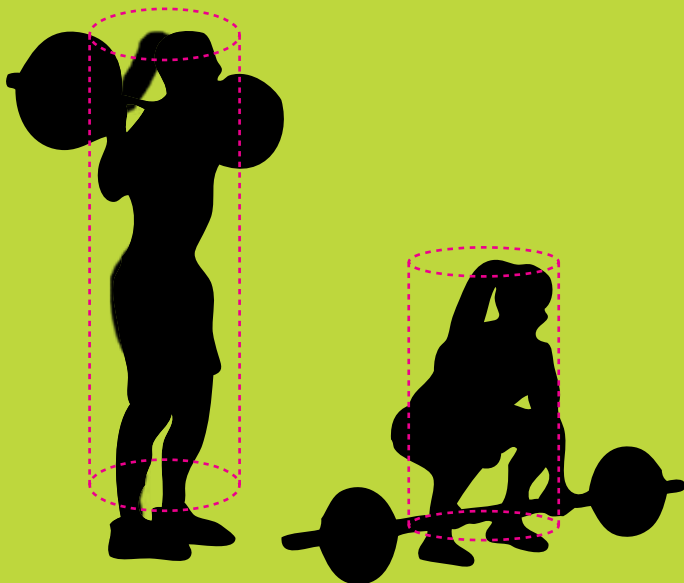
- Place one foot on the bench and step up, fully extending the leg. Step down and repeat on other leg (step up).
- Do this 10 times each leg.
- Turn around and place right foot behind you on the bench, with left leg in front of your body.
- Bend your left leg until thigh is parallel to the floor and then straighten. Do this 10 times, then swap legs (1 leg squat).
- Stand sideways to the bench and place nearest foot on it and stand up and down 10 times (lateral step up). Swap legs.
- Rest and then repeat, up to 5 times around.

### Mini band workout.

<http://www.youtube.com/user/excelsiorgroupsport?feature=mhee>

- All from a wide stance, unless stated.
- Alternate leg step overs
- Sumo squats with leg lift
- Balanced 1 leg squat and push back
- Balanced 1 leg squat and rear leg cross
- Monster walk: forward and back
- Side steps

# THE SQUAT AND THE DEADLIFT



These are the big lifts for getting the gluteal muscles strong. The beginners workouts and the mini band exercises were preparing the foundations. Now it is time to get to work on **The BIG HOUSE**.

In order to target these muscles, we have to lift heavier than we are used to (but safely).

This can be with dumbbells to start, then with barbells. If you are lifting on your own, or with limited equipment I recommend using dumbbells first, then lifting the bar off the floor (**deadlift**) next.

**Squats:** start with front squat (bar resting on the front of your shoulders, then overhead, then back squat.

Full comparison here: <http://www.excelsiorgroup.co.uk/blog/front-squat-vs-back-squat>

## Key Points:

### Warm up:

Get hot and sweaty before lifting heavy.

Do a variety of activities before rehearsing the lift with a lighter weight.

- Lift a load that you can do safely. If your technique goes, lower the weight.
- Get a full range of motion.
- Look to do 4-6 repetitions of each exercise and repeat that exercise 3-4 times in a session.
- If in doubt, do a little bit less, but do it more often (do 2-3 shorter sessions a week, rather than 1 big one where you can't walk for 3 days!).

### Rest:

If you can lift after 30 seconds rest, the weight wasn't heavy enough.

### Finisher:

Finish the session with some athletic movements like jumping, running, dribbling a ball.

It is important to reinforce the athleticism of the athlete as the Squat and Deadlift are performed in a "Tube".

# THE SQUAT AND THE DEADLIFT

cont'd

## Sample Leg Strength Session

### Warm Up:

- Walk out press up x5, 10 metre shuttle run touch floor each end x5 (x4).
- Broomstick overhead squat + 2 lunges (x10)

### Key Lift 1:

Front squat. 2 sets at lighter weights. 4 sets of 6 reps at heavier weight.

### Complementary exercise 1:

Overhead medicine ball throws, 3-5kg 5 times, twice.

### Key lift 2:

Deadlift. 2 sets at a lighter weight, then 4 sets of 8, 8, 6, 4, reps at same weight.

### Complementary exercise 2:

Split jumps. Start in a lunge position and jump up and down. 2x 5 each leg.

### Finisher:

Dribble tennis ball through 10 pairs of cones 4 times: left hand bounce, right hand bounce, left foot, right foot. Race to finish against other exercisers or clock.

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There are a myriad of different sets, reps, exercises and sequencing that you can do. It is important to balance consistency with variety.

- Consistency so that your body learns the movement and then can add loads.
- Variety so that you keep stimulating the body and mind to adapt.

### Here are some (but not all) ideas:

- Try 5 sets of 5 reps, increasing the weight each set, or increasing for the first 3, decreasing the last 2.
- Try doing 10,9,8,7,6,5,4,3,2,1, reps over 10 sets.
- Super set: work 2 different exercises in a small group. Such as front squat followed by pull ups. This allows the legs to recover, and minimises wasted time.
- Change the exercise order. So in the sample session above, you might start with the deadlift, and then follow with the front squat.



# APPLYING STRENGTH OUTSIDE OF THE GYM

Squats and dead lifts are great but most sporting actions are 1 legged like the ones shown below and involve moving in different directions. So we need to do some more **hopping + jumping** as well. Speed and agility require basic strength in order to hold posture and balance, but it is how you apply that strength that is the most important thing.



# AGILITY

“ The ability to change direction without the loss of speed, strength, balance or body control. There is a direct correlation between improved agility and the development of athletic timing, rhythm and movement ”

—Sports Agility Kreiss & Costello 1993

Agility is often tested by timing an athlete through a set series of drills. But in sport, agility is also dependent on decision making.

#### **Train the athlete so that they:**

- Can move themselves in different directions.
- Then do this faster, or with more acute turns.
- Then add sport skills.
- Then do it in a random fashion.

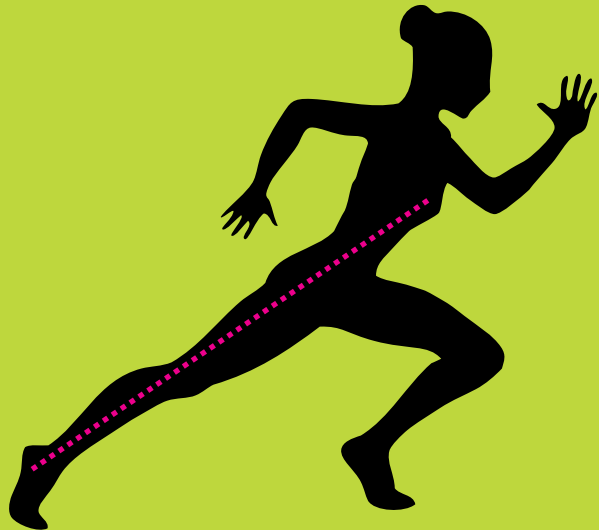
If you just do the sports skills, you will make short term gains, but come unstuck in the long term as you fail to develop the underlying movements.

(Of course, in sports like roller derby, we have to do all that on an unstable platform too.)

It is much easier to become more agile when you can bend and turn lower and faster.



# SPEED



“ The ability to achieve high velocity, but in sport we more often require Acceleration:  
More specifically, horizontal acceleration of body weight. The simplest and most accurate description from physics for explosiveness; quickness, agility and even speed ”  
—Jack Blatherwick GAIN 2011

**The ability to control the body in a Straight Line Extension (SLX) is a key part of accelerating.**

Strengthening drills that incorporate the whole body in that position are very useful.

In the first 2-3 strides the Big House is a key factor in providing force for the thrust. After that (5-25 metres) the coordination and SLX are more important.



# JUMPING (AND LANDING)

It is much more likely that a female athlete will get injured on the landing or turning, rather than the taking off.

## **When landing there are some key points you should consider:**

- Land with knees bent to a 30 degree angle at least (less than this and the ligaments are taking the load).
- Try to land quietly. This teaches you to cushion the landing.
- Return to standing and gain balance before rejumping.

## **Jump session 1**

**Have about 30 to 60 seconds rest between each set of exercises.**

- 20 – 25 seconds of ankle bounces.
- Keep feet together and legs straight, push up off the floor using only your toes. Pull toes up as you get into the air, land and immediately push off again.
- Broad jumps with sticky landings.
- Jump forward with two feet, land with knees slightly bent and keep the lower body perfectly still for 2 seconds. Then jump forward again.
- Squat jumps on mats: start from a crouched position with hands on the floor, jump up off the floor and land. Repeat.
- 1 x 30 seconds of double legged cone jumps forward\back.
- Keeping feet together, jump over a small cone and back continuously.
- 1 x 30 seconds of double legged cone jumps on mats side to side.
- Zig zag broad jumps with sticky landings.
- Keep feet facing forward, but jump diagonally.

## **Jump session 2**

**10 reps of each exercise. This depends on your ability to do a static 1 leg squat with control.**

- 180 degree jumps.
- From a standing position jump up in the air and turn 180degrees, land with control. Return.
- 20-25 seconds of bounding on the spot (1 leg to other).
- Standing on right leg with left knee bent at right angles, push up into the air and land on the left leg.
- Return. If you can't then control the knee, lower the height of your jump.
- Single leg hops forward with sticky landing.
- Stand on one leg and hop forward, landing under control. Gauge the distance by your ability to control your landing.If it is easy, increase the distance you hop.
- Zig zag single leg hops forward with sticky landing.
- As above, but with diagonal jumps.
- 2 feet forward and vertical jumps.
- Jump forward with both feet, land and then immediately jump vertically. Look to change direction from horizontal to vertical as quickly as possible. That is one repetition, repeat for a total of five.







# TRAINING philosophy

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When I first saw James I was identified as a talented rugby player but had various injury and illness problems to contend with. By the end of my time with him I had become an athlete and later received my first international cap against the U.S.A. ..I have since gone on to get 20 caps for my country and hope to gain many more in the future. I owe a lot to James for my development as a player and still use many of his training techniques and stay in touch when I need advice."

—Georgina Rozario, England Rugby Union Scrum Half

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**Our number one priority is to get the athlete on the pitch ready to play. This is the underlying objective of our training; conditioning is not the end goal.**

We look to achieve: quality of execution; safety; progression; variety and intensity. In the correct training environment with good coaching you will develop a hard working and winning mentality. This will help develop an underlying confidence in your ability to produce results under pressure.

We do not believe there is a single magic exercise; we use proven training principles to develop the athlete. We avoid fads but keep an open mind to current research. There are no shortcuts to success, but we can help show you the way.

**Now you have an idea of where to start.  
For further success:**

### **Coaches**

Why not do the Level 1 Coaching Strength and Conditioning for Sport Course?

### **Clubs**

Why not book us to deliver workshops for your Coaches and Athletes?

### **Athletes**

Book a training package to get an Individualised programme for you.

**[www.excelsiorgroup.co.uk](http://www.excelsiorgroup.co.uk)**