

PROTECTION & TREATMENT
OF KNEES in
YOGA



Essay for TTC Level 2

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1. INTRODUCTION

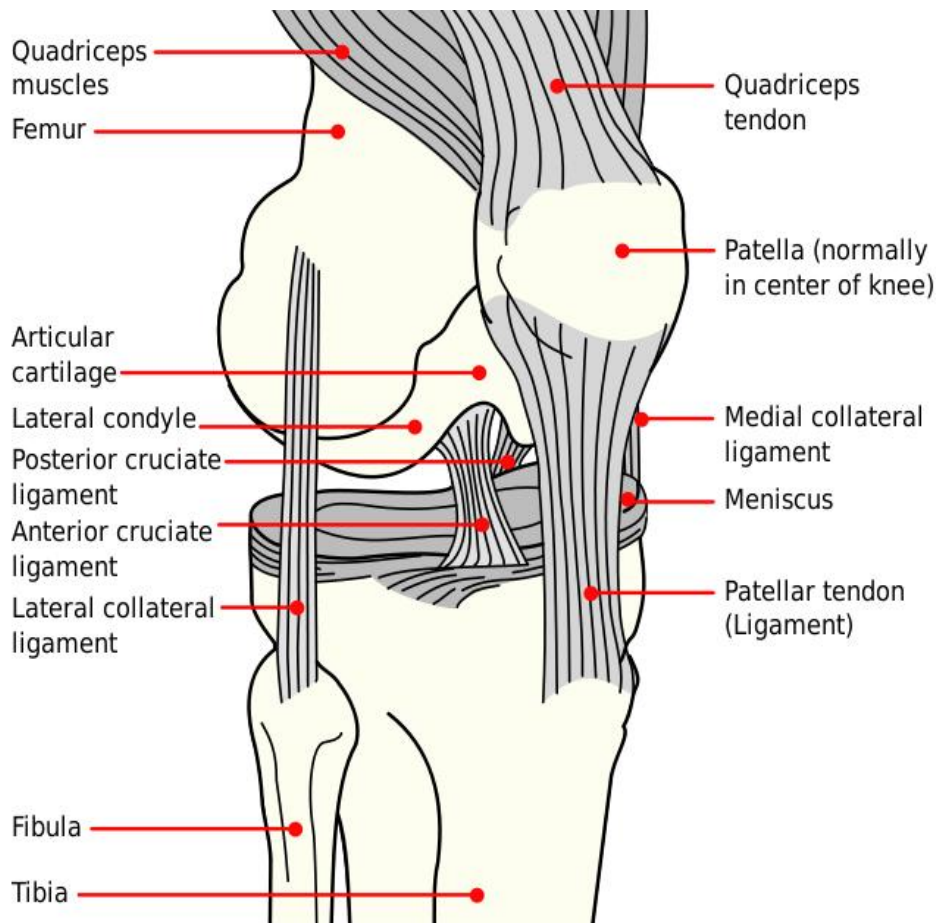
Yoga is demanding on the knees and can be a source of pain when practiced without presence. Yoga is also the ideal therapy for injured knees. Studies have concluded that therapy is better than surgery and yoga is helpful in conditions like arthritis, runner's knee, gout, kneecap tendonitis, torn meniscus, ruptured ligaments, torn cartilage, osteoarthritis and other inflammatory disorders.

2 KNEE ANATOMY

The knee is a hinge joint that enables the extension and flexion of the leg. 3 bones meet at the knee: the thighbone (femur), the shin bone (tibia and the kneecap (patella).

The bones are cushioned by cartilage, 2 C shaped pieces of cartilage called menisci act as shock absorbers between the thigh and shinbone.

The cruciate and lateral ligaments strap all the bones together and keep them in alignment. Tendons connect the muscles to the bones.





3. PROTECTION & PREVENTION

Knees are one of the 3 major stress points in yoga along with the neck and lumbar.

BACK TO BASICS

1) *No hathad no balad.* Never force the knee, be mindful of proper alignment and don't be in a rush to get into posture. Avoid jerky movements: e.g. grabbing the hand behind the leg in Marichyasana. Always go for the variation to maintain the integrity of the body. Shift the focus from "doing" the posture to "feeling" the posture.

2) *Start from your feet.* The feet should be well grounded and the weight evenly distributed on both sides. Spread the toes and press actively through all corners of the foot. This helps build strength evenly in the ligaments & tendons.

3) *Lift the pelvic floor to engage your core.* When the centerline of the body is engaged it becomes stronger and lighter thereby reducing the pressure on the joints. The skeletal system and muscles are in natural alignment and the body maintains its integrity.

4) *Warm Up With Hip Openers.* Often knee problems begin in the hips, it's the lack of rotation of the hip that causes pain to the knee. When the rotation occurs from the hip in postures such as baddakonasana, padmasana, no pain should be felt on the knees. The knees don't need to touch the ground.

5) *No Hyperextension.* Hyperextension leads to loosening of joint and weakness of knee. People with hyper extended knees should keep the knees slightly bent during standing poses and keep the weight evenly distributed over the four corners of the feet.

6) *Keep hips in line.* Always keep the hips in line in standing postures to avoid undue strain on the outer knees. Adopt the variation in standing postures: e.g. Vriksasana, Parsvakonasana, Trikonasana, Virabhadrasana A&B.

7) *Be aware and present during practice.* Listen to your body signals. Be aware of the difference between an intense stretch and sharp pain. Back off if pain is felt during a posture or coming out of a posture.

8) *Build Strength by Balancing.* Balancing pose like Garudasana is beneficial because it builds strength for proper knee alignment.

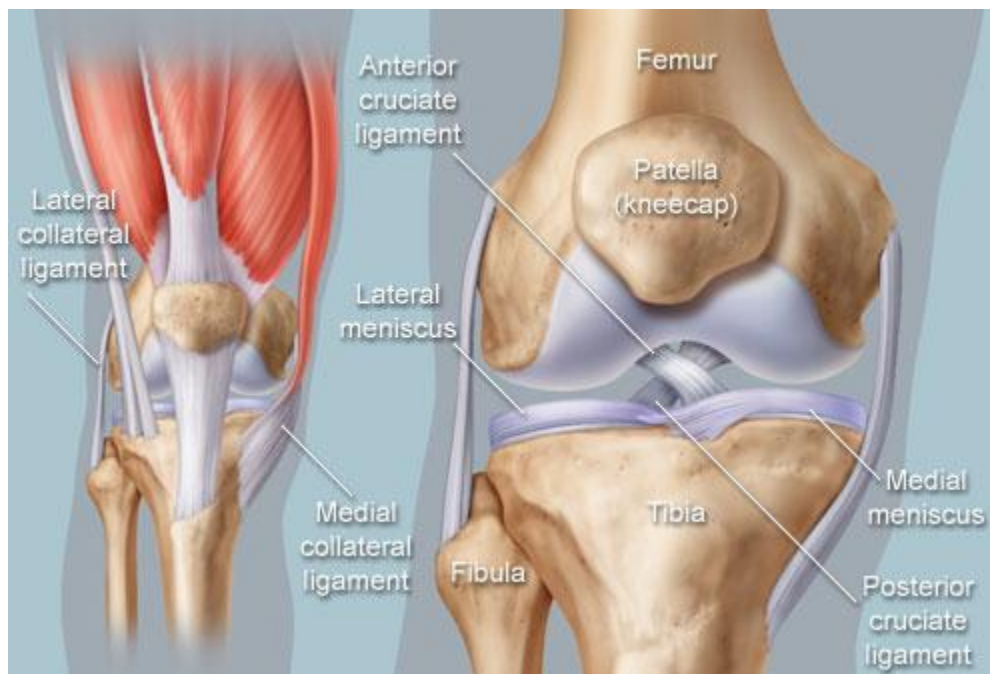
4. KNEE CONDITIONS

CONDITION	DESCRIPTION
Chondromalacia patella (also called patellofemoral syndrome):	Irritation of the cartilage on the underside of the kneecap (patella), causing knee pain. This is a common cause of knee pain in young people.
Knee osteoarthritis	Osteoarthritis is the most common form of arthritis, and often affects the knees. Caused by aging and wear and tear of cartilage, osteoarthritis symptoms may include knee pain, stiffness, and swelling.
Knee effusion	Fluid buildup inside the knee, usually from inflammation. Any form of arthritis or injury may cause a knee effusion.
Meniscal tear	Damage to a meniscus, the cartilage that cushions the knee, often occurs with twisting the knee. Large tears may cause the knee to lock.
ACL (anterior cruciate ligament) strain or tear	The ACL is responsible for a large part of the knee's stability. An ACL tear often leads to the knee "giving out," and may require surgical repair.
PCL (posterior cruciate ligament) strain or tear:	PCL tears can cause pain, swelling, and knee instability. These injuries are less common than ACL tears, and physical therapy (rather than surgery) is usually the best option.
MCL (medial collateral ligament) strain or tear:	This injury may cause pain and possible instability to the inner side of the knee.
Patellar subluxation	The kneecap slides abnormally or dislocates along the thigh bone during activity. Knee pain around the kneecap results.
Patellar tendonitis	Inflammation of the tendon connecting the kneecap (patella) to the shin bone. This occurs mostly in athletes from repeated jumping.
Knee bursitis	Pain, swelling, and warmth in any of the bursae of the knee. Bursitis often occurs from overuse or injury.
Baker's cyst	Collection of fluid in the back of the knee. Baker's cysts usually

	develop from a persistent effusion as in conditions such as arthritis.
Rheumatoid arthritis	An autoimmune condition that can cause arthritis in any joint, including the knees. If untreated, rheumatoid arthritis can cause permanent joint damage.
Gout	A form of arthritis caused by buildup of uric acid crystals in a joint. The knees may be affected, causing episodes of severe pain and swelling.
Pseudogout	A form of arthritis similar to gout, caused by calcium pyrophosphate crystals depositing in the knee or other joints.
Septic arthritis	Bacterial infection inside the knee can cause inflammation, pain, swelling, and difficulty moving the knee. Although uncommon, septic arthritis is a serious condition that usually gets worse quickly without treatment.

4.1 Common knee conditions:

- Strain or tear to the ligaments
- Strain or tear to tendons
- Torn meniscus
- Osteoarthritis (wear and tear of cartilage)
- Irritation of cartilage under the kneecap (common in young people)
- Gout (swelling and severe pain)



4.2 Main causes

- Sports injuries
- Misalignment of the knee due to uneven weight distribution and incorrect posture
- Wear and tear through age or repetitive injuries
- Obesity, too much pressure on the joint

5. YOGA THERAPY

Yoga is effective in treating knee conditions, especially torn ligaments, tendonitis, gout, arthritis, osteoarthritis, runner's knee, torn meniscus, torn cartilage and other inflammatory disorders.

The reasons for this are:

- Controlled breathing helps to decrease the production of toxins, good for inflammatory disorders
- Relaxing and stretching the tissues promotes circulation and relieves pain
- Gentle stretches promote the natural healing process and avoid use of surgery

The object of yoga therapy will be to strengthen the neuromuscular system and reduce the pressure on the knees. This can be achieved through a combination of joint movements, asanas, cooling pranayama and mild banda.

5.1 Joint movements

Joint movements should be practiced to improve blood circulation, remove toxins and relieve pain:

- Toe, ankle and knee movements strengthen the nerves
- Knee cap tightening in particular is beneficial.
- Knee rotation
- Ankle rotation & ankle bending
- Toe rotation and bending
- Leg raising, alternate legs

3-5 times daily for about 15 minutes/session. Once the knee has regained strength, mild asanas can be added to the therapy program.

5.2 Asanas

When the neuro muscular system improves and the joint has more strength, simple asanas can be performed to accelerate recovery. Slow, steady and controlled movements are recommended.

Asanas can be performed with mild lifting of pelvic floor (mula banda) to make the body lighter and invert the pranic flow.

1. Tadasana
2. Bhujangasana
3. Shalabasana
4. Leg raising, alternate and both legs
5. Dandasana, with knee cap tightening
6. Setubandasana breathing
7. Setubandasana raised hips for proper knee alignment
8. Pavanamuktasana kriya
9. Sarvangasana
10. Savasana

5.3 Pranayama

To reduce pain and inflammation cooling pranayamas can be prescribed:

- Bramari.(humming sound) strengthens the neuromuscular system and has been found to be effective for arthritis.
- Naddi shuddi
- Shitali , in warm season
- Shitkali, in warm season
- Kapalabati, for lightness & purification, to be performed during cold seasons.

6. YOGA THERAPY

Duration : 30 minutes

ASANA	COMMENT
Joint movements <ul style="list-style-type: none"> • Toe, ankle and knee movements • Knee cap tightening • Knee rotation • Ankle rotation & ankle bending • Toe rotation and bending • Hands stretch 	Slow controlled movement of the joints improves the blood circulation, removes toxins and relieves pain Sometimes the movements cause pain but continuous and regular effort should be applied to reduce the pain and strengthen the knee.
Tadasana	For alignment and even weight distribution
Bhujangasana	No stress on knees
Shalabasana	No stress on knees
Leg raising, alternate and both legs	Develops leg muscles evenly
Setubandasana breathing	
Setubandasana raised hips	Correct alignment of the knees

Pavanamuktasana	Kriya and breathing
Dandasana	Knee cap tightening. Good for knee hyper extension.
Sarvangasana	No pressure on knees
Sarvasana	Relaxation
Bramari	Good for arthritis
Naddi shuddi	Purification of energy
Shitali	Seasonal
Shitkali	Seasonal
Kapalabati	Seasonal. For lightness & purifi

In the presence of obesity the above therapies should be combined with a diet and healthy food choices.