

Structural Yoga Therapy for Post Meniscus Surgery

Aramati Akke Hulburt, MS, CMT, RYT-500

Akke's Yoga Place
2401 South Main Street, Suite J
Blacksburg, VA 24060
Phone (540) 953 2553

akke@akkesyogaplace.com
www.akkesyogaplace.com

Yogaville, Virginia
November 2005

Edited by Mukunda Stiles

1 A. Case study

Bob is a retired army colonel, 63 yrs old. Bob has had no previous experience with yoga and no previous interest in yoga. Bob's general attitude has been 'no pain-no gain', and for most of his life has been very skeptical of yoga. Bob's wife, who has been a yoga student in my classes and a massage client, referred him to me.

Bob is much disciplined and for that reason I thought he would be a good candidate for my case study. The challenge on my part would be to spark his interest in yoga and have him experience the benefits of a yogic, more sattvic approach to life. Bob has led a much disciplined life and after retirement has continued with a regular daily exercise regime; Bob exercises at home, at a local fitness center and walks on a daily basis. Bob's attitude is that you don't get breakfast until you've completed your exercises.

Bob likes to 'putter' at home. Bob and his wife are actively involved in their church and in volunteering in the community, they love to go bird watching and they recently traveled to South America on a birding trip down the Amazon River. They have a grown son who is currently serving in Iraq and they tragically lost their daughter when she was a young adult.

Bob experienced pain in this right knee in November of 2004. He was doing a plumbing repair job at his home and when he got up, there was a pop in his knee and sharp pain followed. On a scale of 1-10 he would rate the pain as a 7. He went to the doctor in December 2004 and to a specialist in April of 2005. An X-ray and an MRI revealed a tear in the medial meniscus.

Bob was given the following 3 choices:

- do nothing,
- wait
- have surgery

He chose to have his meniscus surgically repaired. The surgery was performed on May 27, 2005. During the time between the injury and the surgery Bob used an ice pack several times a day and started taking glucosamine as a supplement.

Two weeks after the arthroscopic surgery was performed on an outpatient basis Bob came for his first visit to me. Bob had expected to be able to walk and be pain free shortly after the surgery, which was not the case. At the time of this first assessment Bob had not visited the Physical Therapist (PT) yet. I encouraged Bob to visit a PT so that he would do the exercises prescribed by a medical doctor for a torn meniscus repair. He made an appointment immediately and after 2 visits to the PT he came for his second visit to me. I could do only a partial intake on the first visit because of pain levels in the knee. I did have a chance to explain some of the principles of SYT on that first visit; Bob was intrigued and slowly became more open to yoga. He thought that I might be able to help him with his recovery from surgery.

There were a total of 8 visits, the initial visit was on June 14th and the final visit was on October 5, 2005. We took the PT prescribed exercises and 'yogafied' them

(please see appendix); rather than doing as many repetitions as possible in a short amount of time, I suggested coordinating breath with movement and awareness, focus on strength in areas where there was lack thereof and do gentle stretching.

On subsequent visits I gradually added more movements from the Joint Freeing Series (JFS). On visit 6, I was able to do a full assessment when the pain had subsided to a 2 on a scale of 1-10. I did a final assessment on visit 8 when his pain had subsided to occasional discomfort when walking downhill.

Bob has had scoliosis for as long as he can remember, he has constant discomfort in his back because of it. When he was 16 and got his drivers licence, his first trip was to the chiropractor because of back pain related to scoliosis.

1 B. Physical assessment:

Bob weighs 208 lbs, measures 6 feet, and is 63 yrs old. Bob gives a healthy and strong impression. Bob eats a healthy low fat diet that includes fresh fruits, vegetables and meat, he tries to keep sweets to minimum, he takes glucosamine as a supplement.

Bob’s right shoulder is noticeably higher than the left and the right arm is internally rotated.

Scoliosis: Measuring his spine revealed a left lumbar curve and a right thoracic curve, measuring 2-3 degrees in the lumbar region, neutral at T9, 8 degrees to the right at T1, T2.

There were three assessment dates, June 14th, September 7th and October 5th, 2005 during which Range of Motion (ROM) of the joints was measured in degrees and Muscle Testing (MT) occurred, a comparative, subjective measurement of muscle strength on a scale from 0-5.

Range of Motion measurements:

Exam dates	06/14/05	09/07/05	10/05/05
Action	ROM	ROM	ROM
Supine	R/L	R/L	R/L
Ankle: Dorsiflexion	8/20	20/20	
Eversion	15/17	18/18	
Inversion	45/56	45/50	
Hip: Flexion	105/105	120/122	120/122
Prone			
Knee: Flexion	100/125	117/120	125/125
Hip: Extrnl.Rotation	55/48		
Internal Rotation	25/35		

Results of Muscle Testing:

Exam dates	06/14/05	09/07/05	10/05/05
Action	MT	MT	MT
Supine	R/L	R/L	R/L
Ankle:Dorsiflexion	3.0/3.5	3.5/3.5	4.0/4.0
Eversion	2.5/3.5	3.5/3.5	4.0/4.0
Inversion	2.5/3.5	3.5/3.5	4.0/4.0
Hip Flexion	1.5/3.0	3.0/3.5	3.5/3.5
Psoas isolation	1.5/3.0	3.0/4.0	3.5/4.0
Prone			
Knee Flexion	pain	2.0*/2.0*	2.5/2.5
Hip Extension	Pain	3.5/3.5	
External Rotation	Pain	2.0/2.0	3.0/3.0
Internal Rotation	Pain	2.0/2.0	2.5/3.0
Glut. Max. isolation	Pain	1.0/1.0	2.0/2.0

*cramping occurred when tested

1C. Summary of findings

As a result of the MT and ROM measurements, the following muscles were found to be in need of strengthening or stretching, no muscles were found in need of release.

Muscles to Strengthen	Muscles to Stretch	Muscles to Release
<u>Date: 06/14/05 partial test</u> R. Tibialis anterior R. Peroneus longus/brevis R. Hamstrings R. Psoas	R. Gastrocnemius, Soleus R. Quads R. hip External Rotators	
<u>Date: 09/07/05</u> Right and Left Knee: Hamstring Hip: Internal Rotators External Rotators Gluteus maximus Shoulder: Extensors Internal Rotators External Rotators Lower Erector spinae R. Latissimus dorsi R. Lower Trapezius	Right and Left Quads	
<u>Date: 10/05/05</u> Right and Left Knee: Hamstrings		

Hip: Internal Rotators External Rotators Gluteus maximus Shoulder: Extensors Internal Rotators External Rotators Lower Erector spinae R. Latissimus dorsi R. Lower Trapezius Rectus abdominus		
--	--	--

1 D. Recommendations:

Visit 1: 6/14/05

Because of pain levels in knees and buttocks, I could only do a partial ROM and Muscle test. He rated this pain as a 7 on a scale of 1-10.

- The JFS #1, #2 and #3 were given to strengthen the Tibialis Anterior, Peroneus Longus and Peroneus Brevis.
- JFS #5 was given to strengthen the Psoas, in seated position, legs turned out to 90 degree angle, feet turned out to 45 degree angle, first just engaging the leg without lifting it off the floor, gradually increasing to lifting and lowering the leg.
- Because of knee pain, JFS #7 was not a possibility, so Ardha Salabasana was suggested to strengthen hamstrings and to stretch quads.

I encouraged Bob to visit a PT so a medical expert could suggest exercises that are commonly used for a meniscus repair.

Visit 2: 6/22/05

Bob had 2 visits with the PT. There is much less pain in his right knee (5 on a scale of 1-10) which he attributes to doing the ankle movements of the JFS. He was really surprised that there was lack of strength in his right psoas, which we discovered at visit 1. Bob has been diligent about doing #5 of the JFS as recommended at that time to increase strength in his psoas.

- We clarified the movements and alignment of JFS 1, 2, 3 and 5 and Ardha Salabasana. Rather than doing as many repetitions in a short amount of time, which has been Bob's goal in general, I suggested coordinating movement with breath and awareness. We "yogafied" PT's recommendations in this way too. (See #9, Appendix)
- I had Bob suggest how many repetitions would be beneficial for him.

Visit 3: 6/29/05

We focused especially on breathing and 'tweaked' alignment of PT's suggestions. We talked about how muscles work and how certain reflexes work, that bouncing in a pose

will cause muscles to shorten and we talked about the benefits of relaxing in a pose. (Anatomy of Hatha Yoga, p 41) Bob likes to be challenged and have goals, so I asked him to do the suggested movements as slowly as possible, that being his challenge. At this point he commented that I would make a good drill sergeant, which I took as one of the highest complements from a retired army colonel. Recommendations until next visit:

- Continue with JFS 1, 2, 3 and 5, Ardha Salabasana and PT's recommendations in a yogic way.
- A modified Parsvotanasana was given for Scoliosis and to stretch R. gastrocnemius. Because of discomfort in the right knee and Bobs' 'no pain-no gain' approach, and I suspected not much strength in his back, I wanted him to approach this gently. So I suggested he use a low table or chair for support of his upper body so that he would use this pose to gently explore the areas of tension and discomfort in his body. I suggested for him to move his left foot forward and right leg back, so that his r. gastrocnemius would stretch. His right hip was moving back and I encouraged him to get a sense of the hips becoming level, and the spine elongating from the tail bone to the base of the skull.
- Also a modified Half-forward bend was given for lower back stiffness. We had Bob feel the difference in a very gentle exploration of this pose with the right hand placed higher on the wall than the left, to again create the feeling of elongation in the spine and gently let the tailbone move toward the floor on the exhale and release the effort on the inhale. The knees are slightly bent in this pose.
- A 'rolling' spinal twist on the left side was suggested to relieve again some stiffness and discomfort in the back. (See Appendix)

Visit 4: 07/13/05

Bob really loves doing the movements and is feeling changes in his body. He is doing the recommended movements diligently but still wants to push himself. So there are more discussions of coordinating breath and movement and awareness. The conversations are very lighthearted and fun. Bob is thinking that this approach to movement would be very beneficial to our troops. Recommendations until the next visit:

- Continue with JFS 1, 2, 3 and 5, Ardha Salabasana and PT's recommendations.
- Adding JFS #13 and #14 with arms extended, reaching for the edges of the room, so there is openness in the chest and heart, when the elbows bend, there is not the spaciousness in the chest, and there is the feeling of the shoulders collapsing.
- Clarification of Parsvotanasana, Half-forward bend and rolling twist and continuation of the movements.

Visit 5: July 27

The whole JFS is now a possibility, #6 modified for scoliosis with left knee forward of right, #14 with arms extended. There is no pain or discomfort when Bob is on his hands and knees.

Visit 6: 09/07/05

Full assessment:

- ROM and muscle strength in ankle on Right is very much improved.
- Muscle strength improved in R. psoas and in R. hip flexors.
- Both knees are tested for movement in the ligaments and both seem to be fine.
- There is no pain when hamstrings are tested for strength, but there is cramping afterwards (on both sides).
- There is no pain in buttock area, but not much strength in Gluteus Maximus or in the hip internal and external rotators. It seemed to work better to do the Internal and External rotation of the hip from a standing position since there was pain in the medial area of the right knee when doing this movement seated.
- It was recommended that Bob do the sunbird pose, with leg in hip extension, flex the knee, extend the knee and then flex both the knee and hip at the same time, followed by the fire hydrant pose. He thought he could do 6 slow repetitions on both sides.
- The left lower erectors did not engage when tested for strength, the right did. So Bhujangasana was recommended with the legs offset to the left which engaged the lower erector spinae on both sides of the spine.
- There was asymmetrical engagement in the upper spine. To bring awareness to this area it was recommended for Bob to lie on the back and press his “wings” (shoulder blades) down.

Visit 7: 09/21/05

There is still a fairly constant discomfort (1.5-2 on a scale of 1-10) in medial knee when walking downhill, but there is no pain during other activities.

- Bob is getting relief in his back especially from JFS #8 (hip abduction and adduction)

The recommendations are still the

- JFS with adaptations: IR, ER standing,
- Sunbird pose, bend knee, straighten knee, and fire hydrant pose.
- Bob is happy to report that his elbows now are able to touch in #13 of the JFS.
- Modified Half Forward bend.
- Modified Parsvotanansana,
- Bhujangasana with legs offset to the left
- Setubandhasana with a ball or block between the knees to track the knee properly and to strengthen the shoulder extensors and middle trapezius.
- Rolling twist for relief of tension in back

Bob wants to get back to deep knee bends which I strongly discouraged. I suggested that he might do a supported knee bend but not let the knee get past a 90 degree angle. After consulting with a PT on the pain occurring in the medial knee, especially when walking downhill, she thought this might be due to lack of strength in the oblique fibers of the Vastus Lateralis muscle and showed how to strengthen this area. The recommendation was to lean with the back against the wall, knees slightly bend. Place a soft ball of about 12 inches in diameter behind the sacrum and slowly bend the knees to a

90 degree angle and slowly straighten the knees. This seemed to satisfy Bob's desire for deep knee bends.

Visit 8: 10/05/05

Final assessment: Most of the muscles that were weak shortly after surgery to the right knee have returned to full strength, although the left side is a little stronger than the right. The strength in the Hamstrings, Gluteus maximus and External and Internal rotators of the hip has improved considerably and could continue to improve. So Bob is going to continue with the recommendation from the previous visit:

The recommendations are still the

- JFS with adaptations: IR, ER standing, Sunbird pose, bend knee, straighten knee, and fire hydrant pose.
- Modified Half Forward bend.
- Modified Parsvotanansana,
- Bhujangasana with legs offset to the left
- Setubandhasana with a ball between the knees to track the knee properly and to strengthen the shoulder extensors and middle trapezius.
- Rolling twist for relief of tension in back

Bob's abdominal muscles were not strong at the time of the previous assessment, but he did not want to do traditional abdominal strengthening exercises like crunches or sit ups (which were not suggested). I carefully broached the subject on the last visit. He was willing to lift one leg to a 90 degree angle while lying on his back and keeping a lumbar curve, and at the same time bring the other leg into hip and knee flexion. From that position dip the bend knee foot in an imaginary puddle away from him to strengthen the abdominals, alternating legs and coordinating movement with breath.

1E. Results of recommendations:

There is still the tendency of 'no pain-no gain' but substituting a safer approach has been very effective and seems to satisfy Bob's desire for certain moves that he used to do and feels like his body should still be able to do.

Instead of doing deep knee bends, he is now moving his knees to 90 degree knee flexion with a ball supporting his back against the wall. Instead of doing as many repetitions as possible in a limited time frame Bob is now coordinating movement with breath, he is trying to distinguish between stretch and strength and trying to listen to the messages of his body.

He has a good understanding about how muscles work, how the strength of the muscles protect the integrity of the joints, that stretching his muscles feels different from strengthening.

His physical body has opened up in many ways, his breathing pattern has changed from upper trunk to full abdominal breathing and emotionally he has opened up in many ways and shared deeply about some of the tragedies in his life.

At the time of the final assessment Bob is virtually pain free, Bob seems to be enjoying his yoga practice, feels that this has greatly enhanced his recovery from meniscus surgery; he will continue to incorporate the things he has learned about breath, movement and awareness and is appreciating the things he has learned about his body.

I am deeply grateful to Bob for being willing to be open to some of the yogic practices and to allow me to work with him on this level and it is my hope that he will continue to incorporate some of this in his life.
Bob will return in several months to see how things are going.

2A. A Torn Meniscus

Arthroscopy

When a physician is evaluating an injured knee, a history is taken to determine the specific problems that a patient is having with the knee. Next a physical examination of the area will be performed to determine the site of the pain, the presence or absence of physical findings that are known to be associated with a torn meniscus, and x-rays are performed to identify other abnormalities that may give similar problems to those of a torn meniscus. In some instances, additional diagnostic tests such as an MRI may be ordered. If the history and physical findings indicate that a tear is present, arthroscopic surgery may be indicated for treatment.

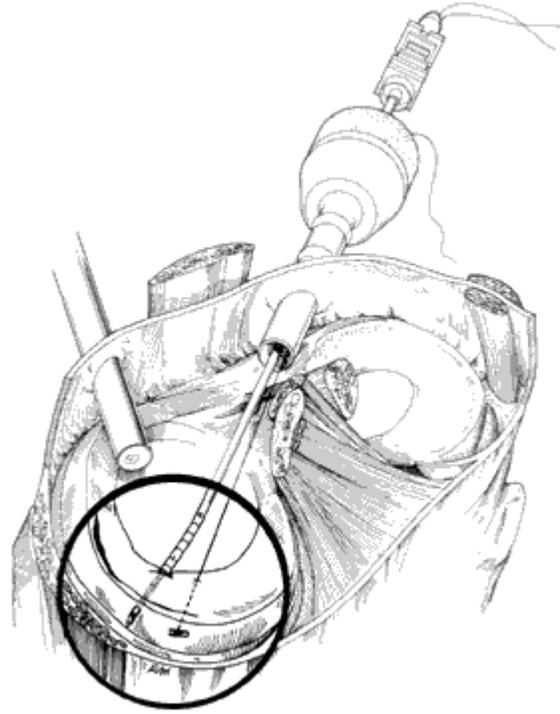
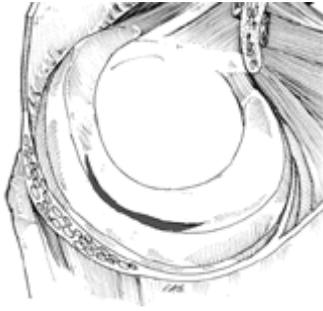
For arthroscopy the patient lies on the back on the operating table. Anesthesia can be general, spinal or local anesthesia with intravenous sedation. The skin is prepared with an antiseptic solution. Arthroscopy involves inserting a fiber optic telescope that is about the size of a pencil into the joint through an incision that is approximately 1/8 inch long. Fluid is then inserted into the joint to distend the joint and to allow for the visualization of the structures within that joint. Then, a hollow needle is placed in the joint space, then a tiny camera introduced through it, to relay the image of the inside of the joint onto a television monitor. The structures are examined and the surgery is performed. After arthroscopy the knee is a bit sore and swollen for a few days. An Ace bandage or a brace may be helpful.

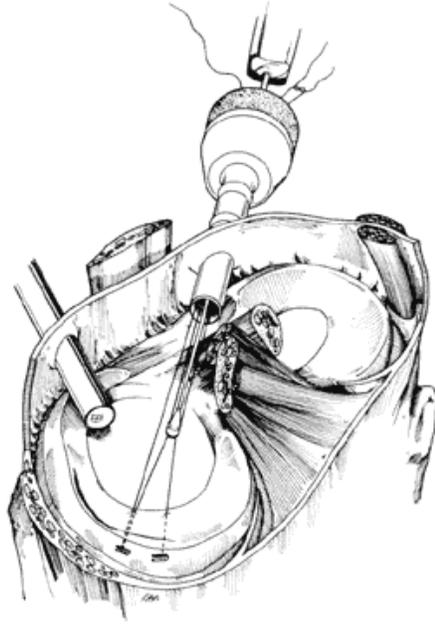
This is usually done as an outpatient. On the average, most patients are able to walk without crutches within 48 hours. An active rehabilitation program is then initiated in an effort to rebuild the muscle strength in the muscles around the knee, thus relieving the stress on the knee.

In most patients, an exercise program is started by the seventh post-operative day on Nautilus type equipment. Patients are usually on some type of activity restriction for approximately 6 weeks after surgery, or until rehabilitation has been successfully completed.

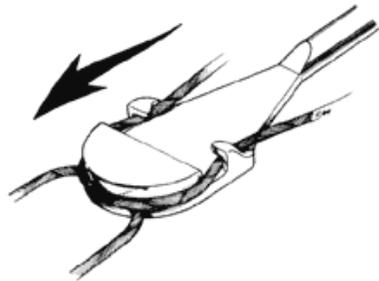
Obviously these general guidelines must be individualized and may change during the recovery phase. Arthroscopy is much less traumatic to the muscles, ligaments and the tissues than the traditional method of opening the knee.

Peripheral meniscal tear in the zone of blood supply

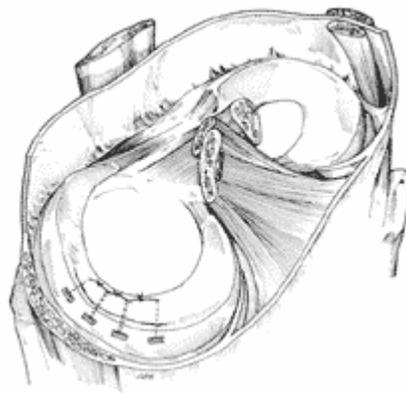




Knots are pushed down after placing suture anchors



Close up of knot pusher



Arthroscopic view of a meniscus repaired with the T-Fix® system



Meniscus

The meniscus is a C-shaped piece of fibrocartilage which is located at the peripheral aspect of the joint. The majority of the meniscus has no blood supply. For that

reason, when damaged, the meniscus is unable to undergo the normal healing process that occurs in most of the rest of the body. In addition, with age, the meniscus begins to deteriorate, often developing degenerative tears. Typically, when the meniscus is damaged, the torn piece begins to move in an abnormal fashion inside the joint.

The Role of the Meniscus

The meniscus has several functions:

Stability - As secondary stabilizers, the intact meniscii interact with the stabilizing function of the ligaments and are most effective when the surrounding ligaments are intact.

Lubrication and nutrition - The meniscii act as spacers between the femur and the tibia. By doing so, they prevent friction between these two bones and allow for the diffusion of the normal joint fluid and its nutrients into the tissue which covers the end of the bone. This tissue is known as articular cartilage. Maintenance of the integrity of the articular cartilage is critical to preventing the development of post-traumatic or degenerative arthritis.

Shock absorption - The biconcave C-shaped pieces of tissue known as meniscii (cartilage in non-medical terms) lower the stress applied to the articular cartilage, and thereby have a role in preventing the development of degenerative arthritis.

The Knee Joint

The knee joint is the largest and most complex joint in the body. It allows extension, flexion and some rotation. Despite its single joint cavity, the knee consists of three joints in one: an intermediate one between the patella and the lower end of the femur (the femoropatellar joint), and lateral and medial joints (collectively known as the tibiofemoral joint) between the femoral condyles above the C-shaped menisci) or semilunar cartilages of the tibia below.

The knees have a built in locking device that provides steady support for the body in the standing position. As we begin to stand up, the wheel shaped femoral condyles of the tibia and the flexed leg begins to extend at the knee. Because the lateral femoral condyle stops rolling before the medial condyle stops, the femur rotates medially on the tibia, until all major ligaments of the knee are twisted and taut and the menisci are compressed.

The tension in the ligaments effectively locks the joint into a rigid structure that cannot be flexed again until it is unlocked. This unlocking is accomplished by the popliteal muscle, which rotates the femur laterally on the tibia, causing the ligaments to become untwisted and slack.

Besides deepening the shallow tibial articular surfaces, the menisci help prevent side-to-side rocking of the femur on the tibia and absorb shock transmitted to the knee joint. However the menisci are attached only at their outer margins and are frequently torn free.

The tibiofemoral joint acts primarily as a hinge, permitting flexion and extension, however it is structurally a bicondylar joint. Some rotation is possible when the knee is partially flexed, but when it is extended, side to side movements and rotation is strongly resisted by ligaments and the menisci.

The femoropatellar joint is a plane joint and the patella glides across the distal end of the femur during knee movements. The knee joint is unique in that its joint cavity is only partially enclosed by a capsule. The relatively thin articular capsule is present only on the sides and posterior aspects of the knee, where it covers the bulk of the femoral and tibial condyles.

Anteriorly where the capsule is absent, three broad ligaments run from the patella to the tibia below. These are the patellar ligament flanked by the medial and lateral patellar retinacula which merge imperceptibly into the articular capsule on each side. The patellar ligament is actually a continuation of the tendon of the bulky quadriceps muscle of the anterior thigh. The retinacula are expansions of the same tendon. Physicians test the patellar tendon to test the knee-jerk reflex. The synovial cavity of the knee joint has a complicated shape, with several extensions that lead into blind alleys. At least a dozen bursae are associated with this joint. The subcutaneous prepatellar bursa is often injured when the knee is bumped.

Both extra- and intracapsular ligaments stabilize and strengthen the capsule of the knee joint. The extra capsular ligaments stabilize and strengthen the capsule of the knee joint. The extra capsular ligaments all act to prevent hyperextension of the knee and are stretched taut when the knee is extended. These include the following:

1. The fibular and tibial collateral ligaments are critical in preventing lateral or medial rotation when the knee is extended. The pencil like fibular collateral ligament extends from the lateral epicondyle of the femur to the head of the fibula. The broad tibial collateral ligament runs from the medial epicondyle of the femur to the medial condyle of the tibial shaft below and is fused into the medial meniscus.
2. The oblique popliteal ligament is actually part of the tendon of the semimembranosus that crosses the posterior aspect of the knee joint.
3. The arcuate popliteal ligament arcs superiorly from the head of the fibula and reinforces the joint capsule posterior.

The intercapsular ligaments are the cruciate ligaments because they cross each other, forming a cross within the notch between the femoral condyles. They help to prevent anterior-posterior displacement of the articulating surfaces and to secure the articulating bones when we stand.

The anterior cruciate ligament attaches to the anterior intercondylar area of the tibia. From there it passes posterior, lateral and upward to attach to the femur on the medial side of its lateral condyle. This ligament prevents forward sliding of the tibia on the femur and checks hyperextension of the knee. It is somewhat lax as the knee is flexed and taut when the knee is extended.

The stronger posterior cruciate ligament is attached to the posterior intercondylar area of the tibia and passes anteriorly, medially and upward to the lateral side of the medial femoral condyle. This ligament prevents backward displacement of the tibia, or forward sliding of the femur.

Although these ligaments are within the joint capsule, they are outside the synovial cavity and the synovial membrane nearly covers their surfaces. Note that the two cruciate ligaments both run up to the femur and are named for their tibial attachment site.

The knee capsule is heavily reinforced by muscle tendons:
Since the muscles associated with the joint are the main stabilizers of the knee, the greater their strength and tone, the less chance of injury.

Psychological associations

The knees are a symbol of inner determination, pride; the knees are also a symbol of willingness to bend to the flow of life, being willing to give yourself to your deepest Self without resistance, allowing yourself to move along the path of true evolution, without stubbornly holding on to false or outer values which could block that unfolding. In the knees lies the power to defend yourself and not letting others push you, the strength that radiates your confidence.

The knees allow you to kneel down to your deepest values as a divine being, honoring and respecting yourself and others, being flexible and open to the world. (Translated from Christiane Beerlandt, *De Sleutel tot Zelf-Bevrijding*, *The Key to Self Liberation*.)

4. Ayurvedic assessment

When assessing a person who is recovering from a torn meniscus repair, how would this reflect on a second kosha level and how would the doshas be affected? Is the condition a vata, pitta or kapha issue?

In general if the pain is vague and seems to be moving around indicates a vata imbalance. The most beneficial role the therapist can play in this case would be that of a friend or teacher. The recommendations for the client would include relaxation, movement coordinated with the breath, not focusing so much on alignment as on the rhythmic movement and creating the feeling of spaciousness.

A sharp pain or inflammation would be an indication of pitta being out of balance. A pitta imbalance requires that the therapist allows the client to make choices. Recommendations would include hydration and a more creative approach to asana, to develop the feeling of gentle stretch and not to overdo and push through the pain.

If the pain is 'stuck' the imbalance would be of a kapha nature. The therapist would be more in the role of the authority, so that the client can put his trust in this approach to healing, there being a feeling of surrender to the therapist which might evolve into surrender to the Divine. Strengthening and holding poses to increase stamina would be beneficial as would devotional practices such as prayer, chanting and meditation.

If the issue is on a third level kosha, then how can the gunas be restored to a sattvic state? Can the approach to life, the intention and/or force of the current practice be re-directed so that a sattvic state can be re-established?

If the pain presents itself on a fourth level kosha, then wisdom questions are in order, what is the source of the deeper pain.

Indications that there is a pitta imbalance: high vitality, healthy coloring, Bob sweats easily, has a keen intelligence, quick wit, is decisive, sets goals and sticks with it, has strong feelings about what is right and wrong, has strong likes and dislikes. Bob's general approach to life has been 'no pain no gain' and I tried to give him many choices and let him decide what would be most helpful in his situation. We also discussed several times which approach to his exercises would be beneficial and which would most likely aggravate his condition.

There was pain and stiffness especially in his trunk and shoulders which would indicate a vata imbalance. Bob was willing to listen to the messages of the body, to move with awareness and coordinate movement with the breath and not go to the pain levels. This has created more balance in his body, more balance between strength and flexibility, less pain in the knee area and more openness, flexibility in the chest and back, the front and back door to his heart. This was reflected in his sharing of his life experiences on very deep levels.

4. Common Body Reading:

The condition of a torn meniscus will affect the musculature around the knee joint. The muscles originating or inserting near the joint immediately below and above the knee (ankle and hip) are often affected as well.

Common muscular imbalances revealed by posture (Structural Yoga Therapy, Mukunda Stiles, p. 103) may include:

POSTURAL CHANGE	TIGHT MUSCLES	WEAK MUSCLES
Hyperextended knees	Hamstrings, Gastrocnemius	Lower Quads, Popliteus
Knock-knees	Adductors, Gluteus medius	Gluteus medius, TFL
Bowed legs	Gluteus medius, Tensor fascia late (TFL)	Adductors, Gluteus medius
Tibial torsion	TFL, Gluteus medius	Gluteus maximus, Sartorius, Tibialis anterior
Feet turned outward	Psoas, External Hip Rotators, Sartorius, Gluteus maximus	TFL, Gluteus minimus
Feet turned inward	TFL, Gluteus minimus	Psoas, External Hip Rotators, Sartorius, Gluteus maximus
Pronated ankles	Peroneus Longus/Brevis	Tibialis Anterior/Posterior
High arch	Tibialis Anterior/Posterior	Peroneus Longus/Brevis
Flat foot	Tibialis Anterior	Tibialis Posterior

5. Contraindicated yoga practices and general activities to be avoided:

Any asanas and activities that move the knee joint beyond normal range of motion such as hero pose or deep knee bends and squatting should be avoided.

Motions causing injuries to be avoided:

- planting the foot and twisting the body,
- twisting the knee during sports like skiing or tennis or golf,
- avoid kicking a ball while in hip adducting as during soccer,
- ‘Clipping’ as in football.

6. General recommendations for post surgery meniscus repair:

a. therapeutic/free of pain:

- R.I.C.E. (Rest, Ice, Compression, and Elevation) of the joint to reduce inflammation, swelling and pain.
- Eliminate any contra-indicated practices and activities that may interfere with the healing process.
- Determine which muscles need to be strengthened, stretched or released by way of ROM and Muscle Testing

b. stabilize situation and lifestyle recommendations:

- Support the healing process with a healthy diet and supplements such as flaxseed oil and glucosamine. Practice relaxation and promote a positive approach to life that restores the body back to health.
- Create a Structural Yoga Therapy program that addresses the above issues and fits into the clients' daily routine.
- If there is just one visit, I would start with the JFS (modified for the clients' needs), done dynamically to become more aware of feelings of contraction and stretch and coordinating movement and breath.

c. maintenance and long term considerations

- If there are subsequent visits I would change the focus of the JFS to strengthening and maintaining that strength.
- Evaluate on all levels of the koshas and adapt recommendations as needed
- Re-test Muscle strength and ROM and re-evaluate the SYT program.
- Encourage daily practices that support health and well being.

7. Questions and Answers from www.yogaforms.com

Knees February 7, 2005

I took your SYT course at Kripalu a couple of weeks ago. I am the one who was blowing my nose the whole time. The one from Puerto Rico. I am writing first, to say thank you again. Your teaching left quite an imprint that continues to deepen in my sadhana and in my life each day. It feels beautiful. I look forward to doing the 2-year training with you.

The second thing has to do with my knee. At the course you only had time to check it out briefly. You told me to strengthen all my leg muscles. You said bridge reps would be helpful. I think, however, my knee is worse than I knew. I actually think I might have injured the meniscus. When I am standing naturally, with equal weight on both feet, my left knee is comfortably straight while my right knee is slightly bent. I had been feeling resistance to that knee straightening for a while. Now it requires me to really engage my quads to get the knee straight and even then it feels kind of jammed. It clicks with each step I take, always. The clicking point is at about a 5 - 10 degree flexion. And there is a slight gravelly sound on extension. And, there is quite a bit of soreness near the connection to the fibula. Bummer.

I am really hoping that it isn't something that is going to require surgery. And, at the moment I have no health insurance. So, I have been spending more time with all the stuff in the JFS that strengthens the legs. I have been doing slow flowing reps of warrior poses I and II as well as bridge reps focusing on muscular contraction rather than momentum.

And, I found a sequence for knee strengthening in Anatomy of Hatha Yoga that I have been practicing as well. Basically it consists of standing with my legs wide apart and strongly engaged while I turn my trunk right and then left and then bend forward and back on each side turn a million times. Any thoughts you might have about this would be hugely appreciated. I know you are busy and get lots of inquiries from loads of students. So, I'll be patient.

I would recommend that you go to my archive site - www.yogaforums.com and do search about knee conditions there you will find my answers to many similar complaints. Also recommend taking glucosamine chondroitin supplements which seem most helpful for connective tissue injury. I cannot say what injury is without seeing you but suggest you do vata balancing and Kapha increasing practices. First is JFS done with rhythmic breathing -- key is not too many times 6-10 is enough to get the sense of prana flowing into the joint tissue. Definitely the million times recommended in Anatomy of H. Yoga is likely to aggravate by increasing pitta. Do not do much let it heal. In second phase of healing once swelling, tenderness to touch is passed then increase Kapha by doing JFS as it says in my book for strength. Think of toning all directions of motion - adduction, abduction, flexion, extension, mildly on rotations (again I disagree with twisting torso with legs planted as in anatomy book as it can stress rotators medial and lateral sides of the knee. These motions are especially likely to aggravate the meniscus or ACL or PCL, the inner knee delicate structures.

To increase Kapha safely you should feel the specific muscles you are toning and only do one muscle per asana as in the JFS Strengthening series; holding poses only 6-10 breaths or more specifically as long as you can focus on one muscle awareness. So in bridge tone hamstrings. In Locust tone gluteals. In Virabhadrasana I tone adductors; in Virabhadrasana II tone abductors, like that then you will be safely building tone and power to immune system. Be cautious if you suspect meniscus injury. Do not be aggressive, keep sattvic attitude, not rajasic attitude I am going to heal no matter what (that creates trouble). Blessings. Mukunda

Torn Meniscus January 25, 2005

Mukunda,

Q- I am working with a woman who had surgery for a torn meniscus in Oct. About 2 mos. after the surgery she started having a pain on the lateral side of the knee that goes to the calf. Now she has a baker's cyst behind the knee, and her doctor says that Synovial fluid leaks into the cyst. MT for sartorius, psoas, and gluteus maximus were very weak. She has had "knock" knees her whole life but with lots of hatha yoga in the last year or so she seems to be changing the alignment of her legs for the better. I think her problems probably started with her hips. Her external rotation of the hips isn't very good, and this goes along with the weak muscles mentioned above. What would you recommend? JFS for the hips? I don't know about the Baker's cyst. I do think there is always some pain when muscles are changing/realigning, but not to the degree she has had. Would you suggest some poses that would not stress the knee too much but strengthen the weak muscles such as bridge, stick, locust, bound ankle (maybe), Warrior I (maybe, depending

on the knee).Also, I guess strengthening the quadriceps is almost always a good idea with a knee problem. Any help you can give with this will be appreciated.

A – Note that the weak muscles have in common that they are external hip rotators. Also this weakness is correlated with her range of motion being small. So you want to give plenty of variations of motions and asanas that work those muscles from mild to moderate difficulty. Definitely JFS but also modify sunbird motions to give external hip rotation motions. Modify all motions to not stress the knee or be weight bearing long. Give extra padding to knees and if necessary change to another position. Your ideas and directions are all good. Definitely tone the quads but also think that the entire 4 compartments (adduction, abduction, flexion and extension) of the hip need toning when there has been knee surgery. Give all actions in dynamic manner not static asanas, as this builds tone the safest and quickest. Namaste

Degenerating Ligaments December 20, 2004

I have found out about this forum through a friend who practices structural yoga therapy. My question might be a little off topic here, but I hope you may have some advice.

I have a friend who has been practicing ashtanga yoga for about 15 years, and has been recently diagnosed with a mild version of a connective tissue disorder called ehler's-danlos syndrome. It seems that the root of the problem is a missing protein in collagen formation which leads to extremely elastic ligaments & cartilage tissue. One manifestation is extreme flexibility, even double jointedness, which has made the practice of advanced asana fairly easy. It has also led to multiple small horizontal tears in the knee and shoulder ligaments. At this point, arthroscopic surgery, to knit together the ligament tears has been suggested as an option which would lead to recovery & full mobility. However, sometimes the results of such surgery may lead to other complications, and it is an invasive procedure, so I am trying to do research on any dietary, herbal & physical therapy & lifestyle changes that might be effective to slow down, stop, or even reverse some of the damage.

A vegetarian version of glucosamine has now become available, and we will try that, but any additional suggestions or references would be greatly appreciated. Namaste.

In the past few days, browsing on the internet, I came across something called prolotherapy. It supposedly helps heal arthritic joints and damaged ligaments by injecting dextrose solution into the affected area. It should be stimulating immune response strongly enough that the body actually is jump- started into rebuilding connective tissue.

I am not sure how successful treatments are, and am doing more research - if anyone has any experience w/this pls. post

There are a few prolotherapy sites which can be easily found through Google, I wouldn't post links or copy information here, as I'm not sure it is appropriate. thanks!

A - Asthanga Yoga practice is more likely to aggravate such conditions of loose ligaments due to the increased pitta that is inherent in this style of yoga. By increasing the body heat it promotes flexibility and in some cases inflammation of the joint tissues. My first recommendation is to do a gentler style of yoga such as Integral or Kripalu or Classical Hatha Yoga.

David Frawley, a Vedic scholar and author of many excellent books, wrote an article for Yoga International magazine called Herbs for Enhancing Hatha published March/April 1996. Among the herbs cited is ashwagandha "which possesses excellent nutritive properties and strengthens the muscles, tendons, bones, and nerves, increasing ojas the primary energy of the body thus fortifying the immune system and feeding the mind." I would suggest you find an Ayurvedic herbalist trained in this field who knows how to give the appropriate dose and mixture to balance your uniqueness.
namaste mukunda

Knee Injury Torn Meniscus August 6, 2004

Thank you for providing great answers to our questions. I have searched the Yoga Forum and did not find what I was looking for. My question is: How can a student continue a yoga practice if he is recovering from a torn meniscus? I read in some of the Forum emails something about a "joint freeing series" however I have no idea what that series is. Can you please inform me of the asanas that are relatively good for this student to do? Also, a list of big No-No asanas would be great (asanas to avoid). I look forward to your answer. Thank you very much.
Patricia.

A - The Joint Freeing Series is a set of 22 motions I adapted from the Sivananda School of Yoga to take every joint of the body to its full range of motion (ROM), thus restoring ROM, strength and improving circulation to the deeper joint tissues. It is fully described in my book Structural Yoga Therapy. In terms of a torn meniscus, I would suspect this student has great knee flexion limitations preventing him from doing the full motion as shown in pg. 138 of my book. Instead he should do the motion without his arms assisting.

Also I would avoid the obvious poses that will aggravate the knee and do not try to stretch the knee back to full ROM for sometime, let healing come at its own pace. Avoid hero pose, cross leg sitting on floor - instead sit with legs extended; avoid pulling heel toward buttocks as in Dancer King, Frog, etc. Warrior poses would be good held gently and focus on toning his adductors and abductors. namaste mukunda

Knee Pain in Lunge and Others January 20, 2004

I have a new student with a history of knee trouble. She had torn cartilage in her left knee and had an operation 2 years ago. They left the tear but took out scar tissue. She has arthritis in her quad and patella. She also has "trouble" with her right knee. After light yoga practice both knees are sore. She is unable to put her right knee back in lunge because it causes her pain. Also her left knee hurts in extension on #4 of the joint freeing series. In #5 the left knee has pain when the knee is externally rotated. Her left knee has

pain when it's bent in janusirshasana after 20 seconds or so. In general it seems her knees hurt when her kneecaps are pulled up. She is very motivated to have a regular asana practice. Any insight into what can be done for her knees, and what should be given/avoided in her practice in general would be most helpful thank you -- BP

A - A very challenging situation. The deeper solution might well be to do the arthritis diet (search for that topic on this site) as a 10 day cleanse to help remove ama (toxic material) from joints that are in pain. This is the more lasting solution, especially when combined with a regular Ayurveda pitta balancing diet.

As far as asanas go i would have her do cat and slowly separate the knees so one is going gradually into groin stretch cited in my book on page 164. The entire series would be better to do yet this one motion might provide some relief when the runner stretch is painful. I have been finding that students who do the entire mobilization series described here in chapter 17 that there results are superior to doing just some of the motions.

Torn Meniscus Knee Pain May 20, 2003

Q - may have torn my left meniscus, and have been unable to find good advice on whether to stabilize the knee and stay off of it, or continue moving and promoting circulation. I continue practice of Pavanmuktasana, though the ankle eversions are painful. After the first week, I stopped all Trikonasana and warrior poses because of ensuing pain.

I will get results of the MRI tomorrow and have engaged a chiropractor as well as an orthopedist to look at them. Do you know anything about the arthroscopic surgery? What I have researched so far leads me to believe that a torn meniscus is almost impossible to heal without the surgery, which often has people walking again within days. People I've spoken with who've tried alternatives for several years still have pain and usually wind up getting the surgical fix 2 - 5 years later. Any advice or guidance would be useful. I'm using ice for pain, arnica topically and internally (homeopathic). Also bromelain, glucosamine, and MSM for tissue repair. You are an angel, Mukunda, and your love and knowledge are deeply appreciated. Blessings, M

A - I assume you mean a medial meniscus (cartilage) tear, as this is the most common. A lateral tear is rare. I have suffered from this too when I was a teenager and had surgery. In those days the surgery was poor and I had trouble with the knee for the next 5 years until I began to create what is now called Structural Yoga Therapy. These days the surgery is quite excellent and prognosis for it is excellent. I do know of students who have gone without surgery and are fine no pain. I cannot give recommendations without knowing more -- which meniscus is torn? I assume medial, as eversion would be most likely to cause pain. Main recommendation is do only the joint freeing series, nothing more. All other products you are using sound like a good idea. If you were here I would also do bodywork with a product from Dr. Christopher's Natures Way called BF & S liniment. This is only sold through practitioners but it is excellent for healing connective tissue. There was a formula of the herbs in capsule form but I believe that is no longer available.

Knee Injury January 11, 2003

Hello Mukunda... Thank you again for making yourself so accessible for inquiry... I have a student, young male about 30 or so, who just underwent a medial meniscotomy.... about 10% of a flapping piece of meniscus/cartilage removed using arthroscopic surgery...the surgery happened on Wednesday, October 23rd and he has now been back practicing for one week. He feels gluteus react. What he finds helps the knee is to stretch the muscle chain from the minimus, to the IT band. The initial injury occurred about two years ago while in India attempting janusirsanasa ...he has already underwent surgery for it...any suggestions on helpful hip openers or whatever else would be most helpful. Thank you again ... namaste d

D - It is not clear from your writing what he feels in his body. This is always important starting point with making personalized recommendations. Know and understand anatomically what they feel and make sense of what helps and what doesn't. Surgery for medial meniscus is often a sign of tightness in the lateral thigh especially at the IT band of the tensor fascia late. Optimal is to check for normal range of motion of internal and external hip rotation. Lacking this openness at the hip rotators causes stress and pulling in the connective tissues at the knee. In general this is hip abduction strength and hip abduction stretches -- poses that do this are the closed hip standing poses of Virabhadrasana I and Parsvottanasana; Gomukhasana -- face of light/cow; and Parivritta janusirsanasa. The aim is to generate the specific feelings described above in those poses. If the poses do not generate these feelings then variations must be used. The concept is to adapt the poses to the student not the other way around. Namaste Mukunda

8- References

Beerlandt, Christiane. De Sleutel tot Zelf-Bevrijding (In Dutch, translates into The Key to Self-Liberation), Altina, Oostende, Belgium, 1998.

Coulter, David H. Anatomy of Hatha Yoga, Body and Breath, Inc. Honesdale, PA, 2001

Frawley, David. Yoga and Ayurveda, Self Healing and Self Realization, Lotus Press, 1999.

Lad, Vasant Dr. Ayurveda, The science of Self Healing, A Practical Guide, Lotus Press, 2004.

Marieb, Elaine N. Human Anatomy and Physiology, Benjamin Cummings, 2001.

McLanahan, Sandra A. Dr., McLanahan, David J. Dr. Surgery and its Alternatives, Twin Stream Books, 2002

Stiles, Mukunda. Structural Yoga Therapy, Adapting to the Individual Boston, MA: Samuel Weiser, 2000.

Websites

<http://www.arthoscopy.com> and link to <http://www.ourkneedoctor.com>, describing knee pain, anatomy of the knee, common knee conditions.

<http://www.medscape.com>, go to 'meniscus repair', there are many articles and studies on meniscus repair, causes of meniscus damage, etc.

<http://www.orthoassociates.com>, specialized Maine orthopedic surgeons providing care to a variety of musculoskeletal problems and injuries

<http://www.stoneclinic.com>, Multi-disciplinary team of health professionals providing orthopedic and sports medicine care. Located in San Francisco

9 – Appendix

Rolling Twist: Have the student lie on his/her side with knees and hips at 90-degree flexion and arms at 90-degree flexion as well. If necessary, support head with pillow or folded blanket. Allow the top arm to stretch beyond the lower arm and gradually move top arm into full flexion, making a semi-circle on the floor with the arm. If comfortable, have the student keep the gaze toward the hand. When arm is in full flexion have the student roll the trunk and keep the arm moving, the arms are now reaching away from one-another at a 180-degree angle. Allow the hand to move to the hip area, and rejoin the lower arm, which is still in the same position on the floor.

90 Degree Knee Bend with the back supported by a wall, a soft 12 inch ball behind the sacrum and a ball or block between the knees:

Start with leaning the back against a wall, the knees slightly bend and place a soft 12 inch ball behind the sacrum. Slowly bend the knees to a 90 degree angle, the ball will slide up the back, and bringing the knees back towards straight.

Physical Therapist's recommendations:

In picture 1, "HIP/KNEE-12 Heel slides", Bob was using a theraband to pull his heel close to his buttock. His tendency is to pull firmly and hold his breath. We talked about how this movement did bring his knee to full flexion, but it did not help to increase the strength in the knee flexors and extensors. The movement is very similar to #4 in the JFS. I asked Bob to slow down the movements, to coordinate the movement with the breath, to inhale with the extension of his knee and exhale with knee flexion. Also to deepen the breath so he felt more movement in his abdomen and to bring awareness to the feeling of the stretch in the muscles that were being stretched and feeling the strength in the muscles being strengthened.

In picture 2, "KNEE/HIP – 38 Supine Hamstring Stretch", we positioned Bob in a doorway with the upward facing leg supported against the doorjamb, so that the knee could be as close to being comfortably extended. I then asked him to bring awareness to his foot and bring his foot very carefully into dorsiflexion, to the point where he could feel the stretch and at the same time breathe and smile easily and not tighten up through his shoulders and chest.

In picture 3, "HIP/KNEE -23 Terminal Knee Extension", awareness was brought to keeping the foot in dorsiflexion and moving with the rhythm of his breath.

I was a little concerned about Bob's affected knee in picture 4, "HIP/KNEE – 48 Supine Piriformis Stretch", but he seemed to be fine. Again we talked about using the strength of the agonist muscle to stretch the antagonist. Not going beyond the point of comfort, but being able to breathe with the movement and being able to relax parts of the body not involved with the movement.

In picture 5, "HIP/KNEE -18 Straight Leg Raise, Phase II" again awareness was brought to the position of the foot as well as movement in rhythm with the breathing.

JUL 25, 2003

Created By: Mark D. Piechoski, PT, ATC, CSCS

HIP / KNEE - 12
Heelslides

Slide heel along surface of table attempting to bend knee as much as possible. Hold 10-15 seconds.



Repeat 10 times.
Do 2 sessions per day.

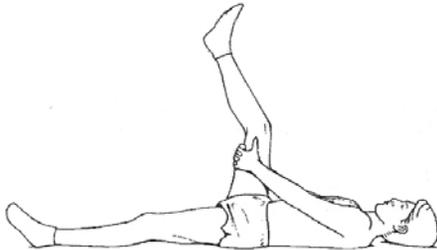
HIP / KNEE - 48
Supine Piriformis Stretch



Cross legs with involved leg on top. Gently pull other knee toward chest until a comfortable stretch is felt in the buttock/hip area. Hold 20-30 seconds.

Repeat 3 times per set. Do 2 sessions per day.

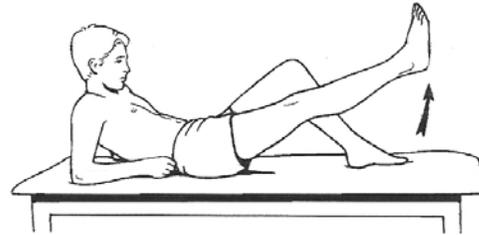
HIP / KNEE - 38
Stretching: Supine Hamstring Stretch



Lying on back and supporting thigh behind knee, slowly straighten knee until a stretch is felt in back of thigh. Hold 20-30 seconds.

Repeat 3 times. Do 2 sessions per day.

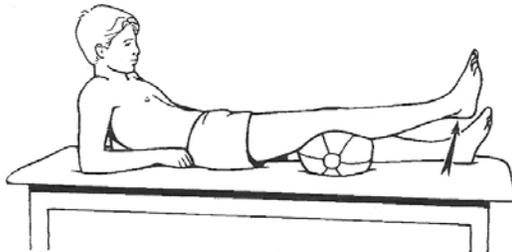
HIP / KNEE - 18
Strengthening: Straight Leg Raise, Phase II



Resting on forearms, tighten muscle on front of thigh, then lift leg 8-10 inches from surface, keeping knee locked. Hold 3 seconds.

Repeat 10 times. Do 2 sessions per day.

HIP / KNEE - 23
Strengthening: Terminal Knee Extension



With knee bent over bolster, straighten knee by tightening muscle on top of thigh. Be sure to keep bottom of knee on bolster. Hold 3 seconds.

Repeat 10 times. Do 2 sessions per day.

10. Bio

Aramati Akke Hulburt, was born and raised in The Netherlands, has been a student of Yoga since 1973. She is certified to teach Integral Yoga at Basic and Intermediate levels, Acu-Yoga and Structural Yoga. She has taught Yoga in public schools, at fitness and health centers and at her own studio. She also works as a massage therapist.