

Hip Hip Hooray

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Session Objectives

- Create a mind map of the hip structure, movement and support system
- Explore various techniques to make the hip conditioning more effective
- Experience several exercise sequences where we build support around the hip from the inside out and around; observe the impact on the rest of the body

Please use the following two complementary videos to see some of the exercises covered in the handout, how they are sequenced and cued. Some comments and references to what we talked about during the presentation are included, as well as some qualitative assessment (that's why the first video especially is much longer than a normal one-hour class). You are welcome to download and save both videos for future reference. They are yours!

Application video #1

<https://www.dropbox.com/s/wcl339j6bj1qily/Hip%20Hip%20Hooray-Application.mp4?dl=0>

Application video #2

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What makes up the human hip

Hip joints are complicated. First, they are deep in the body and difficult to visualize.

Second, they are part of what is called a kinetic, or movement chain from head to toe, which means consideration of the pelvis and spine, as well as the weight-bearing joints of the leg and foot, is critical to proper hip function. Like anything in the body, the hip joints don't work in isolation. They depend on what's above and below, as well as each other to produce movement and support.

Third, and likely the most fascinating (and perhaps confusing) part of all, the muscles that move and support the hip perform multiple actions in different directions, and many seem to bend or twist rather than line up in one direction.

One analogy that may help when it comes to the hips and the muscles that cross over them is that of a system of roads. Imagine looking down on several highways, and how they crisscross over each other, circle around and back on themselves, run parallel and then perpendicular to one another. It is a similar story with the hip and thigh musculature. That means there is a lot going on in that part of the body and a lot to manage too! On the plus side, this knowledge opens the opportunity for many creative ideas on how you can condition the hips, and you can make your personal training sessions or group classes always feel fresh and challenging.

Structure

The hip is a joint that commonly referred to as a ball and socket. It is formed by the acetabulum (aka the socket) and the head of the femur bone (aka the ball). The acetabulum is part of the pelvis.

The "ball" fits snugly into the "socket" and rolls and glides in several directions to produce movement.

The "ball" is secured in the "socket" by three strong ligaments that wind around the neck of the femur. There's also a small femoral head ligament on the inside. The soft tissue that lines the acetabulum (the socket) is called the acetabular labrum, is thought to aid in the stability of the joint as well.

The bottom line: the joint is very secure.

Musculature

The hip is divided muscularly into three compartments listed below. Some muscles are found in more than one compartment and several have multiple actions. It may be advantageous to work with these compartments in the order shown to create optimal mobility and stability at the hip.

Posterior compartment

Gluteus maximus
Gluteus medius
Gluteus minimus
Semimembranosis
Semitendinosus
Biceps femoris
Piriformis
Obturator externus
Obturator internus
Gemellus superior
Gemellus inferior
Quadratus femoris

Anterior compartment

Psoas major
Iliacus
Sartorius
Rectus femoris
Tensor fascia lata

Medial compartment

Adductor magnus (anterior fibres)
Adductor longus
Adductor brevis
Pectineus (sometimes included as a hip flexor)
Gracilis

As we move, many hip joint muscles perform both a stabilizing and a mobilizing role. Some of them also act on the knee joint and pelvis/spine simultaneously (both movement and stability).

Hip movements

The hip moves in six directions: forward, backward, to the inside, to the outside and in a spiral to the back and the front. The clinical terms are flexion, extension, adduction and abduction, lateral rotation (also known as external rotation) and medial rotation (also known as internal rotation), respectively.

Muscles from more than one compartment are involved in each of the hip movements. This fact leads to the understanding that we need to condition muscles in all three compartments of the hip for optimal function.

Hip flexion

Psoas major

Iliacus

Sartorius

Rectus femoris

Tensor fascia lata

Gluteus medius - anterior portion

Gluteus minimus

Adductor magnus (anterior fibres)

Adductor longus

Adductor brevis

Pectineus is sometimes included as a hip flexor

Some sources also include gracilis as a hip flexor

Exercise examples:

- Psoas Press

Lie down on your back, bring one knee over the hip, the angle at the hip is a little less than 90 degrees, foot dangles, and place the opposite palm on the thigh, fingers pointing up. Gently press thigh into hand.

- Hip Fold

Lie down on your back, raise one leg at a time to a tabletop, and then gradually lower down. Keep the pelvis and spine steady. Ask your participants to imagine the thighbone rolling back and down into the hip socket as they draw knee over hip.

Variations:

- Double leg hip fold (i.e. Lift and lower both legs at the same time)
- Toe taps (i.e. From tabletop, lower one leg at a time down)
- Bicycle legs (i.e. From the tabletop position, move legs as if riding a bicycle)

- Single Full Leg Raise

- Lean Back in seated

Sit up with legs bent in front, feet on the floor, or legs extended on the floor – arms crossed on the chest, or reaching in front, or hands lightly holding back thighs if legs are bent - weight even between sitz bones – tall through the spine with a little arch in the lower back. Lean a few inches back from the hips and then return to centre. No changes to the spine (remains tall with a little dip in the lower back).

Variations:

- In a leaned back position with knees bent, walk feet a few inches forward and back
- In a leaned back position with knees bent, lift one leg at time into tabletop; lift both legs; extend one leg at a time; extend both legs
- In a leaned back position, both legs up in tabletop, fold deeper at the hips bringing torso to thighs, thighs to torso, and then move the two a few inches away from each other

- Hip Hinge in standing (legs parallel, turned out, turned in, on a single leg)

Stand with feet and knees pelvic width apart. Place hands on pelvic points (commonly called “hip bones”). Hinge forward at hips to about 60°. Do not go all the way to 90°. Ask your participants to look for sensation of muscles lengthening and shrinking in the back of the hip and thigh. Ask to imagine the top of the pelvis narrowing as they hinge forward (or “hip bones” narrowing/pulling towards each other).

- Squat (cue thighbones rolling back and down into hip sockets as the down phase)

Hip extension

Gluteus maximus

Semimembranosus

Semitendinosus } Hamstrings x 3

Biceps femoris

Gluteus medius (posterior portion)

Adductor magnus (posterior fibres)

Exercise examples:

- **Supine Shoulder Bridge**

Lie on your back with legs hip width apart, feet parallel and arms down by your sides. Press through feet and back shoulders, and lift hips and ribs together, then lower both down. Ask your participants to look for muscular contraction in the back of the hip and upper back thigh. If they feel tension in the lower back a) suggest pressing more through heels for better hip muscle recruitment; b) suggest dropping ribs down a bit; c) suggest lifting hips only ½ way up; d) cue lifting from the gluteal creases.

- **Prone Hip Extension**

Lie face down - legs parallel - weight even between front thighs - hands under forehead or palms under pelvic points (commonly known as “hip bones”) - abdominals are slightly pulled in - shoulders gently pressed back. Pour weight into one thigh and lift the other off the floor. Ask your participants to lift the leg from the back of the hip.

You can do this movement in quadruped (i.e. on hands and knees). For balance, press into the same side hand and opposite knee/shin bone before lifting the leg. Keep the torso square towards the ground)

Hip adduction

Pectineus

Gracilis

Adductor longus

Adductor brevis

Adductor magnus

Gluteus maximus (lower fibres)

Biceps femoris (long head)

Obturator externus

Some sources include psoas and iliacus as hip adductors

Exercise examples:

- Side Lying Hip Adduction

Lie on a side – crown of the head in line with the tailbone - shoulders and hips aligned, the top shoulder and hip are stacked over the bottom counterparts – small space under the bottom waist - legs are on the floor in scissor-like position with top leg slightly behind the pelvis and bottom leg slightly in front of the pelvis. Lift and lower the bottom leg. Ask your participants to lift from the top of the inner thigh for more power.

- Heel Beats

Lie on a side – crown of the head in line with the tailbone - shoulders and hips aligned, the top shoulder and hip are stacked over the bottom counterparts – small space under the bottom waist – legs parallel. Lift both legs up and slightly turn them out, then open and close the legs as if clapping with inner thighs.

Hip abduction

Gluteus medius

Gluteus minimus

Tensor fascia lata

Gluteus maximus (upper fibres)

Sartorius

When hip is flexed piriformis, quadratus femoris, obturator internus and the gemelli assist with abduction

Exercise examples:

- Side Lying Hip Abduction

Lie on a side – crown of the head in line with the tailbone - shoulders and hips aligned, the top shoulder and hip are stacked over the bottom counterparts – small space under the bottom waist – top leg extended and in line with the hip – bottom leg is bent or extended and slightly in front of the pelvis on the floor. Lift and lower the top leg. Ask your participants to lift from the top side hip.

- Side Bridge + top leg lift

On a side, stand on the forearm with arm bone rolled well back in the socket – knees bent and stacked on top of each other – heels in line with sitz bones - the spine is in long line from crown to tailbone – front ribs slightly pulled in. Press through the forearm and bottom lower leg, lift hips away from the floor, and at the same time lift the top leg away from the bottom.

Hip medial rotation

Gluteus medius (anterior portion)

Gluteus minimus

Tensor fascia lata

Semimembranosis

Semitendinosis

Adductor magnus

Pectineus

Exercise example:

- Side Lying Hip Abduction + turning the leg in

Hip lateral rotation

Gluteus maximus

Posterior portion of gluteus medius

Piriformis

Obturator internus

Gemellus superior

Gemellus inferior

Quadratus femoris

Obturator externus

Biceps femoris

Sartorius

Psoas iliacus

Adductor magnus

Exercise examples:

- Side Lying Hip Abduction (leg bent or extended) + turning the leg out
- Side Lying Clam
Lie on your side with legs flexed to 45°. Keep pelvis stacked and bottom waistline slightly lifted off the floor. Keep feet together and gradually turn out and lift the top knee. Ask your participants to look for the muscular contraction in the back of the hip ("the buttock like a sponge shrinks into itself"), or to think of the hip and thigh muscles "wrapping" around towards the back.

This chart is to show you that your spinal muscles - abdominals, spinal erectors and QL, are primary movers of the pelvis, and moving the pelvis is moving in the hips. Those same muscles also help stabilize the pelvis and therefore your hips. This is why it's important to include the work around the waist when you work on the hips.

Pelvic movement	Primary muscles
Anterior tilt	Erector spinae, hip flexors
Posterior tilt	Abdominals, hamstrings, gluteus maximus, deep hip lateral rotators
Lateral tilt	External and internal obliques, QL, erector spinae
Rotation	External and internal obliques, erector spinae

Tips for an effective hip conditioning

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- **Gently mobilize before strengthening to optimize the alignment in the hip; optimal alignment = optimal muscle recruitment**

Exercise examples:

NOTE: These exercises can be used as a warm-up, active "rest" in-between strengthening exercises, and as part of a cool down/release at the end of the class.

- Pelvic tilts in all directions (forward/backward)

Lie on your back with knees bent and feet flat, about hip width apart. Gradually tip your pelvic points (or as commonly called "hip bones") towards your armpits and then reverse the motion and tilt them towards your thighs. Avoid pressing into your feet and squeezing the glutes as you move the pelvis.

Additional options:

- Rotation (i.e. rolling buttock to buttock with knees remaining in the centre)
- Horizontal rotation (i.e. “wag the tail”)
- Draw circles on figure 8’s on the back of the pelvis

The above pelvic motions re-educate the abdominals, hip lateral rotators, pelvic floor and mobilizes the hips, pelvis and spine.

- Supported Hip Circles (hold knee with your hand and gently turn the thighbone in the hip socket; keep the pelvis and spine steady)
- Hip Sways (arms wide, roll across the back of the pelvis side to side, letting knees move along with the hips and feet roll on the floor; may turn head in the opposite direction; legs hip width apart – more movement in the pelvis and spine; legs wider than hips – more movement in the hips)
- Hamstring Stretch (hold thigh with both hands and extend and bend knee; extend only as far as your thigh can stay quiet in your hands (i.e. doesn’t push forward) and your leg doesn’t shake; add dorsiflexion at the ankle (i.e. reach through the centre of the heel pulling toes to knee – more eccentric work in the lower leg as well); add supination and pronation at the ankle (i.e. reach through the outer heel, then the inner heel)

In quadruped (on hands and knees):

- Cat/Cow (cue movement of the pelvis in addition to spine to promote motion at the hips – it’s the same as forward/backward pelvis tilting)
- Hip Glides (keep spine neutral, glide hips back and forward; legs parallel, hips turned in (take feet outside of knees), hips turned out (big toes together, knees wide; then try drawing a circle with the entire body as you continue shifting forward and backward)

In standing:

- Side pelvic glides (legs a bit wide then hips, shift pelvis side to side; imaging “flossing” your hips)
- Hip circles (draw circles with your pelvis, try not to move in the waist)

- Hip figure 8's (with legs a bit wider than hips, in tandem stance (one foot in front the other back; keep knees slightly bent, allow feet to naturally roll on the floor)
 - Hip Hinge (legs parallel, bend forward at the hips; can turn legs out, then in)
 - Forward/backward pelvic tilts (legs stay slightly bent, hands rest on quads)
 - Horizontal pelvic rotation (i.e. "wag the tail"; legs stay slightly bent, hands rest on quads)
- **Use visualization cues to help people understand where movement and support come from. It's basically cueing sensations and intentions. You tell them WHAT, HOW and WHY. Why is this important?**
 1. You will help people build more body awareness.
 2. When people understand where movement and support come from, there's more control, power and accuracy/precision in their movement. Also, as a result, there will be less compensation and strain.
 3. The work you do with them becomes more meaningful for them: they understand why they are doing what they are doing, they can do a self-check and see whether they are on the right track.
 4. It validates your expertise as a movement professional (you're not simply taking them through a bunch of motions).
 5. By asking if they can feel specific sensations, it can give you a clue of whether they're working optimally and are reaching the functional outcome you're hoping for. This is the opportunity for variations and modifications, or perhaps shifting gears to something else if it's not working.

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- **Use the six major motions of the hip to condition the joint three-dimensionally. Use combined motions to maximize the work and time. For example:**

- Supine Single Leg Raise + leg circles
- Side Lying Hip Abduction + leg circles
- Side Lying Hip Abduction + figure 8's
- Side Lying Hip Abduction + forward/backward kick
- Side Lying Hip Adduction + leg circles or squares
- Side Lying Hip Abduction/Adduction + hip external/internal rotation (both legs are lifted, turn legs in and out)
- Side Lying Hip Abduction/Adduction + scissor kick (both legs are lifted, kick one leg forward, the other back, then switch)
- Side Lying Hip Abduction + karate kick
- Supine Shoulder Bridge with legs wider than hips and slightly turned out
- Prone Hip Extension in prone or quadruped + leg circles

- **Work muscles in all three compartments**

Suggested conditioning sequence after a warm-up/mobilization:

- #1 - posterior to turn on the primary hip support
- #2 - anterior
- #3 - medial
- #4 - any order afterwards and combined motions

- **Include exercises in different positions**

- Supine (on the back)
- Prone (on the front)
- Side lying
- Tall kneeling
- Quadruped (on hands and knees)
- Standing

- **Use bone rhythm cues if appropriate for your students**

Examples:

- In a squat, keep weight even between big toe and outer heel, thigh bones slightly turn out when legs bend, thigh bones slightly turn in when legs extend (suggested cue: “Hip and thigh muscles wrap out and around to the back” when legs are bending, “hip and thigh muscles wrap over the top and in” when legs extend).
- In a lunge, cue curling or tucking the sitz bone on the front leg side to highlight the pelvic torsion. When it works, you feel more work in the back hip and thigh, the waist stays long, and the lower back stays quiet and tension-free.

You may cue the same small sitz bone tuck when doing Single Leg Hip Fold or Single Full Leg Raise in supine or in standing. If it works, there will be less work in front of the hip and you may feel more work at the back of the hip – this is where ideally a lot of support comes from when you flex the hip.

- **Include cues for both concentric and eccentric muscle contraction**

Note: People often report an increased ROM during an exercise when they think of lengthening of the muscles

Examples:

- Cue lengthening and shrinking of the back thigh muscles in Hip Hinge
- In Side Lying Hip Abduction, cue shrinking of the top side hip muscles and lengthening of the inner thigh
- In Supine Shoulder Bridge, cue shrinking of the back hip and thigh muscles and lengthening through front of the hip and thigh

- **Work the body above and below the hip**

- Any work you do to condition the abdominals
- Any work you do to condition the back muscles
- Any conditioning work for the foot/ankle featuring motions such as dorsiflexion, plantar flexion, supination, pronation, circular motions. You may use an elastic band around the foot; use gravity as in standing heel raises; or add movement on the lower leg while you are moving at the hips (i.e. point and flex through the ankle during Side Lying Hip Abduction or Supine Single Leg Raise; or hold the leg in the air and draw circles with the foot).

- **Include standing exercises to challenge the hips in gravity**

Exercise examples:

- Hip Hinge (legs parallel, turned out, turned in, on a single leg)
Stand with feet and knees pelvic width apart. Place hands on pelvic points (commonly called “hip bones”). Hinge forward at hips to about 60°. Do not go all the way to 90°. Ask your participants to look for sensation of muscles lengthening and shrinking in the back of the hip and thigh. Ask to imagine the top of the pelvis narrowing as they hinge forward (or “hip bones” narrowing/pulling towards each other).
NOTE: It is useful to do this exercise near the beginning of any standing work. It is also great if someone “tweaks” their back during class. Give it as homework to help stabilize the pelvis and lower back.
- Tick-tock (legs slightly wider than hips, step foot to foot shifting weight completely over a single leg; try in parallel, turned in, turned out, legs bent (i.e. like a bear walk))
- Squat
Keep weight even between big toe and outer heel, and between feet. Knees stay in line with mid hips and mid toes. For more recruitment of the hip/thigh muscles, on the way up, you may use the following cue options: a) press through feet, especially heels; b) lift from the knees (add “knee caps pulling up the front of the thighs); c) lift from the hips (“hips pull in as if in a vice grip and up” or “imagine suspenders pulling the pelvis up”)

- Plie (i.e. similar to squat with legs slightly turned out, heels together, keep the torso slightly leaned forward from the hips). Use the same cues as for squat (see above). Also, ask your participants to pull the inner thighs in and up, when extending the knees.
- Standing Single Leg Stance
Stand with one foot on a yoga block and the opposite toes grazing the floor for balance. Press down the foot into the block (big toe, baby toe, centre of the heel) to step up, so your other foot gradually lifts away from the floor. Add cue to “pull up through the inner thigh” when stepping up for more balance. Try to keep both sides of the waist long. Use this exercise in any standing work. It is a great preparation for single leg balances.

To add challenge: a) stay up tall on the block with arms wide on the sides and swing the opposite leg forward/back; b) circle free leg forward and back; c) circle free leg forward and step down on it, circle back and step down; d) keep the toes of the free leg grazing the floor or off the ground – draw small circles with the hip on the standing/support leg side (the one on the block).

This exercise re-educates hip abductors and hip stabilizers; emphasis should be on gluteus medius (posterior fibres).

Use this exercise in any standing work you add to mat-based exercises. It is a great preparation for single leg balances.

- Standing Heel Raises
Stand in parallel and distribute your weight so half is in your heels, and most of the rest is anchored between the big toe and the second toe. As you press into the big and the second toe and lift your heels, make sure you are not leaning forward. Sometimes it helps to think of the torso moving back in space as you lift your heels

This exercise re-educates the muscles of your lower leg; this is a key exercise for optimal function in the whole system.

- Standing Forward Lunge
Stand in a lunge position - one leg forward and the other leg back - with all toes pointing forward. Bend the front knee and keep the back knee extended or slightly softened; back heel can be on or off the floor. Square the pelvis to the front and hinge forward at the hips. As you lower and lift the torso the effort should be

coming from your gluteus maximus and upper hamstrings. Press your front heel strongly into the floor for added recruitment of those muscles. This is a challenging exercise and builds lots of strength in the pelvis, hips and thighs. It's also a great option for people with knee issues who were advised to avoid a classic lunge.

- Tandem Stance Lunge

Stand in a lunge position with your feet vertically aligned (as if standing on a beam or rope) - all toes pointing forward - both knees slightly bent - small hinge forward at the hips - the back heel is up. Square the pelvis to the front and bend both knees to lower down on your legs - the back knee is reaching to the front heel. Press your front heel strongly into the floor on the way up for more power in the buttock and upper hamstrings. This is a challenging exercise and builds lots of strength in the pelvis, hips and thighs. This exercise is not suitable for people with vulnerable knees.