ANATOMY AND PHYSIOLOGY ONLINE COURSE ASSIGNMENT

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Sanskrit name of Asana: hamsa parsvottanasana
Picture of the Asana:

1. POSITIONS OF THE MAJOR JOINT COMPLEXES IN HAMSA PARSVOTTANASANA

JOINT COMPLEX	LEFT	RIGHT
ankle	Dorsiflexion, Inversion	Plantarflexion, Eversion
knees	Extension, Internal Rotation	Extension, External Rotation
hips	Flexion	
lumbar spine	Neutral to slight flexion	
thoracic spine	Flexion	
cervical spine	Extension (photo)	
shoulders	Internal Rotation, Depression, Adduction	
elbows	Flexion, Pronation	
wrists	Extension, Radial deviation	

2. MUSCLE GROUPS WHICH WILL BE STRETCHED IN HAMSA PARSVOTTANASANA (RELATIVE TO THEIR NORMAL LENGTH IN THE ANATOMICAL POSITION)

ARMS (UPPER AND LOWER)	Wrist flexors, Elbow supinators, Elbow extensors, Elbow ulnar deviators
SHOULDERS	Elevators, Flexors, External rotators, Abductors
SPINE	Extensors (enhanced with neck flexion)
LEGS (UPPER AND LOWER)	Knee flexors, Back ankle plantarflexors, Front ankle dorsiflexors
HIPS	Extensors, Abductors and Ext. rotators (especially of the front leg)

3. MUSCLE GROUPS WHICH MUST BE ACTIVE IN HAMSA PARSVOTTANASANA

ARMS (UPPER AND LOWER)	Wrist flexors (espec. if pinching skin in the middle back) and extensors, Wrist radial deviators, Elbow flexors and pronators
SHOULDERS	Depressors, Extensors, Adductors, Internal rotators
SPINE	lumbar spine flexors (tailbone down, abdomen in), thoraric spine flexors (lower ribs in; flexion assisted with fingers pulling the back´s skin upwards)
LEGS (UPPER AND LOWER)	Front leg (Plantar flexors, Knee ext. rotators, Ankle evertors) Back leg (Plantar Flexors)
HIPS	Front leg (external rotators, flexors), Back leg(internal rotators, extensors (mat stretching))

4. THREE SIMPLER ALTERNATIVE WAYS TO PERFORM HAMSA PARSVOTTANASANA

1. **Problematic ulnar nerve stretch (Anumukha puritat mudra):**
   Instead of full prayer hands on the back, one can only internally rotate and depress the shoulders, retract the shoulder blades (and abbduct shoulders to intensify) and extend plus radialy deviate the wrists. If experiencing neck problems or numbness in the little finger, ommitting the ulnar nerve stretch altogether might be the most appropriate version.

2. **Knee joint instability:**
   Ommiting the locking mechanism of the front leg is a good solution for those experiencing pain in the knee. Slight flexion of the knee activates hamstring, which takes over functionality of malfunctioning ACL. Presing into VMO of the front leg with the opposite arm (while still possibly maintaining the Ulnar nerve stretch) helps if Patella maltracking is a problem.

3. **Tight hamstrings:**
   In this case it is worth separating the hamstring and spinal stretches. To stretch hamstring one should forward bend up only to the point that enables him to maintain the neutral spine and no posterior pelvic tilting. Focous should be given to activation of reciprocal relexation reflex (hip flexor activation) and in case of a slightly more advanced practitioner even utilisation of the inverse myotatic reflex.
   To stretch the spine then, one should bend the front knee. Then flexion of the spine is safe, since hamstring is released.

4. **Lower back pain:**
   Being gentle with any spinal flexion/extension is the key. It is rather worth paying attention to the relief of the pain, which is oftentimes caused by i.e. weak musculature around lower back. One should really stretch the mat with his feet to elicit stretch reflex and thus activate spinal flexor (front leg push) and extensor (back leg push) muscles.

5. THREE INSTRUCTIONS THAT WILL ELICIT MUSCLE ACTIVATION THAT IS NOT AUTOMATICALLY ACTIVATED BY THE POSTURE ITSELF

1. One should externally rotate the thigh of the front leg and internally rotate the thigh of the back leg to activate expansive,tha-kati bandha. To oppose this hip rotation and stabilise the knee joint complex, pressing with the big toes into the mat is recommended.

2. Stretching the mat with the feet activates lower back spinal muscles to prevent unwanted, too profound flexion of the weakest point of the spine.

3. To further stretch (flex) muscles of the thoracic spine, pinching skin of the middle back (while ulnar nerve stretch) and pulling it in and upwards will profoundly help.