ANATOMICAL LOCATIONS IN THE LOWER LIMB THAT CORRELATE WITH BASIC LINES AND SIGNALING POINTS AS OF COURT TYPE THAI TRADITIONAL MASSAGE

NARONGSAK CHANTAWANG

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Health Science at Mahasarakham University

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ABSTRACT

Court type Thai Traditional Massage (CTTM) emphasizes on using hands and fingers applying pressure on the points and basic lines. This study aimed to find out anatomical structures and locations from surface to deeper levels that correspond to the Basic Lines (BLs) and the Signaling Points (SPs) in the lower limb by studying of body surface of 2 volunteers and dissection of 5 cadavers. The study was carried out from May to September 2014 in the Gross Anatomy laboratory room, Biological sciences building, Faculty of Science, Mahasarakham University, Thailand. It was revealed that the normal points correspond to the muscular origins and the proximal parts of artery penetrating through the opening and the nerves ramify to supply the muscles.
The SPs on the outer lower limb are along the borders of iliotibial tract or between the muscular origins where the arterial and nerve supply are found while the SPs on the inner lower limb are found in adjacent to the courses of the artery and nerves.
The points that are considered to be both normal points and SPs on the outer lower limb usually correspond to the fleshy parts of the muscles and the posterior border of iliotibial tract and to the branches of the arteries and the nerves entering the muscles, in association with the hip joint while the inner lower limb situated near its the arterial and nerves supply. The BLs correspond to the longitudinal arrangement of muscles from the origins to the tendons, the borders of iliotibial tract, the artery and the nerve supplies between the muscles and the dorsal veins of foot Except the BL2 corresponds to the longitudinal arrangement of muscles form the tendons to the origins. The SPs are

in close association with the Myofascial Trigger Point (MTrP) is near the muscular origin which are similar to the locations of MTrPs and referred from MTrPs correspond to the locations of BLs. The locations of the SPs correspond to the meaning of SPs. It is quite reasonable that the leg massage points and lines as of CTTM always correspond or are closely related to anatomical structure especially arteries, nerves and muscles.

ชื่อเรื่อง ตำแหน่งทางกายวิภาคในขาที่สัมพันธ์กับแนวเส้นพื้นฐานและจุดสัญญาณของการนวดราชสำนัก
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บทคัดย่อ

การนวดแผนไทยแบบราชสำนักเน้นการนวดด้วยนิ้วและมือตามจุด จุดสัญญาณและเส้นพื้นฐาน การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาตำแหน่งทางกายวิภาคและอวัยวะในขาที่สัมพันธ์กับจุด จุดสัญญาณและเส้นพื้นฐาน จากส่วนตื้นจนถึงส่วนลึก โดยการคลำในคนปกติ 2 ราย และชำแหละ 10 ขา ของศพดอง 5 ศพ พบว่า ตำแหน่งของจุดนวดอยู่บนจุดเกาะต้นของกล้ามเนื้อบริเวณส่วนต้นของหลอดเลือดและเส้นประสาทกระจายเข้าสู่กล้ามเนื้อ ตำแหน่งจุดสัญญาณอยู่บนจุดเกาะต้นของกล้ามเนื้อ ซึ่งมีหลอดเลือดและประสาททอดผ่าน จุดสัญญาณที่เป็นจุดพื้นฐานมักอยู่บริเวณขอบของ Iliotibial Tract หรือมัดกล้ามเนื้อ พบแขนงหลอดเลือดและเส้นประสาทเข้ากล้ามเนื้อและเป็นบริเวณข้อต่อสะโพก ในขณะที่เส้นพื้นฐานอยู่บริเวณจุดเกาะต้นไปยังเอ็นของกล้ามเนื้อหรือบริเวณขอบของ Iliotibial Tract พบหลอดเลือดหรือเส้นประสาทที่อยู่ระหว่างกล้ามเนื้อและหลอดเลือดดำบริเวณหลังเท้า จุดสัญญาณต่างๆ อยู่บริเวณตำแหน่งที่มักเกิดจุดเจ็บไก (Myofascial Trigger Point) ที่อยู่ใกล้เคียงกับจุดเกาะต้นของกล้ามเนื้อและสอดคล้องกับความหมายของจุดสัญญาณ ในขณะที่เส้นพื้นฐานอยู่ในบริเวณที่มักมีอาการปวดต่างที่ (Referred Pain) จากจุดเจ็บไกของกลุ่มอาการปวดกล้ามเนื้อและพังผืด (Myofascial Pain Syndrome) จึงสรุปได้ว่า จุด จุดสัญญาณและเส้นพื้นฐานของการนวดราชสำนักเกี่ยวข้องกับโครงสร้างทางกายวิภาคศาสตร์ของมนุษย์ โดยเฉพาะอย่างยิ่ง หลอดเลือด เส้นประสาท และกล้ามเนื้อ

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List of Abbreviation

AB	adductor brevis muscle
AL	adductor longus muscle
AM	adductor magus muscle
ASIS	anterior superior iliac spine
ATA	anterior tibial artery
BL1	Basic massage Line number 1
BL2	Basic massage Line number 2
BL3	Basic massage Line number 3
BL4	Basic massage Line number 4
BLIT	Basic Line of the Inner Thigh
BLIL	Basic massage Line of Inner Leg
BLOT	Basic massage Line of Outer Thigh
BLOL	Basic massage Line of Outer Leg
BF	biceps femoris muscle
CPN	common peroneal nerve
CTTM	Court type Thai Traditional Massage
DPA	dorsalis pedis artery
DPN	deep peroneal nerve
DVF	dorsal venous arch of foot
EDB	extensor digitorum brevis muscle
EDL	extensor digitorum longus muscle
EHB	extensor hallucis brevis muscle
EHL	extensor hallucis longus muscle
ER	extensor retinaculum
FA	femoral artery
FDL	flexor digitorum longus muscle
FN	femoral nerve
G	gracilis muscle
GMax	gluteus maximus muscle
GMe	gluteus medius muscle

GMi	gluteus minimus muscle
Gas	gastrocnemius muscle
IFL	iliofemoral ligament
IGN	inferior gluteal nerve
IL	inguinal ligament
IT	iliotibial tract
ILs	Instep Lines
IPA	internal pudendal artery
ISP1	thigh Inner Signaling Point number 1
ISP2	thigh Inner Signaling Point number 2
ISP3	thigh Inner Signaling Point number 3
ISP4	leg Inner Signaling Point number 4 or middle point of the knee joint
ISP5	thigh Inner Signaling Point number 5
LaM	lateral malleolus
LFC	lateral femoral cutaneous nerve
MeM	medial malleolus
MGA	middle genicular artery
MTrP	Myofascial Trigger Point
NObI	nerve to obturator internus muscle
NP1	Nakabath point number 1
NP2	Nakabath point number 2
OSP1	thigh Outer Signaling Point number 1 or thigh outer point number 1
OSP2	thigh Outer Signaling Point number 2 or thigh outer point number 2
OSP3	thigh Outer Signaling Point number 3 or thigh outer point number 3
OSP4	thigh Outer Signaling Point number 4
OSP5	leg Outer Signaling Point number 5
PA	popliteal artery
PV	popliteal vein
PB	peroneus brevis muscle
PCN	posterior cutaneous nerve of the thigh
Pi	piriformis muscle
PL	peroneus longus muscle

Pl	plantaris muscle
PN	pudendal nerve
S	sartorius muscle
Semim	semimembranosus muscle
Semit	semitendinosus muscle
SBF	short head of biceps femoris muscle
ScN	sciatic nerve
SGA	superior gluteal artery
SGN	superior gluteal nerve
So	soleus muscle
SPN	superficial peroneal nerve
TAOP	temporary artery occlusion point or Pra Too Loom Point
TA	tibialis anterior muscle
TN	tibial nerve
TFL	tensor fascia latae muscle
TM	Thai therapeutic Massage
TP	tibialis posterior muscle
TTM	Thai Traditional Medicine
VL	vastus lateralis muscle
VMe	vastus medialis muscle

CHAPTER 1

INTRODUCTION

Background and Rationale

Thai Traditional Medicine (TTM) is the knowledge and mode of practice for health caring in congruent with Thai culture and way of life according to the principles of Buddhism. TTM comprises of Thai therapeutic medicine, Thai therapeutic pharmacy, Thai therapeutic Massage (TM) and Thai therapeutic midwifery (Center of Applied Thai Traditional Medicine, 2009). TM includes patient assessment, diagnosis, treatment, prevention, promotion and health restoration. The process of treatment involves finger or hand pressing, rolling, pushing, touching, bending, pulling, and hot herbal compressing or other methods according to the art of TM (Royal Institute of Thailand, 2010).

TM or nuad-thai is a branch of TTM and a form of manual therapy that could effectively cure or relieve several symptoms and diseases. TM is classified into two types, namely

Folk massage (FM) developed and passed on from generation to generation over the years. The method of FM all use hands, knees, elbows and feet to massage, bend, press, or stretch the body. The FM techniques vary different according to regions of the country (Thai Traditional Medicine Development Foundation, 2001).

Court type Thai traditional massage (CTTM) emphasizes use the hands and fingers to apply pressure to the points and standard lines (Center of Applied Thai Traditional Medicine, 2003; 2009).

Curriculum of "Applied Thai Traditional Medicine" is assigned including the basic medical sciences namely Human Anatomy, Human Physiology, Human Pathology etc., and the subjects of Thai traditional medicine for a major academic medical practice such as Thai therapeutic medicine, Thai therapeutic pharmacy, Thai therapeutic massage, Thai traditional midwifery (Center of Applied Thai Traditional Medicine, 2003).

The TM should have been originated from Sukhothai peroid, the oldest stone inscription with marks of inscription indicate the treatment by massage was found at the mango forest (Subcharoen, 1999; 2004; 2006).

In King Narai of Ayutthaya peroid, traditional medicine has flourished greatly especially, TTM has been appeared in palace of feudal, military faction and civilian bureaucrats. Department of masseur is the large department, with a lot of duties and responsibilities. The department was divided left and right sections with more doctors than other departments (Subcharoen, 2004; 2006).

The Kings Rama III of the Chakri Dynasty played the important role in revival of TTM. The principles of TTM was gathered and inscribed on marble tablets and placed on the walls of Wat Pho along with stretch hermits exercise or “Ruesi Dud Ton” with explanations of the symptoms or diseases each massage spot or exercise posture could heal. Until many associations and schools were established to conserve the wisdom of TTM in King Rama IX (King Bhumibol), especially Ayurvedic School was established by the association of restoration and promotion TTM and TM founded by Professor Oui Ketusing (Thai Traditional Medicine Development Foundation, 2001; 2007).

Professor Oui Ketusing combined the modern medicine with Thai traditional medicine to treat patients and set up an educational program in "Applied Thai Traditional Medicine". The course consisted of the basic medical science, the subjects of modern medicine for models compare development, the subjects of Thai traditional medicine for a major academic medical practice.

CTTM has not been teaching widely as of the FM. Mr. Narongsak Boonyarattanahiran was one of CTTM specialists that taught CTTM to students

In 2003 A.D., Ayurvedic School moved to the Faculty of Medicine Siriraj Hospital, Mahidol University to teach the 4 years program of Applied Thai Traditional Medicine. While the Faculty of Medicine, Mahasarakham University program thanstarted the Applied Thai Traditional Medicine in 2006 AD (Center of Applied Thai Traditional Medicine, 2009).

The course of CTTM divided into four steps namely 1) the basic lines massage, 2) the signaling points massage, 3) the basic therapeutic massage and 4) the complicated therapeutic massage. The steps 1 and 2 are important. The students required the basic

knowledge of the human anatomy, which is the basis of the massage training along the standard lines and the signaling points as well and leading to the effectiveness of therapeutic massage practice.

The Basic Massage Lines (BLs)

The BLs are the lines to use in Thai massage for treatment, promotion and restoration of health. The SL comprise basic massage of the upper limb (outer and inner arms), basic massage of the lower limb (outer and inner legs) etc (Royal Institute of Thailand, 2010).

The Signaling Massage Points (SPs)

The SPs are the important points or locations on the human body to massage for treatment in CTTM and corresponding to Sen-Sib or 10 (sib) primary energy lines (sen) to regulate the blood flow and distribute the blood and heat throughout the body. There are in the whole body and 10 points are in the lower limb (Royal Institute of Thailand, 2010).

The Meaning of SPs

The SPs are

1. The thigh Outer Signaling Point number 1 (OSP1) associates with the regulation of the blood flow and heat throughout the lower limb to the end of foot.
2. The thigh Outer Signaling Point number 2 (OSP2) is the point that could regulate the blood flow and heat to the head of femur.
3. The thigh Outer Signaling Point number 3 (OSP3) is the point that could regulate the blood flow and heat to the pelvis and the hip.
4. The thigh Outer Signaling Point number 4 (OSP4) is the point that could regulate the blood flow and heat to the knee.
5. The leg Outer Signaling Point number 5 (OSP5) is the point that could regulate the blood flow and heat to the tarsal joint through to the dorsum of foot.

6. The thigh Inner Signaling Point number 1 (ISP1) is the point that could regulate the blood flow and heat to the head of femur.

7. The thigh Inner Signaling Point number 2 (ISP2) associates with the distribution of the blood and heat to the thigh.

8. The thigh Inner Signaling Point number 3 (ISP3) is the point that could regulate the blood flow and heat to the knee.

9. The thigh Inner Signaling Point number 4 (ISP4) is the point that could regulate the blood flow and heat to the knee and the patella.

10. The leg Inner Signaling Point number 5 (ISP5) is the point that could regulate the blood flow and heat to the tarsal joint through to the sole of foot (Center of Applied Thai Traditional Medicine, 2003; 2014).

It is interesting to find out whether and what extent the Anatomical Locations in the Lower Limb Correspond or relate to BLs and SPs as of CTTM.

This study was conducted in the lower limb massage points, signaling points and lines, which are

1) The Basic massage points and lines as references for Basic massage of the lower limb

2) The Basic massage points and lines as references for Basic massage of the outer lower limb.

3) The Basic massage points and lines as references for Basic massage of the inner lower limb.

4) The signaling points as references for massage of the outer lower limb.

5) The signaling points as references for massage of the inner lower limb.

Research on Therapeutic Massage

Temporary femoral artery occlusion increased temperature of the skin of the dorsum of foot and decreased the heart rate and blood pressure (Janepanich et al., 1999) and increased blood flow to the distal region of the lower limb (Eungpinichpong et al., 2002). While the foot massage may decrease the gastrocnemius and tibia lis anterior muscles fatigue (Boonyapho, 1997).

TM doesn't cause damage to cells, tissues and blood vessels because it was found that unchanged in the chemical composition of the blood in the volunteers (Chanavirat, 2002). The Modified Thai traditional massage by focusing on the hips and thighs in supine position reduced average blood lactic acid and heart rate (Yiewyim, 2004). In contrast the average blood lactic acid in Swedish massage was reduced more than Thai traditional massage (Sedum, 2006). While the average blood lactic acid and fatigue in Swedish massage and Thai traditional massage were not different (Phusee, 2006).

The immediately effect after the foot massage decreased the foot paresthesia in the patients with non-insulin dependent diabetes mellitus (Thuma, 2007). While the average of numbness score was reduced after the fourth sessions of foot massage and acupressure in the diabetic patients (Nuchan, 2007).

The correlation between acupuncture points with Myofascial trigger points (MTrPs) on the spatial distribution and the associated pain pattern indicates that remarkably high degree (71%) of correspondence (Melzak, 1997). While the correlation between TM points focus on the Sen-Sib or 10 (sib) primary energy lines (sen) and MTrPs with compared the lines were shown corresponds incidents high degree (70 to 80%) (Eungpinichpong, 2004).

The immediate effect of hamstring muscles length and classic massage were increased after dynamic soft tissue mobilization in competitive female field hockey players (Hopper et al., 2005). Physiological effect namely, range-of-motion, heart rate, blood pressure, mood, and perceived anxiety were not different between Thai traditional massage and Swedish massage groups (Virginia et al., 2006). While the relaxation therapy versus the massage therapy on pain, depression, anxiety and sleep disturbances were not differences in chronic low back pain patients (Field et al., 2007).

The functional rating index, regarding frequency, intensity and during of symptoms were decreased after 3 weeks of the massage therapy in patients with restless legs syndrome (Russell et al., 2007). The pedal plantar pressures variability and contact time from the mean value pressure picture were increased after massage therapy focused on the lower limbs in the patients with diabetic neuropathy (Finch et al., 2007).

While the deep massage therapy to posterior calf combination with the self-stretch exercise program in the patients with plantar heel pain syndrome was decreased greater than ultrasound therapy combination with the self-stretch exercises (Saban et al., 2013).

However, the studies on Thai massage that are associated with anatomical structures are quite limited. It is interesting that the massage along the basic massage lines and signaling points are associated with which organs of the body. This study will focus on the lower limb as it is part of the body that therapeutic massage is frequently involved than other parts.

Objectives

To find out anatomical structures and locations in the lower limb that corresponds to or associated with the BLs and SPs as of CTTM.

Justification of the Study

Study on the 2 volunteers and dissecting of 10 lower limbs from 5 cadavers and from May, 2014 to September, 2014 at the Anatomy laboratory room, Biological sciences building, Faculty of Science, Mahasarakham University.

Benefits of the Study

1. To provide scientific evidences associated with the standard lines and the signaling points of CTTM.
2. The results of this study could be used as teaching materials in the curriculum of "Applied Thai Traditional Medicine" and those interested.

CHAPTER 2

Materials and Methods

This study to find out the points, signaling points and basic massage lines in the lower limb. Weather there are any relationships or corresponding between anatomical locations in the lower limb from surface to deeper levels. By studying outside based on volunteers and cadavers and dissecting cadavers to examine the deeper organs.

Materials

1. Two volunteers
2. Five cadavers
3. Atlas of Human Anatomy
4. Camera

Methods

Mark the point, signaling points and locate basic massage lines on the volunteers and cadavers.

BLs of lower limb comprises Basic Line number 1 to 4 (BL1, BL2, BL3 and BL4), Instep Lines (ILs), Basic Line of Outer Thigh (BLOT), Basic Line of Outer Leg (BLOL), Basic Line of Inner Thigh (BLIT) and Basic Line of Inner Leg (BLIL).

The points of lower limb comprises Nakabath points number 1 and 2 (NP1 and NP2), Temporary Artery Occlusion Point (TAOP), Outer Signaling Points number 1 to 5 (OSP1, OSP2, OSP3, OSP4 and OSP5) and Inner Signaling Points number 1 to 5 (ISP1, ISP2, ISP3, ISP4 and ISP5).

They are divided into 1) normal points which are NP1, NP2 and TAOP, signaling points which are OSP4, OSP5, ISP1, ISP2, ISP3 and ISP5 while the points that are considered to be both normal points and SPs namely, OSP1, OSP2, OSP3 and ISP4.

Basic Massage Lines

BL1 is imaginary line drawn from approximately one fingerbreadth (2 cm) anteromedial to NP2 (Fig 1, Ia) down to anteromedial border of Lateral Malleolus (LaM) (Fig 1, Ib).

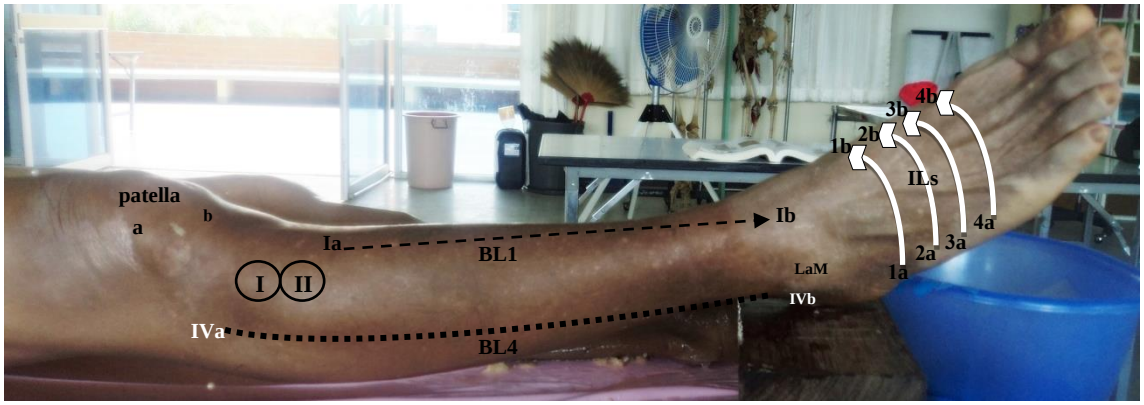

Figure 1 Anterolateral aspect of the leg showing the locations of NP1 (I), NP2 (II), BL1 (Ia to Ib), BL4 (IVa to IVb) and ILs. a, lateral edge of the patella; b, lower part of the patella; LaM, lateral malleolus.

BL2 is imaginary line drawn from approximately 2 fingerbreadth (4 cm) superolateral border of the patella (Fig 2, IIa) up to Huatakak(Fig 2, IIb). Huatakak correspond to the anatomical structure called anterior superior iliac spine (ASIS).

BL3 is imaginary line drawn from approximately 5 fingerbreadth (10 cm) below ASIS (Fig 2, IIIa) down to upper lateral part of the patella (Fig 2, IIIb) approximately 2 fingerbreadth (4 cm).

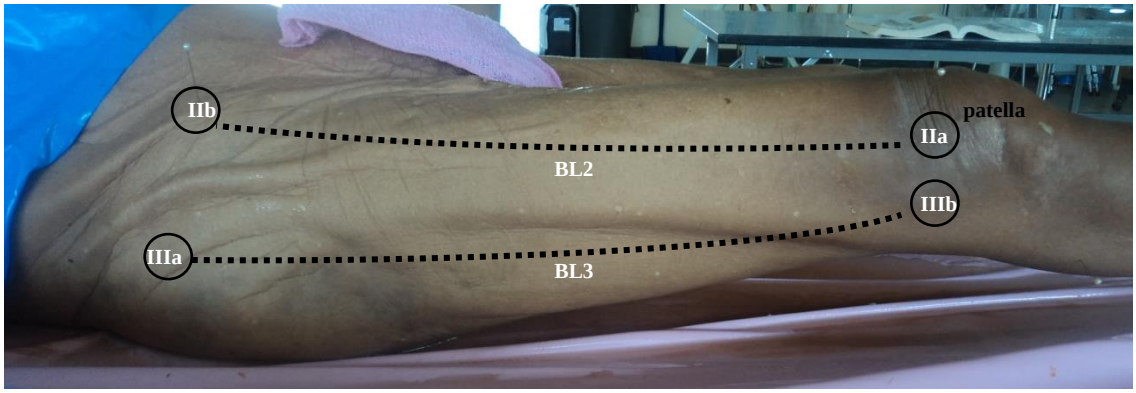

Figure 2 Anterolateral aspect of the thigh showing locations of BL2 from IIa to IIb and BL3 from IIIa to IIIb.

BL4 is imaginary line drawn from approximately 1 fingerbreadth (2 cm) below the fibular head to lateral border of lateral malleolus (Fig 1, IVa-IVb).

There are 4 Instep Lines (ILs) are imaginary line drawn from fifth metatarsal (Fig 1, 1a-4a). First line was occupied by the base of fifth metatarsal to the medial border of the foot (Fig 1, 1b-4b)

BLOT is imaginary line drawn from approximately 5 fingerbreadth (10 cm) below OSP3 to upper part of the lateral side of the patella (Fig 3, x' to y').

BLOL is imaginary line drawn from anterior border of fibular head which is approximately 1 fingerbreadth (2 cm) to anterior border of LaM (Fig 3, a' to b').

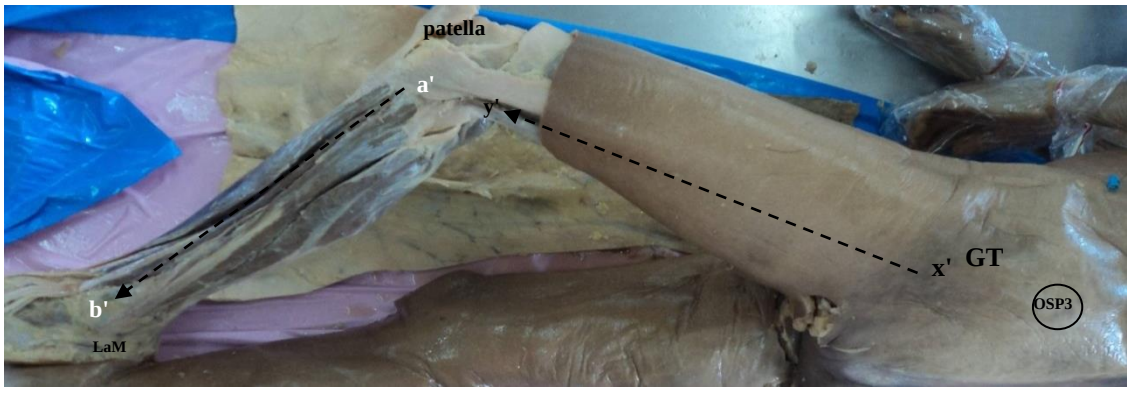

Figure 3 Anterolateral aspect of left thigh illustrated the locations of BLOT from x' to y' and BLOL from a' to b'. GT, greater trochanter; OSP3, the Outer Signaling Point number 3.

BLIT is imaginary line drawn from approximately 2 fingerbreadth (4 cm) below gluteal fold to 2 fingerbreadth (4 cm) above medial side of the medial epicondyle of femur (Fig 4, x'' to y'').

BLIL is imaginary line drawn from medial border of tibia approximately 2 fingerbreadth (4 cm) below tibia head to 2 fingerbreadth (4 cm) to posterior border of Medial Malleolus (MeM) (Fig 4, a'' to b'').

Figure 4 Medial aspect of leg on the left side showing the location of BLIT (x'' to y'') and BLIL (a'' to b'')

Normal Points

NP1 is the point where the vertically line passing through lateral edge of patella (Fig 1, a) intersects with the horizontal line pass through approximately 2 fingerbreadth (4 cm) below lower part of patella (Fig 1, b) while NP2 is approximately one fingerbreadth below NP1.

Temporary Artery Occlusion Point (TAOP) or Perd Pra Too Loom Point is the point where the oblique line passing through ASIS which is approximately 45° (Fig 5, x).

Figure 5 Right thigh showing the location of TAOP (X).

Signaling Points

OSP4 is the point where the two imaginary vertical and horizontal lines intersect. Vertically line passes through the tendons on lateral side of knee (Fig 7, a) which the horizontal line passes through approximately 4 fingerbreadth (8 cm) above the tendons on lateral side of the knee (Fig 7, b).

OSP5 is the point where the imaginary vertical and horizontal lines intersect. Vertically line passes through approximately 1 fingerbreadth (2 cm) anterior to the fibular head (Fig 7, h) whereas the horizontal line passes through approximately 4 fingerbreadth (8 cm) below fibular head (Fig 7, i).

ISP1 is the intersecting point of the vertically line passes through approximately 3 fingerbreadth (6 cm) posterior to midline of inner thigh (Fig 6, L1) with horizontal line drawn adjacent to gluteal fold (Fig 6, L2).

ISP2 is the insecting point of vertically line passing through midline of inner thigh (Fig 6, L3) with horizontal line drawn 2 fingerbreadth (4 cm) below the gluteal fold on inner side of thigh (Fig 6, L4).

ISP3 is the insecting point of vertically line passing through approximately 1 fingerbreadth (2 cm) anterior to midline of inner thigh (Fig 6, L5) with horizontal line drawn 4 fingerbreadth (8 cm) above the patella on inner side of thigh (Fig 6, L6).

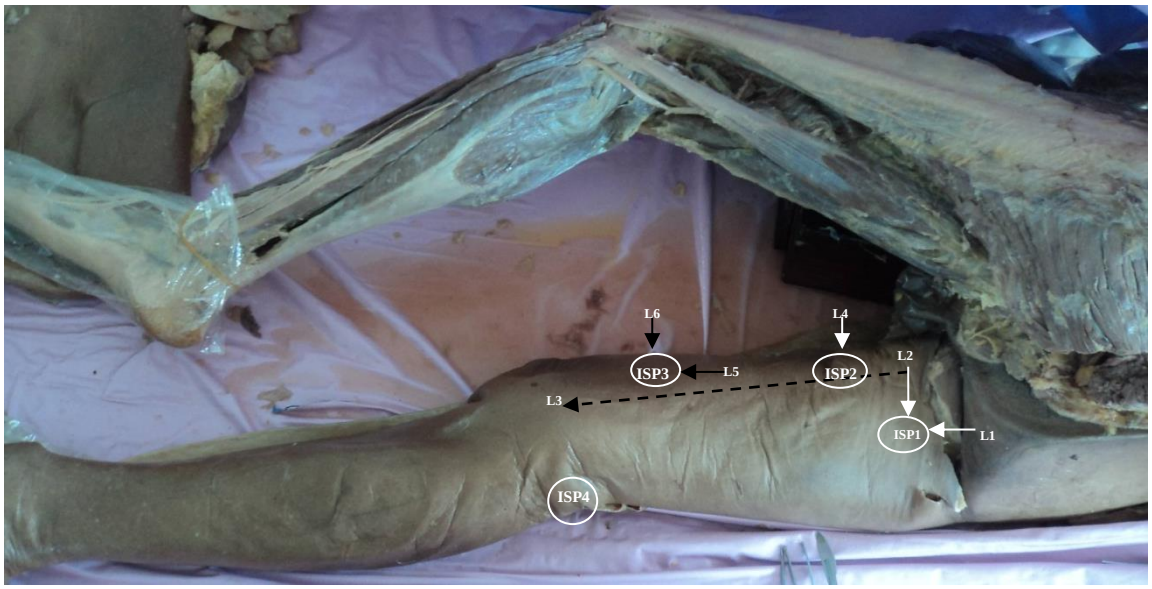

Figure 6 Right thigh and gluteal region showing locations of thigh Inner Signaling Point number 1 to 4 (ISP1, ISP2, ISP3 and ISP4).

ISP5 is the intersecting point of the vertically line passing through adjacent posterior border of medial malleolus with the horizontal line drawn adjacent lower border of MeM.

Points that are Considered To be Both Normal Points and Signaling Points

OSP1 is the point where the imaginary vertical and horizontal lines intersect. Vertically line passes through the highest point of iliac crest (Fig 7, X) which is approximately 5 fingerbreadth (10 cm) whereas the horizontal line passes ASIS (Fig 7, ASIS).

OSP2 is the point where the imaginary vertical and horizontal lines intersect. Vertically line passes through posterior point of ASIS (Fig 7, ASIS) which is approximately 2 fingerbreadth (4 cm) whereas the horizontal line passes anteroinferior point of ASIS (Fig 7, ASIS) which is approximately 1 fingerbreadth (2 cm).

OSP3 is the point where the imaginary oblique and horizontal lines intersect. Oblique line passes through ASIS (Fig 7, ASIS) which is approximately 45° whereas the horizontal line passes the coccyx (Fig 7, C).

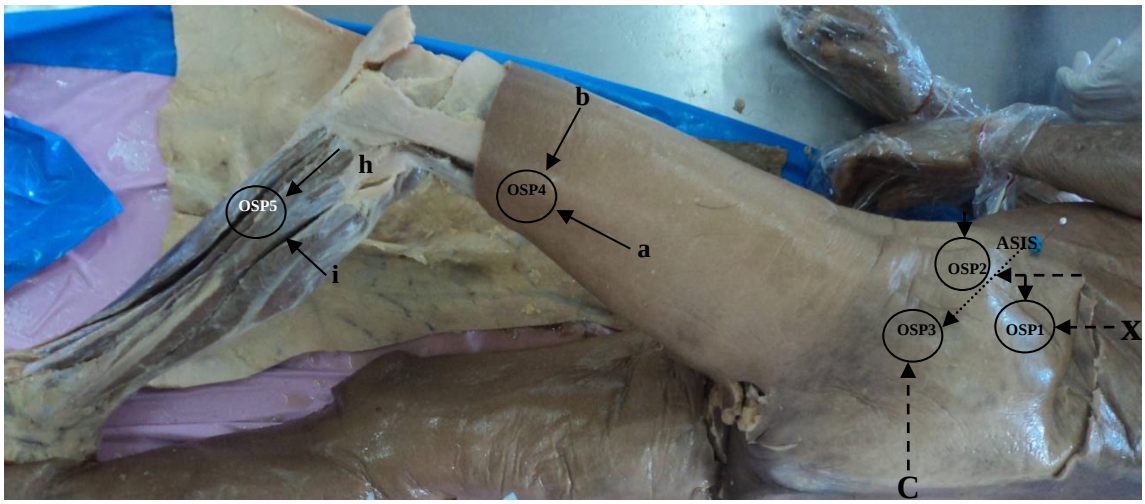

Figure 7 Left thigh and gluteal region, showing locations of OSP1, OSP2, OSP3, OSP4 and OSP5. ASIS, anterior superior iliac spine; C, coccyx; h, fibular head; X, highest point of iliac crest.

ISP4 is the middle point of the knee joint lies behind the knee (Fig 6, ISP4).

1. Palpate at the points, signaling points and along basic massage lines.

2. Make the dissection of cadaver by removing skin and fascia from the buttocks, thighs, legs and feet.

3. Identify anatomical structures located deep to the points, signaling points and basic massage lines specially, muscles, nerves, blood vessels and other structures.

4. Take photograph of these structures.

CHAPTER 3

Results

The Basic Massage Lines

The lateral border of tibia could be palpated adjacent BL1 in the living person. After removing the leg skin (Figs. 8 and 9), it is shown that the BL1 locates along the lateral border of tibia. The proximal part of BL1 locates between the origins of Tibialis Anterior (TA) and Extensor Digitorum Longus (EDL) muscles. While the tendons of TA, EDL and Extensor Hallucis Longus (EHL) muscles related to the distal part of BL1. When dissecting deeper at the middle thirds of the BL1, the anterior tibial vessels (artery and vein) and Deep Peroneal Nerve (DPN) are between in these muscles.

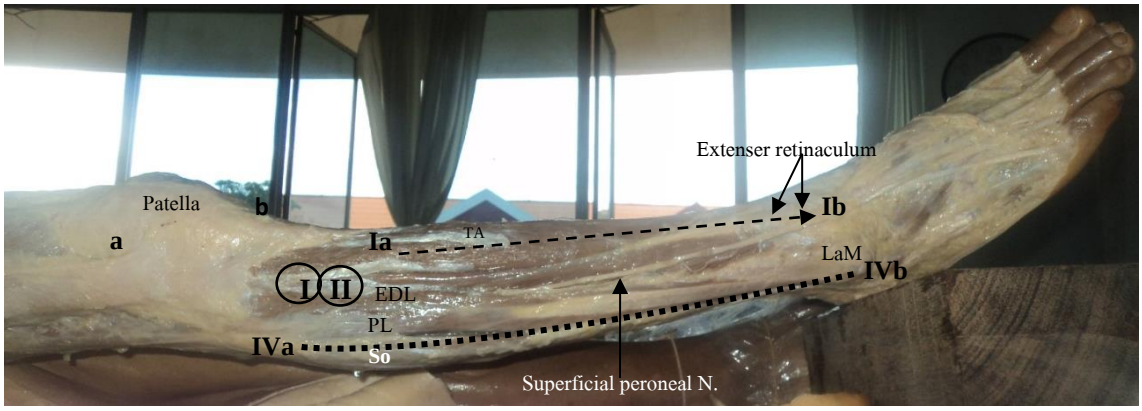

Figure 8 Skin removal of right leg showing locations of NP1 (I), NP2 (II), BL1(Ia to Ib) and BL4 (IVa to IVb). a, lateral edge of the patella; b, lower part of the patella; EDL, extensor digitorum longus muscle; LaM, lateral malleolus; PL, peroneus longus muscle; So, soleus muscle; TA, tibialis anterior muscle.

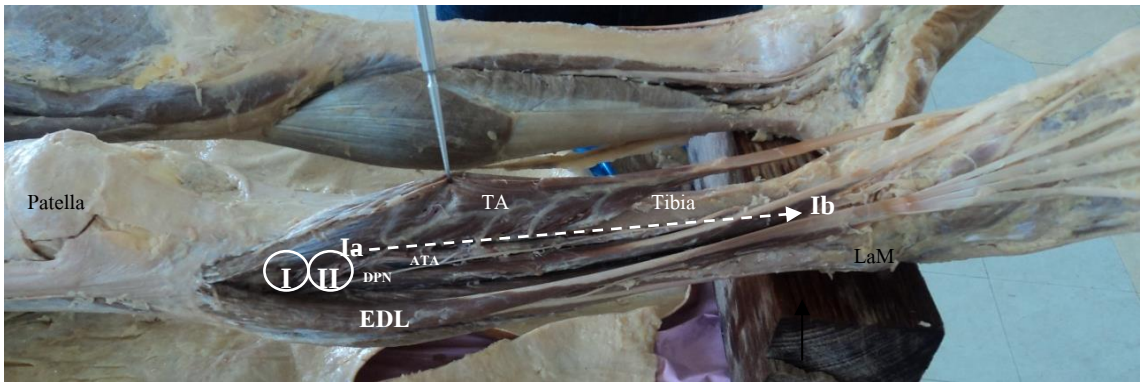

Figure 9 Deeper dissection right leg showing locations of NP1 (I), NP2 (II) and BL1 corresponds to the anterior tibial artery (ATA) and DPN are between TA and EDL muscles. EDL, extensor digitorum longus muscle; LaM, lateral malleolus; PL, peroneus longus muscle; TA, tibialis anterior muscle.

At BL2 runs along the anterior border of Iliotibial Tract (IT) could be palpated in the living person. After removing the thigh skin (Fig. 10), it is shown that the proximal part of the BL2 locates along the anterior border of the Iliotibial Tract (IT), the lateral border of Vastus Lateralis (VL) and the lateral border of rectus femoris muscles respectively. While the origins of Tensor Fascia Latae (TFL) and Sartorius (S) muscles related to the distal part of BL2. The ASIS is important anatomical landmark and the end of the BL2.

At BL3, runs along the posterior border of IT could be palpated in the living person. After removing the thigh skin (Fig. 10), it is found that the proximal part of BL3 locates between the upper parts of Gluteus Maximus (GMax) inserting to IT.
The proximal part of BL3 was located along the insertion of GMax to the posterior border of IT. While the lower part of posterior border of IT and the Short head of Biceps Femoris (SBF) muscle related to the distal part of the BL3.

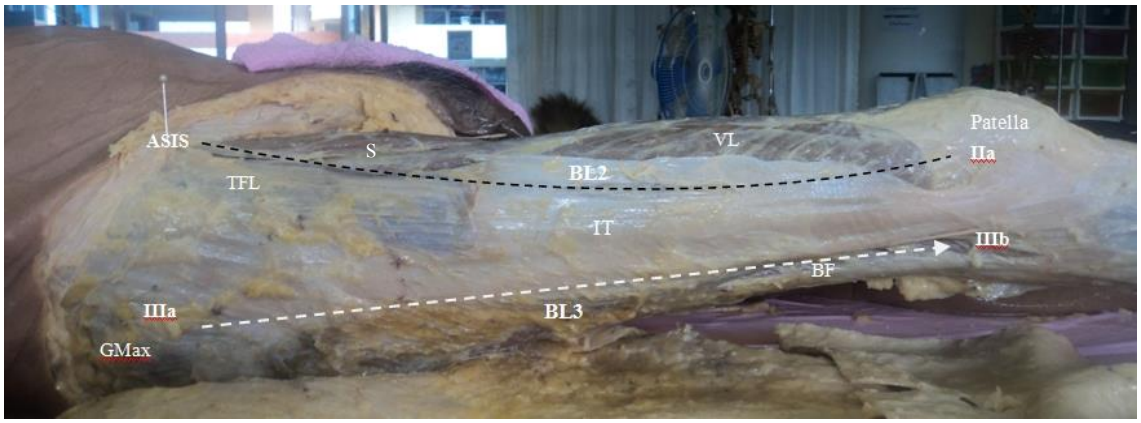

Figure 10 Deeper dissection of right thigh showing the location of BL2 (IIa to ASIS) and BL3 (IIIa to IIIb) locate along the posterior border of IT. ASIA, anterior superior iliac spine; BF, biceps femoris muscle; GMax, gluteus maximus muscle; RF, rectus femoris muscle S, sartorius muscle TFL, tensor fascia latae muscle; VL, vastus lateralis muscle.

The posterior border of fibular could be palpated along BL4 in the living person. After removing the leg skin, it could be mapped that the BL4 locate along the posterior border of fibular. The proximal part of the BL4 occupied by the origin of peroneus longus (PL) and the lateral edge of soleus (So) muscles. The middle part of BL4 was occupied by the origin of peroneus brevis (PB) muscle. While the tendons of PL and PB muscles that correlate with the distal part of BL4 (Fig 8, Iva to IVb). When dissecting deeper at the upper thirds of BL4, the superficial peroneal nerve (SPN) was seen ramifying to supply the muscles in the lateral compartment of the leg (PL and PB muscles).

The dorsalis pedis pulse could be palpated along ILs in the living person. After removing the dorsal of foot skin (Figs. 11 and 12), it is found that the ILs locates on the area where the Dorsal Venous arch of Foot (DVF) and the tendon of EDL muscle. When dissecting deeper at ILs, the Extensor Hallucis Brevis (EHB), Extensor Digitorum Brevis (EDB) muscle, the SPN where the DPN ramified to supply the EDB and EHB muscles. The dorsalis pedis artery (DPA) is continuation of the ATA to supply the contents of the dorsum of foot.

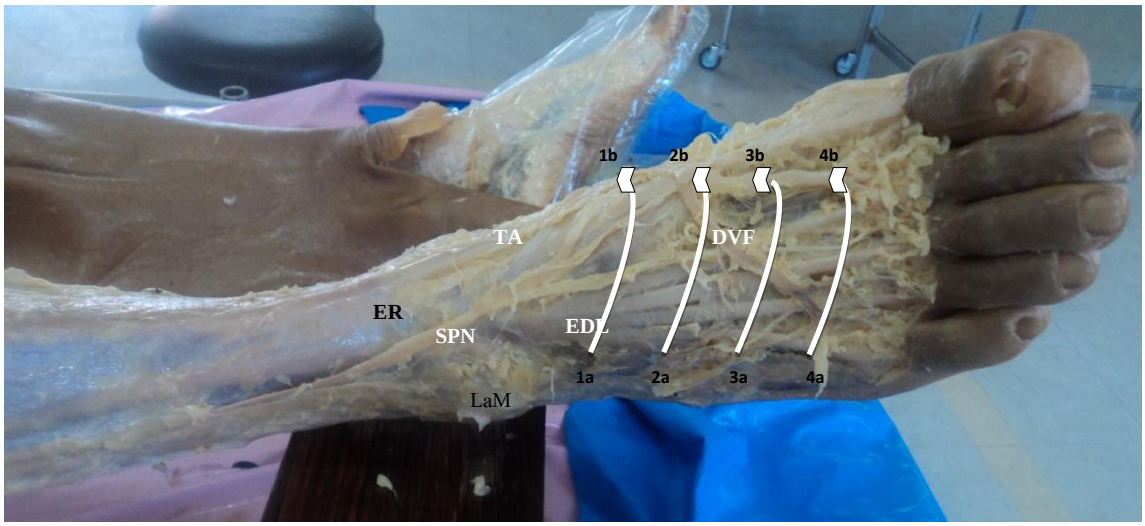

Figure 11 Skin removal of the right dorsum of foot showing the location of ILs (1a to 1b, 2a to 2b, 3a to 3b, 4a to 4b) along to the DVF. EDL, tendon of extensor digitorum longus muscle; ER, extensor retinaculum; LaM, lateral malleolus; SPN, superficial peroneal nerve; TA, tendon of tibialis anterior muscle.

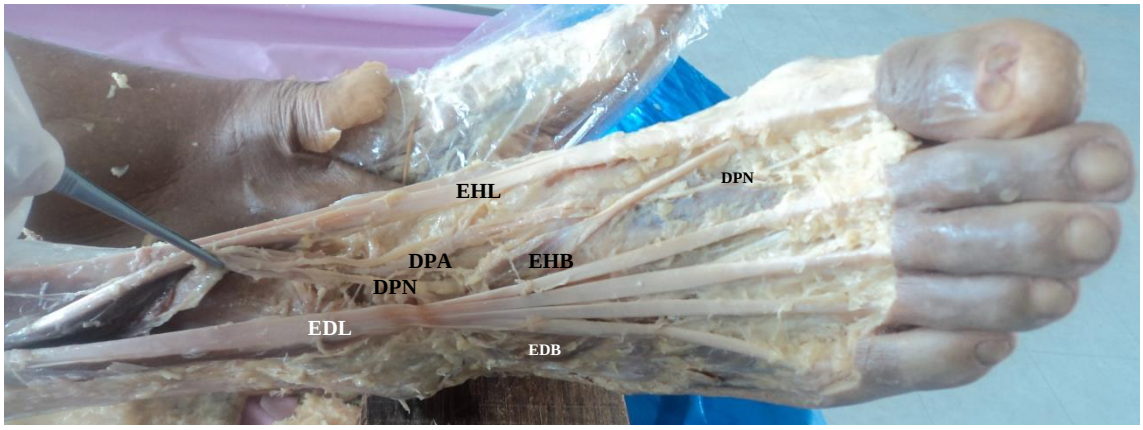

Figure 12 Deeper dissection right dorsum of foot showing the location of the ILs relating to the contents of the dorsum of foot. DPN, deep peroneal nerve; DPA, dorsalis pedis artery; EDB, extensor digitorum brevis muscle; EDL, tendon of extensor digitorum longus muscle; EHB, extensor hallucis brevis muscle EHL, tendon of extensor hallucis longus.

The posterior border of IT could be palpated along BLOT in the living person and was confirmed by removing the thigh skin in the cadaver (Fig. 13). The proximal part of the BLOT was seen along the insertion of GMax to the posterior border of IT. While the posterior border of IT was situated between the SBF muscle related to the distal part of this line.

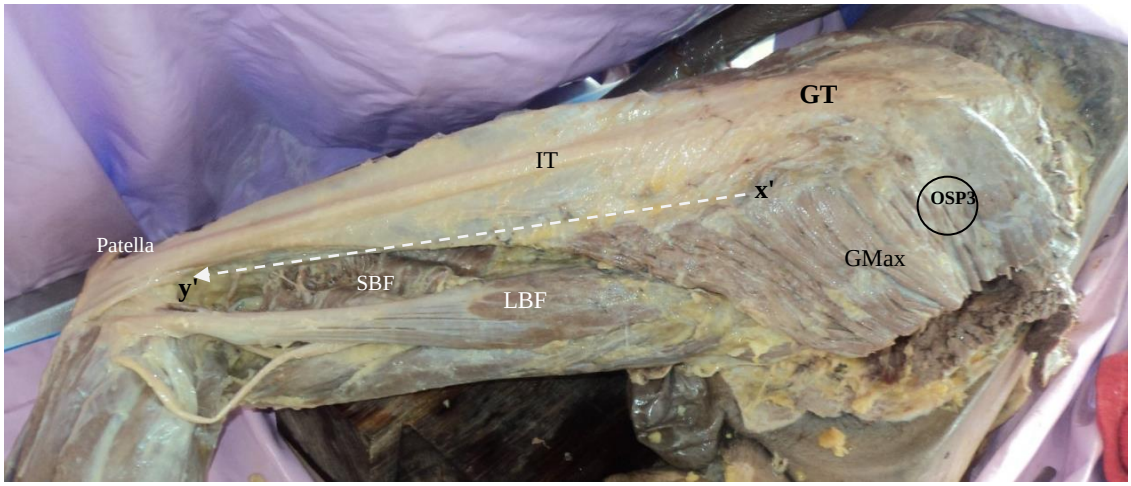

Figure 13 Deeper dissection of the left thigh showing the location of BLOT relating to the posterior border of IT. GMax, gluteus maximus muscle; GT, greater trochanter; IT, iliotibial tract; LBF, long head of biceps femoris muscle; OSP3, the Outer Signaling Point number 3; SBF, short head of biceps femoris muscle.

In the living specimen could be palpated at BLOL runs along the lateral border of tibia and was confirmed by removing of the leg skin in the cadaver (Fig. 14). This line was seen along the anterior border of fibular. The proximal part of this line was situated between the origins of TA and EDL muscles. While the tendons of TA, EDL and EHL muscles related to the distal part of BLOL. When dissecting deeper at the middle thirds of this line was seen the anterior tibial vessels (artery and vein) and the DPN are between in these muscles. The BLOL corresponded to the posterior border of anterior compartment of the leg.

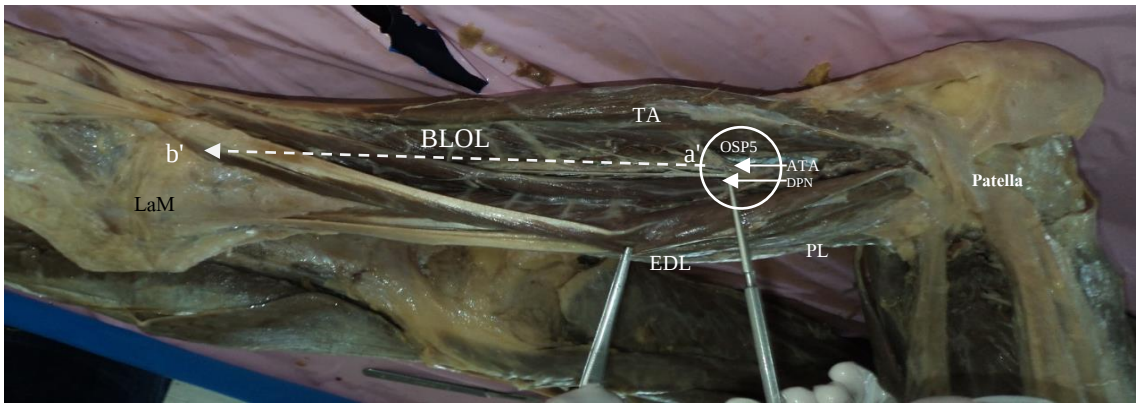

Figure 14 Deeper dissection of left leg showing the locations of BLOL and OSP5 relating to the anterior tibial vessels and DPN are between the TA and EDL muscles at the middle thirds of this line. ATA, anterior tibial artery; DPN, deep peroneal nerve; EDL, extensor digitorum longus muscle; LaM, lateral malleolus; PL, peroneus longus muscle; ATA, anterior tibial artery; TA, tibialis anterior muscle.

The anterior border of Gracilis (G) muscle could be palpated along BLIT in the living person and was confirmed by removing the thigh skin in the cadaver (Fig. 17). BLIT corresponds to the position where the anterior border of G muscle, posterior border of S muscle and distal part of this line corresponded to the medial epicondyle of femur. The middle third of this line is on the area of adductor canal. This canal begins form the lower part of femoral triangle. When dissecting deeper at the middle thirds of the BLIT, the femoral vessels (artery and vein) and Femoral Nerve (FN) are seen under the S muscle. The femoral vessels communicate with popliteal fossa through adductor hiatus in the AM muscle.

The medial border of tibia could be palpated adjacent BLIL in the living person and was confirmed by removing the leg skin in the cadaver (Figs. 21). This line was seen along the medial border of Gastrocnemius (Gas) and So muscles. When dissecting deeper at this line, the posterior tibial vessels (artery and vein) and Tibial Nerve (TN) are seen deep the Flexor Digitorum Longus (FDL) muscle. The popliteal vessels communicate with the posterior tibial vessels through the upper border of the popliteus muscle. While the tendons of FDL and tibialis posterior (TP) muscles are related to the distal part of BLIL.

TABLE I. Summary of anatomical location in the lower limb that correlate with BLs

lines	muscles	Origins of	Tendons of	fascia	Vessels	Nerves (N)
SL1	TA	TA, EDL muscles	TA, EDL and EHL muscles	-	anterior tibial	DPN
SL2	lateral border VL and the lateral border of RF muscles	TFL, S muscles	VL	anterior border of IT	-	LFC
SL3	upper part of GMax	SBF muscles	insertion of GMax to posterior border of IT	posterior border of IT	-	-
SL4	PL, PB and lateral edge of So muscles	PL and PB muscles		-	-	SPN
ILs	EHB and EDB muscles	-	EDL and EHL muscles	-	DVF and DPA	SPN and DPN
SLOT	SBF muscle		GMax insert to IT	Posterior border of IT	-	-
SLOL	TA and EDL muscles		TA, EDL and EHL muscles	-	anterior tibial	DPN
SLIT	anterior border of G and posterior border of S muscles	-	-	-	femoral	FN
SLIL	medial border of Gas, So and FDL muscles		FDL and TP muscles	-	posterior tibial	TN

The Normal Massage Points

After removing the leg skin (Figs. 8 and 9), it is found that both NP1 and NP2 locate between the origins of TA and EDL muscles. As shown in Figure 9, the NP1 located just anterior to the upper part of fibular neck where the anterior tibial artery (ATA) was seen penetrating from the popliteal fossa through the openning in the superior part of interosseous membrane while the NP2 was at the anterior border of fibular neck. At this point (NP2), where the DPN ramifying to supply the muscles in the anterior compartment of the leg. They are TA, EDL and EHL muscles.

At TAOP, the femoral pulse could be palpated in the living person and was confirmed by removing the thigh skin in the cadaver (Fig. 15). This point corresponds to the position where the femoral triangle. When dissecting deeper at the TAOP, the femoral vessels (artery and vein) and the FN communicate with adductor canal through the apex of femoral triangle.

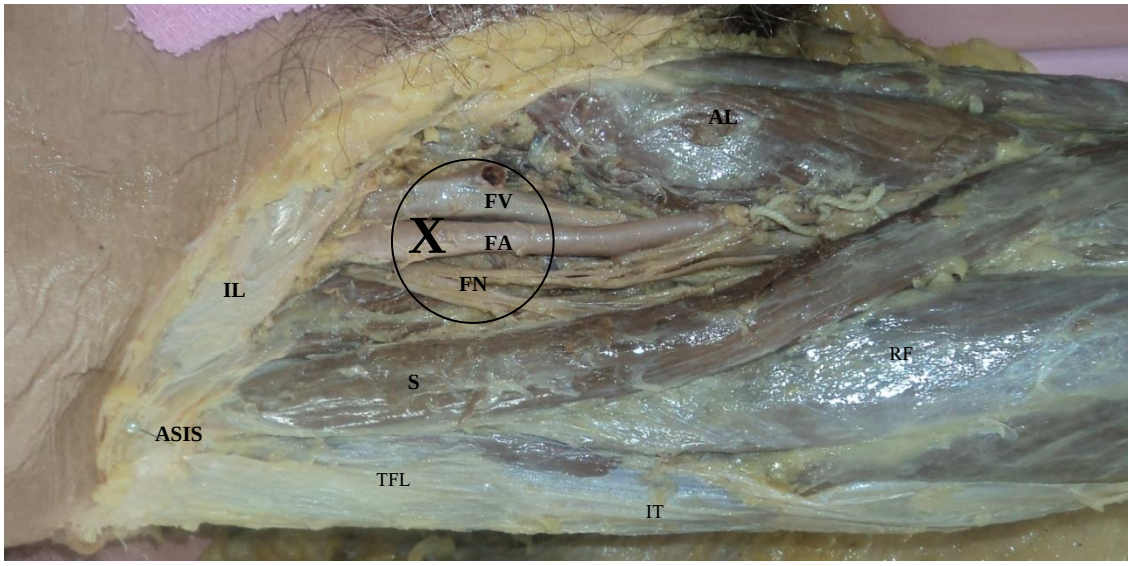

Figure 15 Deeper dissection right thigh showing the location of TAOP (X) relating to the femoral triangle. AL, adductor longus muscle; FA, femoral artery; FN, femoral nerve FV, femoral vein; IL, inguinal ligament; RF, rectus femoris muscle; S, sartorius muscle; TFL, tensor fascia latae; VL, vastus lateralis.

TABLE II. Summary of the anatomical location in the lower limb that correlate with the normal points

Points	muscles	Origins of	Vessels	Nerves (N)
NP1	TA and EDL muscles	TA and EDL muscles	Anterior tibial	-
NP2				DPN
TAOP	-	-	Femoral	FN

The Signaling Massage Points

In the living specimen, it is the posterior border of IT where the SBF muscle originates could be palpated in the OSP4. After removing the thigh skin (Fig. 16), it is seen that between the posterior border of IT and the origin of SBF where the nerve to short head of biceps femoris were seen entering the SBF muscle and supplying it. The superior lateral genicular artery was seen penetrating from the popliteal artery (PA) and anatomoseses with the descending branch of lateral circumflex femoral artery to supply the knee joint.

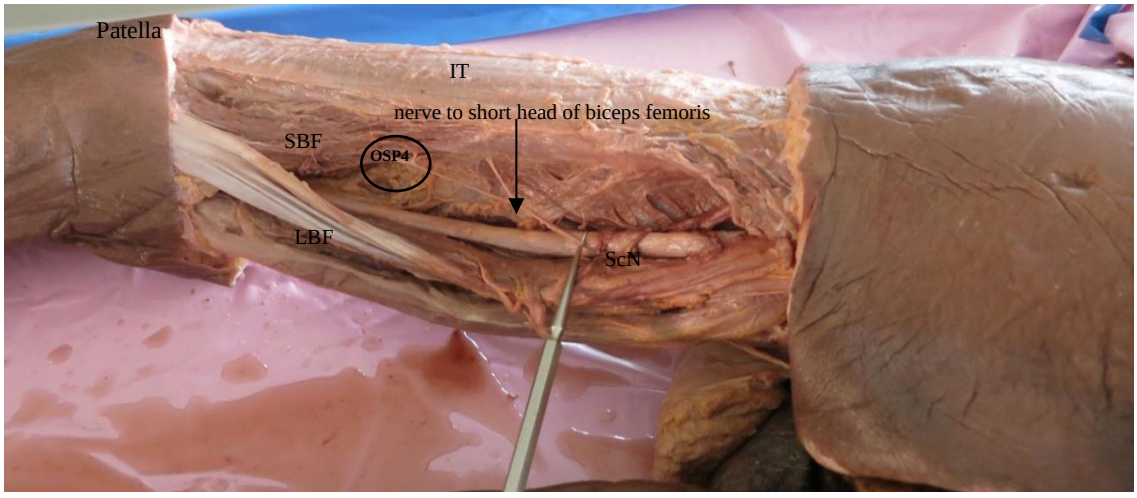

Figure 16 Left cadaver thigh after skin removal showing the location of OSP4 relating to the posterior border of IT where the SBF muscle originates and the nerve to short head of biceps femoris were seen entering the SBF muscle and supplying it. LBF, long head of biceps femoris muscle; ScN, sciatic nerve.

At OSP5, the posterior border of TA muscle could be palpated in the living person. After dissecting the leg skin and the deep fascia (Fig. 14), it is seen that between the TA, EDL and the anterior border of PL muscles. As shown in Figure 14 the OSP5 locates just anterior to the upper thirds of the fibular neck where the anterior tibial vessels (artery and vein) with the DPN descend in front of interosseous membrane before entering to the dorsum of foot.

At ISP1, the posterior border of G muscle could be palpated in the living person. After dissecting the thigh skin (Figs. 17 and 18), it is confirmed that the ISP1 locates between the posterior border of AM muscle and the anterior border of the muscular origin of semimembranosus (Semim) muscle where the posterior division of the Obturator Nerve (ObN) was seen entering the anterior border of the AM to the Semim muscles (Fig. 18).

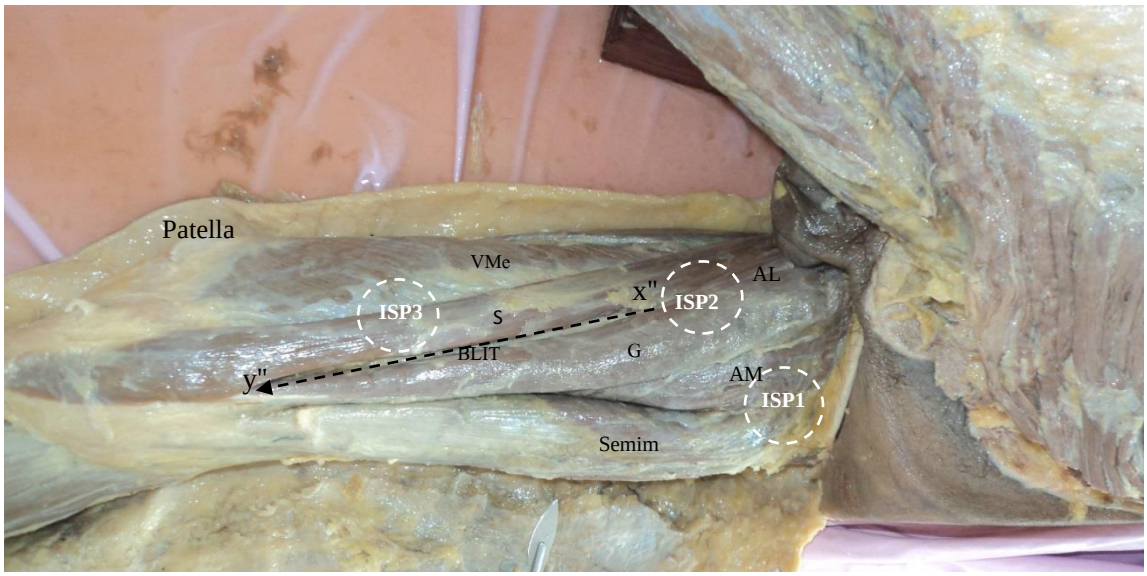

Figure 17 Deeper dissection of medial part of the right thigh showing the locations of BLIT, ISP1, ISP2 and ISP3. AL, adductor longus muscle; AM, adductor magnus muscle; G, gracilis muscle; Semim, semimembranosus muscle; S, sartorius muscle.

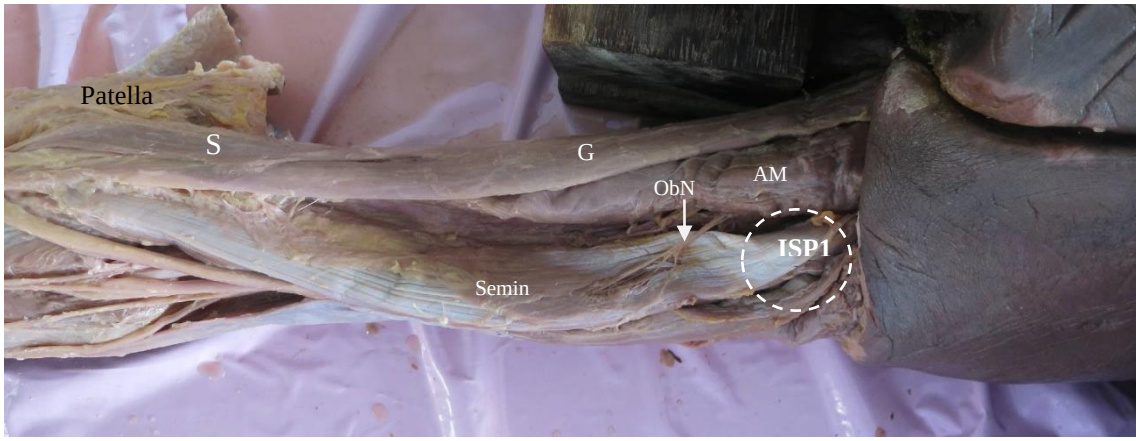

Figure 18 Deeper dissection of the right thigh showing the location ISP1 in relation to the origin of Semim muscle. AM, adductor magnus muscle; G, gracilis muscle; ObN, obturator nerve; Semim, semimembranosus muscle; S, sartorius muscle.

At ISP2, the anterior border of G muscle could be palpated in the living person. After dissecting the thigh skin (Figs. 17 and 19), it revealed that the ISP2 locates the anterior border of G and posterior border of S muscles. As shown in Figure 19 this point was occupied by the proximal part of the adductor canal where the femoral vessels (artery and vein) and the FN are seen under the S muscle. The femoral vessels communicate with adductor canal through the apex of femoral triangle (Fig. 20).

At ISP3, the anterior border of S muscle could be palpated in the living person. After dissecting the thigh skin (Fig. 17), it reveals that the ISP3 locates between the anterior border of S and posterior border of G muscles. As shown in Figure 19 this point was occupied by the distal part of the adductor canal where the femoral vessels and its branches was seen under the sartorius muscle. The femoral vessels (artery and vein) communicate with popliteal fossa through adductor hiatus in the AM muscle (Fig. 20).

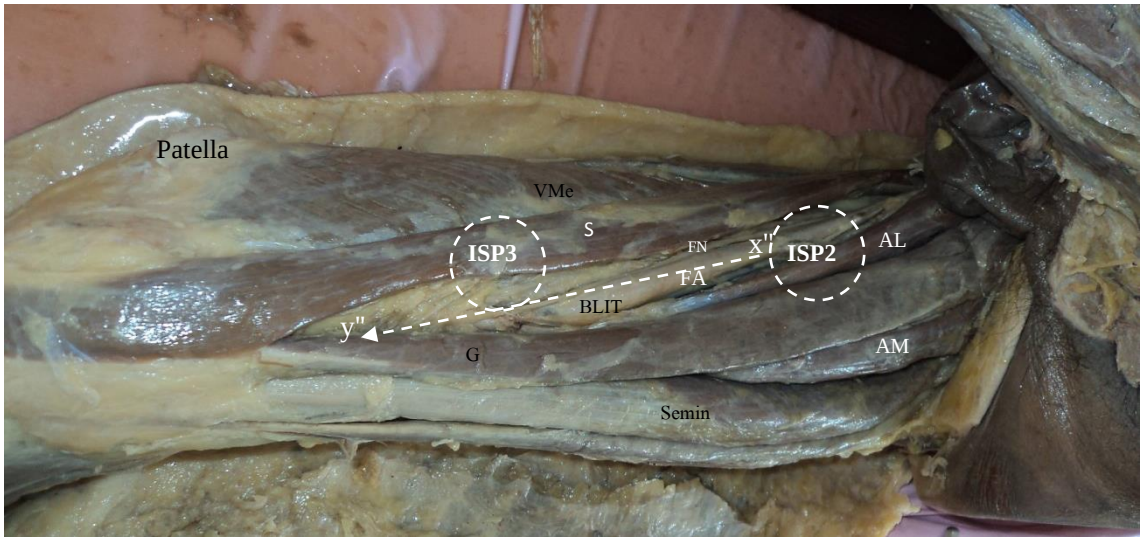

Figure 19 Deeper dissection of the right thigh showing the location of the BLIT, ISP2 in relation to proximal part of the adductor canal and ISP3. Note the FA and the FN are seen under the S muscle. AL, adductor longus muscle; AM, adductor magnus muscle; G, gracilis muscle; Semim, semimembranosus muscle; S, sartorius muscle; VMe, vastus medialis muscle.

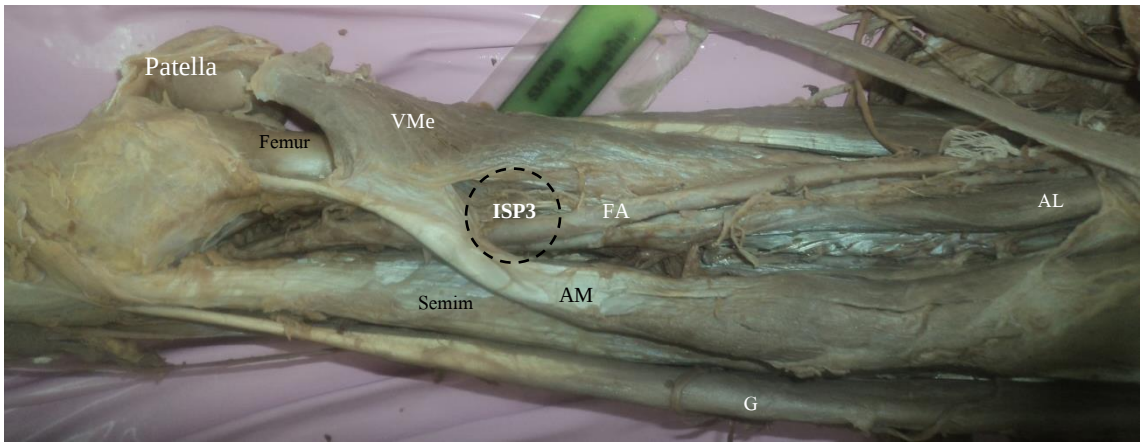

Figure 20 Deeper dissection of the right thigh showing the location of ISP3 and the femoral vessels communicate with popliteal fossa through adductor hiatus in the AM muscle. AL, adductor longus muscle; FA, femoral artery; G, gracilis muscle; Semim, semimembranosus muscle; VMe, vastus medialis muscle.

At ISP5, the posterior tibial pulse could be palpated in the living person. After removing the leg skin in the cadavers (Fig. 21), this point adjacent to the posteroinferior border of MeM where the posterior tibial vessels (artery and vein) and TN are seen deep the flexor retinaculum.

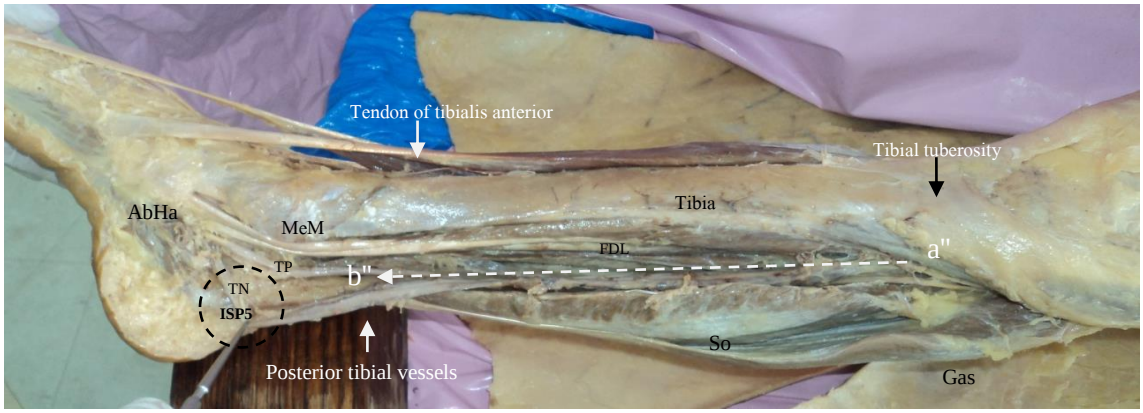

Figure 21 Deeper dissection of the right leg showing the location of the BLIL and ISP5. ISP5 in relation to posterior tibial vessels and TN are seen deep the flexor retinaculum (FR). AbHa, Abductor hallucis muscle; FDL, flexor digitorum longus muscle; MeM, medial malleolus; PT, posterior tibial vessels; TN, tibial nerve; So, soleus muscle; TP, tendon of tibialis posterior muscle.

TABLE III. Summary of the anatomical location in the lower limb that correlate with the SPs

Points	muscles	Origins of	fascia	Vessels	Nerves (N)
OSP4	SBF muscle		posterior border of IT	superior lateral genicular	-
OSP5	TA and EDL muscles			anterior tibial	DPN
ISP1	anterior border of AM and Semim muscles	Semim muscle	-	-	ObN
ISP2	anterior border of G and posterior border of S muscles	-	-	Femoral	FN
ISP3		-	-	Femoral and superior medial genicular	
ISP5	-	-	FR	posterior tibial	TN

The Point that are Considered to be Both Normal Massage Points and Signaling Massage Points

The posterior border of IT could be palpated adjacent OSP1 in the living person and was confirmed by removing the thigh skin in the cadaver (Fig. 22). This point corresponds to the position where the anterosuperior border of GMax muscle is in adjacent to the posterior border of the IT. It was also superficial to the middle parts of Gluteus Medius (GMe) and the Gluteus Minimus (GMi) muscles. The superior gluteal vessels (artery and vein) and the Superior Gluteal Nerve (SGN) were identified between the GMe and GMi muscles near the superior border of the Piriformis (Pi) muscle after they passed through the opening in the greater sciatic foramen to supply the GMe, GMi and TFL muscles (Fig. 23).

At OSP2, the fleshy part of TFL muscle could be palpated in the living specimen and was confirmed by removing of the thigh skin in the cadaver (Fig. 22). This point corresponds to the position where posteroinferior border of the ASIS and was at the fleshy part of TFL muscle. The superior gluteal vessels and the SGN were seen entering the TFL and supplying it (Fig. 23). When dissecting deeper at this point, the iliofemoral ligament was revealed overlying the head of femur in acetabulum (Fig. 24).

At OSP3, the central part of GMax muscle could be palpated in the living person and was confirmed by removing of the thigh skin in the cadaver (Fig. 22). When dissecting deeper at this point, the inferior gluteal vessels (artery and vein) and Inferior Gluteal Nerve (IGN), Posterior Cutaneous Nerve of the thigh (PCN), Sciatic Nerve (ScN) was seen penetrating from the inferior border of the Pi muscle. The Internal Pudendal Artery (IPA), the Pudendal Nerve (PN) and the Nerve to Obturator Internus (NObI) are seen under the sacrotuberous ligament (Figs. 25 and 26).

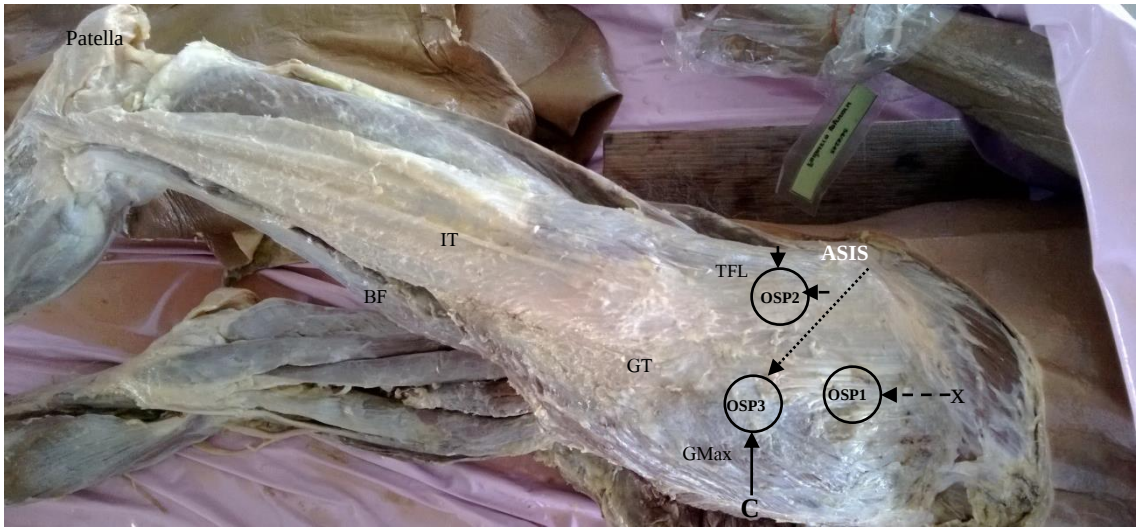

Figure 22 Left thigh and hip after skin removal showing the location of the gluteal region and the top part of the left thigh showing the location of the OSP1, OSP2 and OSP3. ASIS, anterior superior iliac spine; BF, biceps femoris muscle; C, coccyx; GMax, gluteus maximus muscle; GT, greater trochanter; IT, iliotibial tract; TFL, tenser fascia latae muscle; X, highest point of the iliac crest.

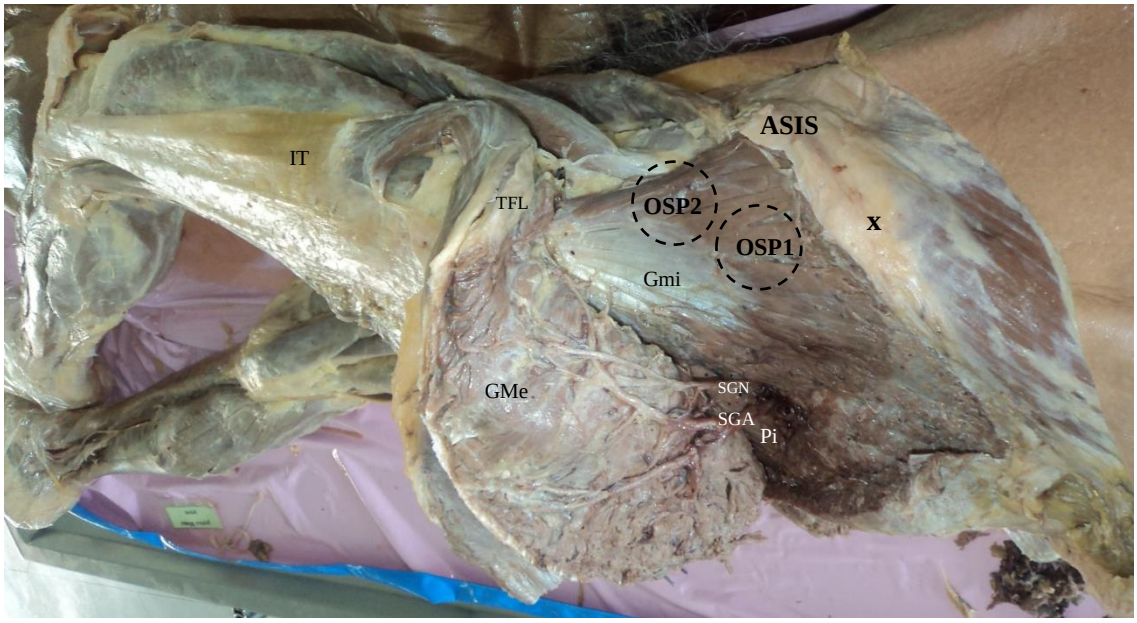

Figure 23 Deeper dissection of the left thigh and gluteal region showing the location of OSP1 and OSP2. The OSP2 related to the anterior border of the GMi muscle. Note the superior gluteal vessels and SGN running along the deeper surface of GMe muscle. ASIS, anterior superior iliac spine; GMe, gluteus medius muscle; IT, ilotibial tract; Pi, piriformis muscle; SGA, superior gluteal artery; SGN, superior gluteal nerve; X, highest point of the iliac crest.

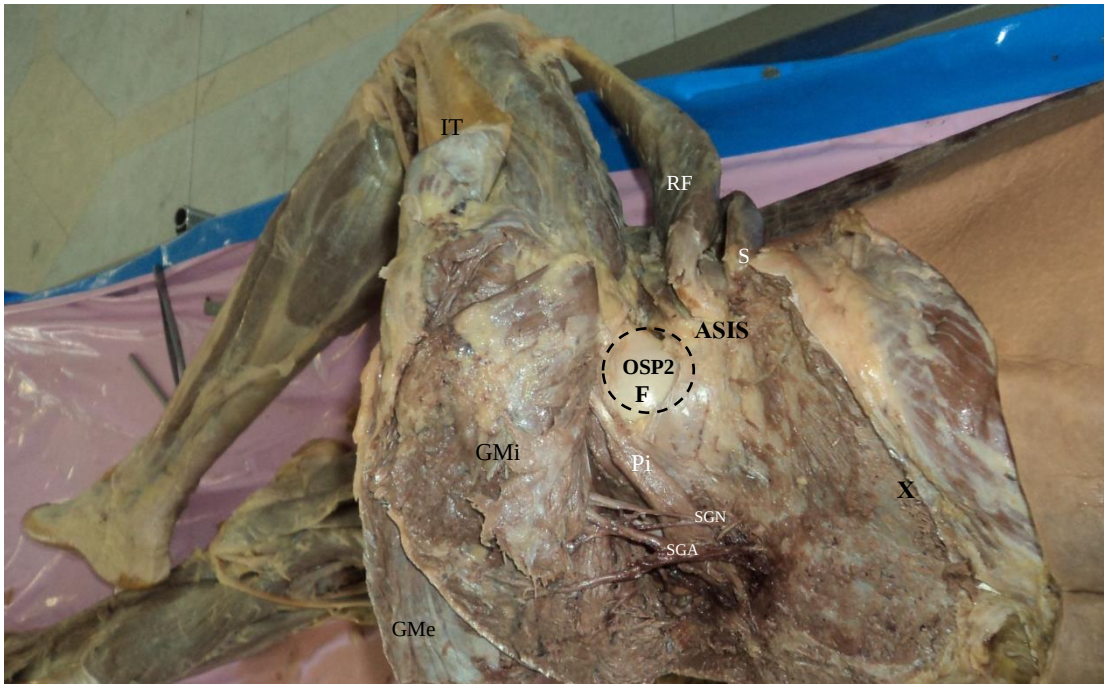

Figure 24 Deeper dissection of the left thigh and gluteal region showing the location of the OSP2 was revealed overlying the femur head in acetabulum. ASIS, anterior superior iliac spine; GMe, gluteus medius muscle; F, femur head; IT, ilotibial tract; Pi, piriformis muscle; RF, rectus femoris muscle; SGA, superior gluteal artery; SGN, superior gluteal nerve; S, sartorius muscle; TFL, tensor fascia latae; X, highest point of the iliac crest

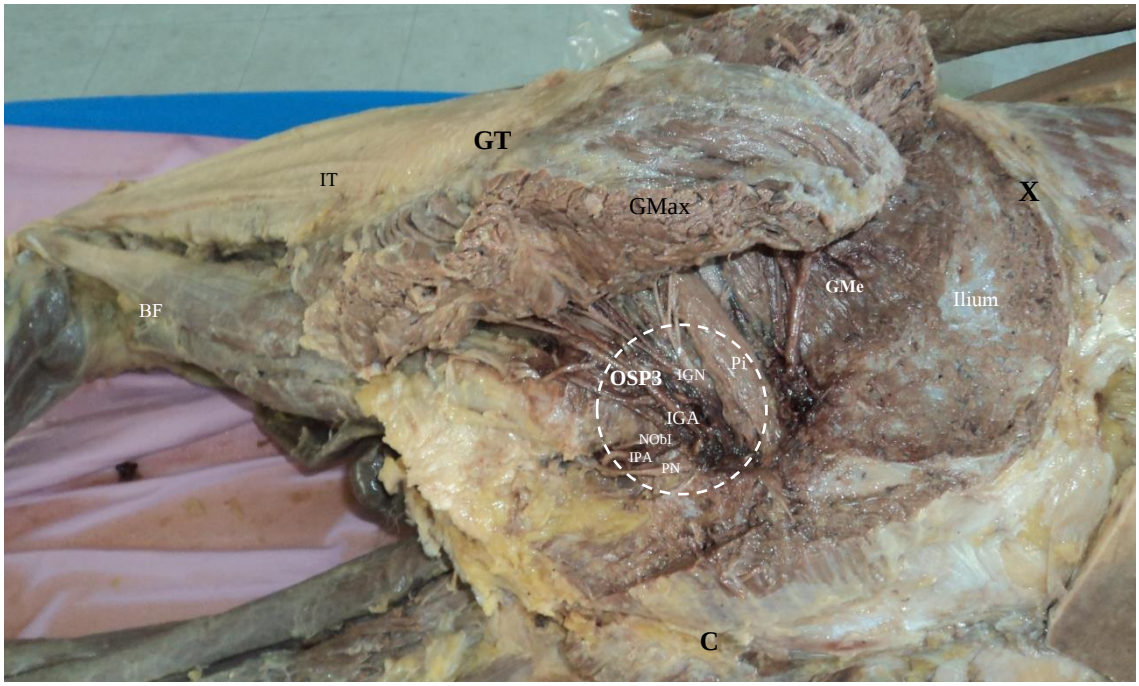

Figure 25 Deeper dissection of the left thigh and hip showing the location of OSP3 in relation to IGA, IGN, IPA, PN and NObI are seen lower border of Pi muscle. BF, biceps femoris muscle; C, coccyx; GMe, gluteus medius muscle; GT, greater trochanter; IT, iliotibial tract; Pi, Piriformis muscle; X, highest point of the iliac crest.

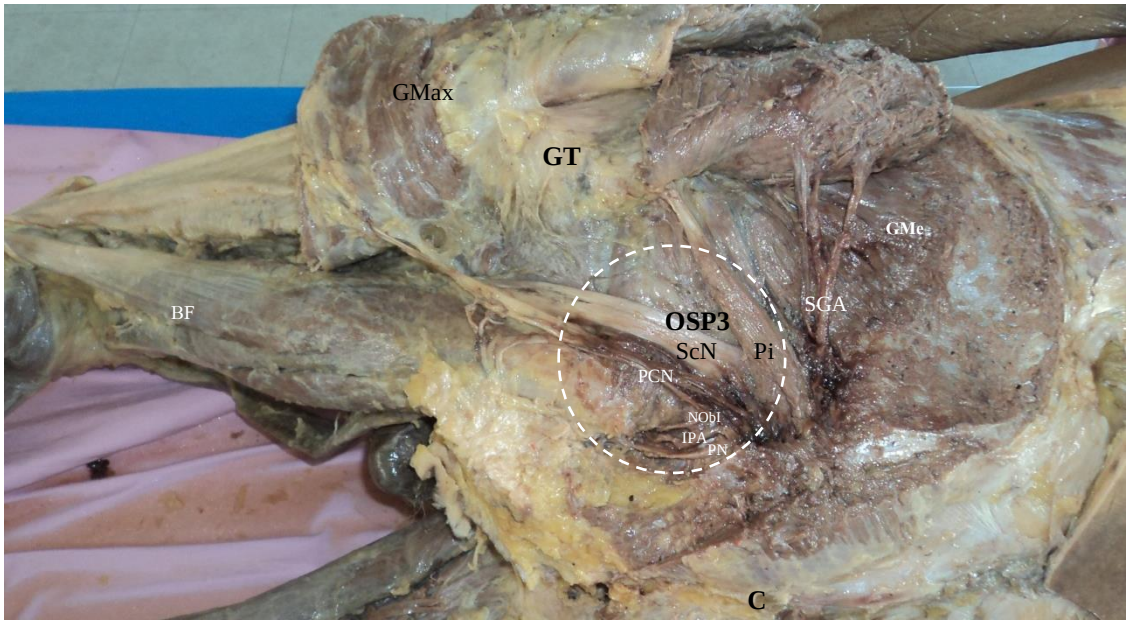

Figure 26 Deeper dissection of the left thigh showing the location of OSP3 related to the ScN was seen penetrating from the inferior border of the Pi muscle. BF, biceps femoris muscle; C, coccyx; GMe, gluteus medius muscle; IPA, internal pudendal artery; IT, iliotibial tract; NObI, nerve to obturator internus; Pi, Piriformis muscle; PN, pudendal nerve; X, highest point of the iliac crest.

At ISP4, the popliteal pulse could be palpated in the living person and was confirmed by removing of the skin in the cadaver (Figs. 27 to 28) this point corresponds to the position where the middle point of the popliteal fossa. The popliteal fossa lies behind the knee, posterior to the lower thirds of the femur and the upper part of tibia. When dissecting deeper at this point, the popliteal vessels (artery and vein) was seen under the TN. The middle genicular artery is the genicular branches of the popliteal artery to supply capsule of the knee joint. The medial sural cutaneous nerve originates from the tibial nerve, descends between the two heads of the gastrocnemius muscle.

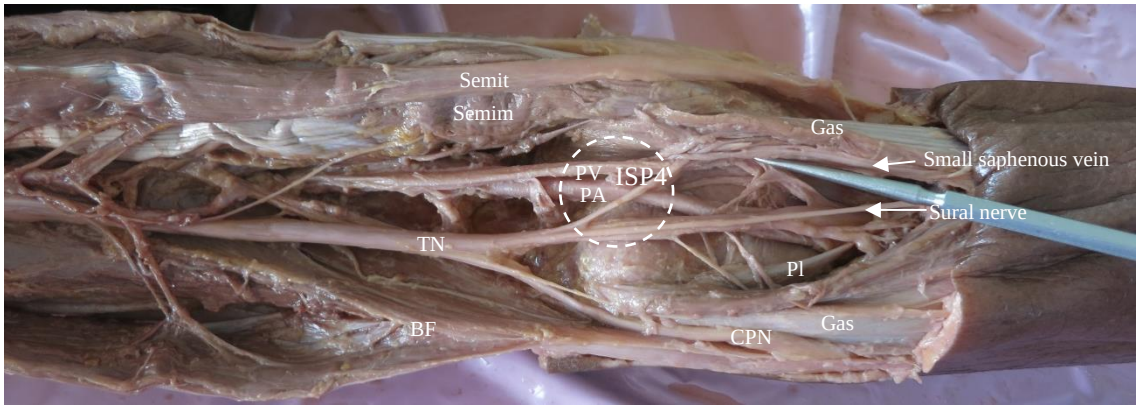

Figure 27 Deeper dissection of the left thigh showing the location of ISP4 related to popliteal vessels and TN. Gas, gastrocnemius muscle; BF, biceps femoris; CPN, common peroneal nerve; Gas, gastrocnemius muscle; PA, popliteal artery; PV, popliteal vein; Pl, plantaris muscle; Semim, semimembranosus; Semit, semitendinosus.

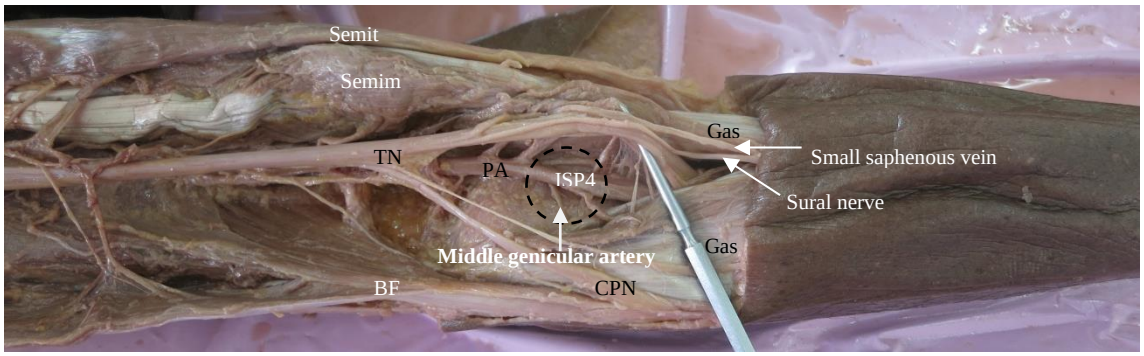

Figure 28 Deeper dissection of the left thigh showing the location of the ISP4 related the popliteal vessels and it branches were seen under the TN. Gas, gastrocnemius muscle; BF, biceps femoris; CPN, common peroneal nerve; PA, popliteal artery; SeM, semimembranosus; SeT, semitendinosus; TN, tibial nerve.

TABLE IV. Summary of the anatomical location in the lower limb that correspond to be both normal points and SPs

Points	muscles	fascia	Vessels	Nerves (N)	joints
OSP1	anterosuperior border GMax and GMe muscles	posterior border of IT	superior gluteal	SGN	-
OSP2	TFL muscle	-			hip
OSP3	GMax and Pi muscles	-	inferior gluteal	IGN, PN, ScN, PCN and NObI	-
ISP4	-	-	Popliteal and middle genicular	TN and its branches	knee

CHAPTER 4

Discussion

It is obvious that the massage points and the BLs of the lower limb are very much related to the anatomical structures. Furthermore, the massage points and BLs have the relationship to similar forms of anatomical structures for some extent and to different forms for more extent.

The normal massage points correspond to the muscular origins and the proximal parts of artery penetrating through the opening was confirmed by pressing the NP1 and NP2 leading to diminishing the dorsalis pedis arterial pulse and in association to the artery and the nerves ramify to supply the muscles. Therefore, the massage on the points should be careful in the elderly.

The Outer Signaling massage Points are along the border of IT and locates near the muscular origins or between the muscular origins where the arterial and nerve supply are found while the Inner Signaling massage Points are found in adjacent to the courses of the arterial and nerve supply for example, the ISP2 and ISP3 runs along the direction of FN and FA and its branches (medial genicular artery) was confirmed by pressing ISP2, ISP3 which could diminishing the popliteal arterial pulse. Except the ISP1 locate near the muscular origin of semimembranosus muscle.

The Basic massage Lines correspond to the longitudinal arrangement of muscles from the origins to the tendons, in association with the borders of IT, as well as to the vessels and the nerve supplies between the muscles. Except the BL2, corresponds to the longitudinal arrangement of muscles form the tendons to the origins.

The points that are considered to be both normal points and signaling massage points association with the branches of arteries and nerves entering the muscles and in association with the hip joint. Therefore, the massage on the points should be carefully in the stroke patients with paralyzed and loss of knee flexion. Except ISP4 corresponds to the popliteal fossa where the arterial and nerve supply are found which could be confirmed by pressing on this point resulting in diminishing of the dorsalis pedis and posterior tibial arterial pulse.

The point and the SPs on the lower limb are in close association conformable with the locations of Myofascial Trigger Point (MTrP) locates near the muscular origins (Eungpinichpong, 2004) namely, the NP1, NP2, OSP1, OSP2 and OSP4, OSP5, ISP1 except the OSP3 association conformable with the location of MTrP in the central part of GMax muscle which are similar to the locations of MTrPs as noted in the documents of Melzax (Melzax, 1977), Staphanie (Staphanie, 1997), Prithvi Raj (Prithvi Raj, 2004) and Myofascial Pain Syndrome (Weachapeach, 1994) namely, NP1, NP2 and OSP5 locates between the muscular origins of TA and EDL muscles. The points that are considered to be both normal points and SPs situated near the muscular origins namely, OSP1 locate near the origins of GMe muscle and OSP2 locate near the muscular origins of TFL, GMe and GMi muscles. The OSP4 is at the muscular origin of SBF muscle.

The BLs correspond to the locations of referred from MTrPs namely, BL1 is area of referred from the MTrP in the TA muscle. BL2, BL3 and BLOT are area of referred from the MTrPs in the GMe, GMi and VL muscles. The BL4 is the area of referred from the MTrPs in the peroneal muscles and the BLIL is the area of referred from the MTrPs in the Gas, So and TP muscles.

The SPs are different from the study of Melzax (Melzax, 1977) and Eungpinichpong (Eungpinichpong, 2004). The SPs are correspond to the meaning of SPs enclose. The ISP2 locates along the femoral vessels which correspond to the area of great arteries. The OSP1 and OSP2 situated on the area of superior gluteal vessels which correspond to the small vessels. The OSP3 situated on the area of the roots of inferior gluteal vessels correspond to the small vessels. The OSP4 is locates to be the superior lateral genicular vessels which correspond to the small vessels. The OSP5 is seen as the anterior tibial vessels which correspond to the small vessels. The ISP3 is found to be the superior medial genicular vessels from the popliteal vessels which correspond to the small vessels. The ISP4 is the area where the middle genicular vessels located of distributed from the popliteal vessels which correspond to the small vessels and the ISP5 is located to be the posterior tibial vessels from the popliteal vessels which corresponds to the small vessels.

The therapeutic massage to treatments low back pain patients associates with the Back Signaling Point number 1. The patients with back pain referred to the hips and outer thighs. Therefore, the emphasize massage on OSP3 associates to the location and referred from MTrP in the GMax muscle while low back pain associates with the Back Signaling Point number 3. The patients with back pain referred to the outer thighs, leg, ankle and plantar surface. Therefore, the emphasize massage on OSP2 associates to the location and referred from MTrP in the GMi muscle (Thai therapeutic massage (Court type Thai traditional massage), 2003).

CHAPTER 5

Conclusion

Conclusion

The findings of this study indicate that there are some relations between the anatomical structures or the organs of the body and the points, SPs and lines in the lower limb and could be used to the basic knowledge to next steps of therapeutic massage practice with CTTM.

Recommendation

The findings of this study indicate that there are some relations between the anatomical structures or the organs of the body and the points, SPs and lines in the lower limb. Therefore, anatomical locations correlate with the signaling points and lines in the other parts of the body are not perform.

Limitation of this Study

The findings of this study indicate that there are some relations between the anatomical structures or the organs of the body and the points, SPs and lines in the lower limb. The design of this study may be not strong enough to define the anatomical locations in other parts of the body.

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Appendices

Appendix A

Consent form and Data Collection

แบบยินยอมอาสาสมัคร

ข้าพเจ้า (นาย,นาง,นางสาว) ..... นามสกุล..... อายุ..... ปี
อยู่บ้านเลขที่ ..... หมู่ที่..... ตำบล ..... อำเภอ.....
จังหวัด..... รหัสไปรษณีย์ .....
เป็นบิดา/มารดา/ผู้ปกครอง (ด.ญ. ด.ช.)..... อายุ..... ปี
(ในกรณีที่อาสาสมัครเป็นเด็กอายุน้อยกว่า 18 ปี) ได้รับฟังคำอธิบายจาก นายณรงค์ศักดิ์ จันทะวัง (ชื่อผู้ให้ข้อมูล) เกี่ยวกับการเป็นอาสาสมัครในโครงการวิจัย ตำแหน่งทางกายวิภาคในขาที่สัมพันธ์กับแนวเส้นพื้นฐานและจุดสัญญาณของการนวดราชสำนัก ได้รับทราบถึงรายละเอียดของโครงการวิจัยเกี่ยวกับ

- วัตถุประสงค์และระยะเวลาที่ทำการวิจัย
- ขั้นตอนและวิธีการปฏิบัติตัวที่ข้าพเจ้าต้องปฏิบัติ
- ผลประโยชน์ที่ข้าพเจ้าจะได้รับ
- ผลข้างเคียงหรืออันตรายที่อาจเกิดขึ้นจากการเข้าร่วมโครงการ (ระบุตามความเหมาะสมให้สอดคล้องกับลักษณะโครงการ) และข้าพเจ้าสามารถถอนตัวจากการศึกษานี้เมื่อใดก็ได้ถ้าข้าพเจ้าปรารถนา โดยไม่เสียสิทธิ์ใดๆ ในการรักษาพยาบาลที่จะเกิดขึ้นตามมาในโอกาสต่อไปทั้งในปัจจุบันและอนาคต ณ สถานพยาบาลแห่งนี้ หรือ สถานพยาบาลอื่น และหากพบปัญหาใดๆ ข้าพเจ้าจะรายงานให้แพทย์ หรือเจ้าหน้าที่ที่กำลังปฏิบัติงานอยู่ในขณะนั้นทราบทันที (ระบุในกรณีที่เกี่ยวกับการรักษาพยาบาล)

ข้าพเจ้าได้อ่านและเข้าใจคำอธิบายข้างต้นแล้ว จึงได้ลงนามยินยอมเป็นอาสาสมัครของโครงการวิจัยดังกล่าว

ลายมือชื่ออาสาสมัคร.....
(.....)

ลายมือชื่อผู้ปกครอง.....
(.....)

ลายมือชื่อผู้ให้ข้อมูล.....
(.....)

พยาน.....(ไม่ใช่ผู้อธิบาย)
(.....)
วันที่..... เดือน..... พ.ศ. .....

หมายเหตุ : (1) ในกรณีที่อาสาสมัครเป็นเด็กโตแต่อายุไม่ถึง 18 ปี สามารถตัดสินใจเองได้ให้ลงลายมือชื่อทั้งอาสาสมัคร (เด็ก) และผู้ปกครองด้วย

(2) พยานต้องไม่ใช่แพทย์หรือผู้วิจัย

(3) ผู้ให้ข้อมูล/คำอธิบายชัดเจนต้องไม่เป็นแพทย์ /ผู้วิจัย เพื่อป้องกันการเข้าร่วมโครงการด้วยความเกรงใจ

(4) ในกรณีอาสาสมัครไม่สามารถ อ่านหนังสือ/ลงลายมือชื่อได้ให้ใช้การประทับลายมือแทนดังนี้

ข้าพเจ้าไม่สามารถอ่านหนังสือได้ แต่ผู้วิจัยได้อ่านข้อความในใบยินยอมนี้ให้แก่ข้าพเจ้าฟังจนเข้าใจดีข้าพเจ้าจึงประทับตราลายนิ้วมือขวาของข้าพเจ้าในแบบยินยอมนี้ด้วยความเต็มใจ

ลายมือชื่อผู้อธิยาย.....

(.....)

พยาน.....(ไม่ใช่ผู้อธิบาย)

(.....)

วันที่ .....เดือน..... พ.ศ.....

TABLE V. Records of the anatomical location in the lower limb that correspond to BLs

lines	muscles	Origins of	Tendons of	fascia	Vessels	Nerves (N)
SL1						
SL2						
SL3						
SL4						
ILs						
SLOT						
SLOL						
SLIT						
SLIL						

TABLE VI. Records of the anatomical location in the lower limb that correspond to the normal points

Points	muscles	Origins of	Vessels	Nerves (N)
NP1				
NP2				
TAOP				

TABLE VII. Records of the anatomical location in the lower limb that correspond to the SPs

Points	muscles	Origins of	fascia	Vessels	Nerves (N)
OSP4					
OSP5					
ISP1					
ISP2					
ISP3					
ISP5					

TABLE VIII. Records of the anatomical location in the lower limb that correspond to be both normal points and SPs

Points	muscles	fascia	Vessels	Nerves (N)	joints
OSP1					
OSP2					
OSP3					
ISP4					

VITA

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