

Original Article

## Substantial Study on Constituent Elements of the Foot *Taeyang* Meridian Muscle in the Human Truncus

Kyoung-Sik Park\*

Dept. of Anatomy, College of Oriental Medicine, Sangji University

**Objective :** This study was carried to identify the anatomical component of BMM (*Foot Taeyang Meridian Muscle* in the human truncus), and further to help the accurate application to real acupuncture.

**Methods:** The human truncus was stripped off in order to demonstrate muscles, nerves and other components, and to display the internal structure of the BMM, dividing into outer, middle, and inner parts.

**Results:** The BMM in the human truncus is composed of muscles, nerves, ligaments etc. The internal composition of the BMM in the human truncus is as follows:

1. Muscle

- A. Outer layer: medial palpebral ligament, orbicularis oculi, frontalis, galea aponeurotica, occipitalis, trapezius, latissimus dorsi, thoracolumbar fascia, gluteus maximus.
- B. Middle layer: frontalis, semispinalis capitis, rhomboideus minor, serratus posterior superior, splenius cervicis, rhomboideus major, latissimus dorsi, serratus posterior inferior, levator ani.
- C. Inner layer: medial rectus, superior oblique, rectus capitis, spinalis, rotatores thoracis, longissimus, longissimus muscle tendon, longissimus muscle tendon, multifidus, rotatores lumbaris, lateral intertransversi, iliolumbaris, posterior sacroiliac ligament, iliocostalis, sacrotuberous ligament, sacrospinous ligament.

2. Nerve

- A. Outer layer: infratrochlear nerve, supraorbital n., supratrochlear n., temporal branch of facial n., auriculotemporal n., branch of greater occipital n., 3rd occipital n., dorsal ramus of 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th thoracic n., dorsal ramus of 1st, 2nd, 3rd, 4th, 5th lumbar n., dorsal ramus of 1st, 2nd, 3rd, 4th, 5th sacral n.
- B. Middle layer: accessory nerve, anicoccygeal n.
- C. Inner layer: branch of ophthalmic nerve, trochlear n., greater occipital n., coccygeal n.,

**Conclusions :** This study shows that BMM is composed of the muscle and the related nerves and there are some differences from already established studies from the viewpoint of constituent elements of BMM at the truncus, and also in aspect of substantial assay method. In human anatomy, there are some conceptual differences between terms (that is, nerves which control muscles of BMM and those which pass near by BMM).

**Key Words :** BMM(*Foot Taeyang Meridian Muscle* in the human truncus), meridian point(BL1-35, 41-54), muscle, nerve.

### Introduction

This paper follows a series of research papers which I have reported on several journals with relation to the twelve *meridian muscles* till now.

The concept of *Meridian Muscle* (MM) shown in *Ling Shu*(*Miraculous Pivot*)of *Huandi Neijing*(The Yellow Emperor's Classic of Medicine: A bible of traditional Chinese medicine for about two thousand years) is almost connected with *Twelve Main Meridians*

• Received : 15 October 2008

• Revised : 4 March 2009

• Accepted : 25 March 2009

• Corresponding Author : Kyoung-Sik Park

Dept. of Anatomy, College of Oriental Medicine, Sangji University, Woosan-dong 660, Wonju, Gangwon-do, Korea  
Tel : +82-33-730-0667, Fax : +82-33-730-0653, E-mail : Ksikpark@sangji.ac.kr

This report is funded by Sangji University.

(TMMs)<sup>1)</sup>. According to this theory, TMMs, the twelve pathways, correspond to and connect internally with one of the twelve organs (*Zang Fu*). This means that there are six *yin* and six *yang* channels. There are three *yin* and three *yang* channels on each arm and three *yin* and three *yang* on each leg<sup>2)</sup>. Hereinafter *BM*(*Foot Taeyang Meridian* in the human truncus) is a positive meridian with energy running from the head to the foot. This meridian has sixty-seven bilateral acupoints. *Meridian muscle* is a general term of the muscular system distributed in circulation of the *twelve main meridians*, and is composed of muscular tissue such as muscle (including tendon), fascia, and ligament<sup>3)</sup>, by which *Ch'i*(*Gi*: life energy) in TMMs is collected or concluded or translated<sup>4)</sup>. Taoism explains that good health depends on a free circulation of *Ch'i* throughout all the organs of the body. The *Ch'i*, in turn, depends upon a balance of the two opposing energies of *yin* and *yang*. The meridians are the main channels of *Ch'i*-flow. When this flow is impeded at any point, piercing the channels at the proper points is believed to correct the imbalance.

Acupuncture theory, especially the theory of TMMs or MM, in traditional oriental medicine, although based on empirical studies, predates the use of modern scientific methods, has received various criticisms. There is not yet generally-accepted anatomical and histological basis for their existence. Also, it seems that the anatomical constituents of individual MM are wrongly known to the academic world of oriental medicine<sup>1)</sup>. This brings about a mistaken clinical application or a wrong diagnosis as well as misunderstanding for the mode of action of acupuncture, though the term of MM means a lot to myology, arthrology, rehabilitation, and other clinical applications.

This study was carried out in order to investigate correct elements of *BMM*(*Foot Taeyang Meridian Muscle* in the human truncus) of TMMs, focused on the truncus, and to theoretically support the meridianology or the clinics of oriental medicine, following *Lung MM*<sup>5)</sup>, *Pericardium MM*<sup>6)</sup>, and

*Triple Energizer MM*<sup>7)</sup>.

## Materials and Methods

### 1. Preservative preparations and injection

#### A. The preparation of a preservative

1Kg of phenol is dissolved in 1 ℓ of methylalcohol (the 1st solution). 500ml of glycerin is dissolved in 2 ℓ of methylalcohol and thereafter additional 500 ml of glycerin is dissolved in this solution (the 2nd solution). The 1st and 2nd solutions are well mixed, and warmed (30min, 20°C). 1 ℓ of methylalcohol is added to this mixed solution, stirred for 10 minutes. Finally 1.5 ℓ of formalin is added to this mixed solution.

#### B. Injection

The sheath of the femoral artery & vein is exposed by vertical incision at the medial third of the inguinal ligament, and the femoral artery is carefully separated from the femoral vein.

A preservative is injected into the femoral artery at the speed of 150 ml per minute.

After 6 ℓ of preservative is injected, a needle-inserted part is ligated, subsequently the injector needle is inserted downwards for the preservation of the leg.

### 2. Embalmmnt of cadaver

A. Cadaver is pending in the embalmmnt system for 40 hrs at 40°C.

B. Cadaver is exposed for 1hr at normal temperature, and after that, is kept in refrigerated storage (3°C, 30% humidity).

### 3. Experimental procedure

A. BMM is labeled by latex at the surface of cadaver, subsequently photographed.

B. Pores are made by drilling in the vertical direction at each meridian point.

- C. Skin and superficial fascia are stripped off in order and the exposed deep fascia surface is thereafter labeled by latex, once more being photographed.
- D. Deep fascia is also removed.
- E. Subsequently muscles, tendons, and nerves are investigated and photographed, being divided into three layers (outer, middle, and inner or deep layer).

## Results

BMM (*Foot Taeyang Meridian Muscle* in the truncus) was marked at the surface of the cadaver, and also constituent elements were divided into three layers(outer, middle, and inner or deep layer), being dissected. The results were identified as follows:

- A schema of BMM (refer to Fig. 8)
- Muscle, and related nerves constituting BMM.

### 1. Jeongmyeong (BL 1)

The acupuncture point of *Jeongmyeong* is positioned between the infraorbital margin and the

angulus oculi medialis(Fig. 8). The small intestine meridian and stomach meridian are also united at this acupuncture point.

As shown in Fig. 1, muscle groups related to *Jeongmyeong* are composed of medial palpebral ligament at the outer layer and medial rectus muscle at the inner layer. The infratrochlear nerve from the trigeminal nerve lies at the outer layer as a constituent nerve and a branch of the ophthalmic nerve at the inner layer.

### 2. Chanjuk (BL 2)

This point is positioned at the medial extremity of the eyebrow (Fig. 8).

As gathered from this observation (Fig. 1), the muscle group constituting this *meridian muscle* are the orbicularis oculi muscle at the outer layer, the frontalis and corrugator supercilli muscles at the middle layer and the superior oblique muscle tendon at the inner layer. Here there are the supraorbital nerve, supratrochlear nerve, and temporal branch of facial nerves at the outer layer, and the trochlear nerve at the inner layer of this meridian.

### 3. Michung (BL 3)

This point is positioned 0.5 chon behind the

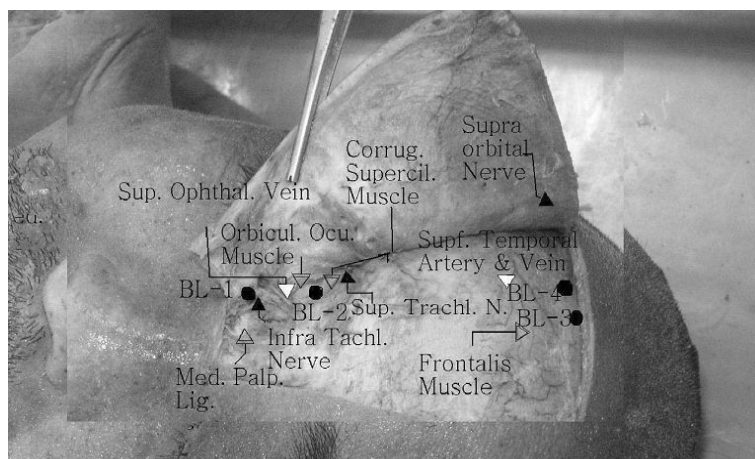


Fig. 1. Photograph shows bladder meridian points (BL 1-4) at the excoriated forehead.  
(△: Muscle, →: Nerve, ▲: Meridianpoint)

hair-line, on a line with BL 2 (Fig. 8). Here there are the frontalis muscle and nerve, the supratrochlear and temporal branch of the facial at the the outer layer (Fig. 1).

#### 4. Gokcha (BL 4)

This point is positioned 1.5 chon lateral to *Sinjeong*, vertically above B2. Here there are the frontalis muscle and nerve, the supraorbital, and the temporal branch of the facial at the outer layer(Fig. 1).

#### 5. Ocheo (BL 5)

As shown in Fig. 2, this point is positioned 1.5 chon lateral to Gv 23 on the forehead. Here there are the frontalis muscle and nerve, the supraorbital, supratrochlear, and the temporal branch of the facial at the outer layer.

#### 6. Seunggwang (BL 6)

This point is positioned 1.5 chon lateral to the medial line of the cranium, at 1.5 chon posterior to BL 5 (Fig. 8). Here there are the galea aponeurotica and nerve, the supraorbital, supratrochlear, auriculotemporal, and the superficial temporal branch of the facial at the outer layer (Fig. 2).

#### 7. Tongcheon (BL 7)

This point is positioned 1.5 chon lateral to 1 chon anterior to *Baekhoe*. Here there are the galea aponeurotica and nerve, the auriculotemporal, and a branch of the greater occipital at the outer layer (Fig. 2).

#### 8. Nakgak (BL 8)

This point is positioned 1.5 chon posterior to *Tongcheon*. Here there are the galea aponeurotica and nerve, and a branch of the greater occipital at the outer layer(Fig. 2).

#### 9. Okchim (BL 9)

This point is positioned 1.3 chon lateral to *Noeho*. Here there are the occipitalis muscle and nerve, the greater occipital, and the 3rd occipital at the outer layer(Fig. 2).

#### 10. Cheonju (BL 10)

This point is positioned lateral to the trapezius muscle tendon, 1.3 chon of Amun(Fig. 8). The constituent muscles of this point are the trapezius muscle at the outer layer, the semispinalis capitis muscle at the middle layer, and the rectus capitis muscle(Fig. 2). The constituent nerves of this point

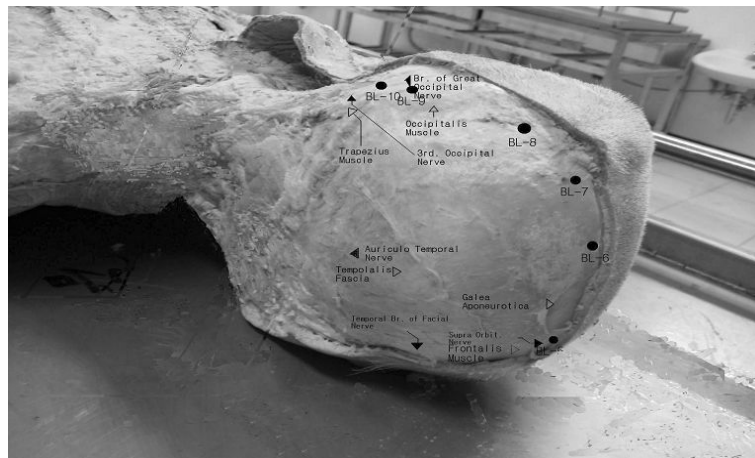


Fig. 2. Photograph shows bladder meridian points (BL 5-10) at the excoriated skull.

are the 3rd occipital nerve at the outer layer and the greater occipital nerve at the inner layer(Fig. 2).

11. Daejeo (BL 11)

This point is positioned at 1.5 chon lateral to Gv 13, which is positioned between the 1st and 2nd thoracic vertebrae (Fig. 8, 3). Here there are the trapezius muscle at the outer layer, the rhomboideus minor, serratus posterior superior, and splenius cervicis muscles at the middle layer, and the spinalis and rotatores thoracis muscles at the inner layer. With relation to the constituent nerves there are the dorsal ramus of the 1st thoracic nerve at the outer layer and the accessory nerve at the middle layer (Fig. 4, 5, 6).

12. Pungmun (BL 12)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 2nd and 3rd thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Daejeo* except that in case of the nerve it is not the dorsal ramus of the 1st thoracic nerve but the dorsal ramus of the 2nd thoracic nerve(Fig. 4, 5, 6).

13. Pyesu (BL 13)

This point is positioned at 1.5 chon lateral to the

hallow which is positioned between the 3rd and the 4th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Pungmun* except that in the case of the nerve it is not the dorsal ramus of the 2nd thoracic nerve but the dorsal ramus of the 3rd thoracic nerve(Fig. 4, 5, 6).

14. Gworeumsu (BL 14)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 4th and the 5th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Pyesu* except that in the case of the muscle the serratus posterior superior muscle is not constituent, while in the case of the nerve it is not the dorsal ramus of the 3rd thoracic nerve but the dorsal ramus of the 4th thoracic nerve(Fig. 4, 5, 6).

15. Simsu (BL 15)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 5th and the 6th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Gworeumsu* except that in the case of muscle the splenius cervicis muscle at the middle layer is not constituent, and the longissimus muscle is added to at the inner layer. In the case of the nerve it is not the dorsal

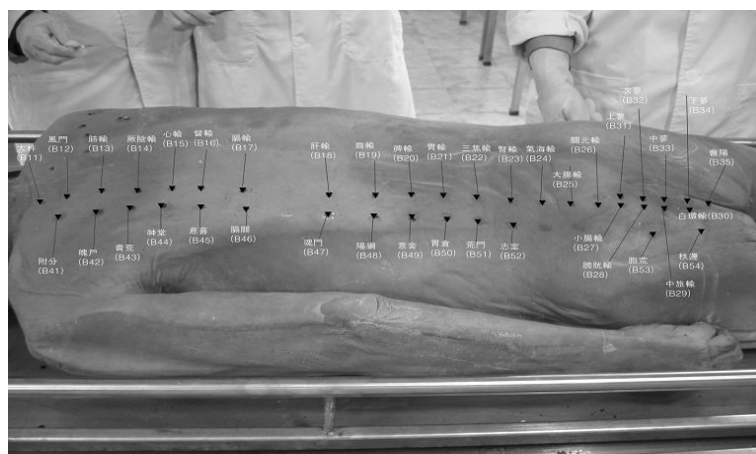


Fig. 3. Photograph shows bladder meridian points (BL 11-54) at body surface of back.

ramus of the 4th thoracic nerve but the dorsal ramus of the 5th thoracic nerve(Fig. 4, 5, 6).

16. Doksu (BL 16)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 6th and the 7th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Simsu* except that in the case of the muscle there is no middle layer, while in the case of the nerve it is not the dorsal ramus of the 5th thoracic nerve but the dorsal ramus of the 6th thoracic nerve(Fig. 4, 5, 6).

17. Gyeoksu (BL 17)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 7th and the 8th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Doksu* except that in the case of the muscle there is the latissimus dorsi muscle at the middle layer, while in the case of nerve it is not the dorsal ramus of the 6th thoracic nerve but the dorsal ramus of the 7th thoracic nerve (Fig. 4, 5, 6).

18. Gansu (BL 18)

This point is positioned at 1.5 chon lateral to the

hallow which is positioned between the 9th and the 10th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Gyeoksu* except that in case of the nerve it is not the dorsal ramus of the 7th thoracic nerve but the dorsal ramus of the 8th & 9th thoracic nerves, and there is no middle layer (Fig. 4, 5, 7).

19. Damsu (BL 19)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 10th and the 11th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Gansu* except that in the case of the nerve it is not the dorsal ramus of the 8th & 9th thoracic nerves but the dorsal ramus of the 9th & 10th thoracic nerves(Fig. 4, 5, 7).

20. Bisu (BL 20)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 11th and 12th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Damsu* except that in the case of the muscle there is the serratus posterior inferior muscle at the middle layer, while the dorsal ramus of the 11th thoracic nerve is added to the

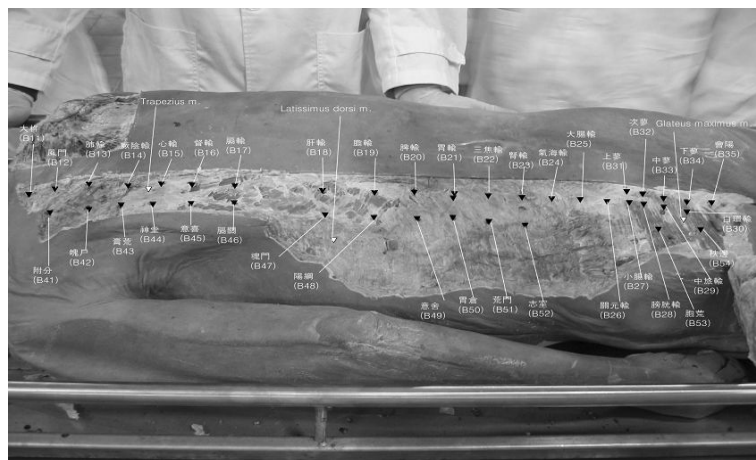


Fig. 4. Photograph shows bladder meridian points (BL 11-54) at deep fascia upon superficial dissection of back.

constituent in the case of the nerve(Fig. 4, 5, 7).

21. Wisu (BL 21)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 12th thoracic vertebrae and the 1st lumbar vertebrae (Fig. 8, 3). The composition is almost the same as that of *Bisu* except that the outer constituents of the nerve are the dorsal ramus of the 10th, 11th, and 12th thoracic nerves(Fig. 4, 5, 7).

22. Samchosu (BL 22)

This point is positioned at 1.5 chon lateral to Gv5 which is positioned between the 1st and 2nd lumbar vertebrae on the median line (Fig. 8, 3). The outer constituents are the latissimus dorsi muscle (thoracolumbar fascia) and the dorsal ramus of the 11th and 12th thoracic and 1st lumbar nerves. The middle constituent is the serratus posterior inferior muscle, while the inner constituents are the longissimus, multifidus, and rotatores lumbaris muscles consecutively (Fig. 4, 5, 7).

23. Sinsu (BL 23)

This point is positioned at 1.5 chon lateral to Gv4 which is positioned between the 2nd and 3rd

lumbar vertebrae on the median line (Fig. 8, 3). The composition is almost the same as that of *Samchosu* except that the nerve at the outer layer is not the dorsal ramus of the 11th thoracic, but that of the 2nd lumbar nerve(Fig. 4, 5, 7).

24. Gihaesu (BL 24)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 3rd and 4th lumbar vertebrae (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and dorsal ramus of the 1st, 2nd and 3rd lumbar nerves. The inner constituents are the longissimus, multifidus, and rotatores lumbaris muscles consecutively (Fig. 4, 5, 7).

25. Daejangsu (BL 25)

This point is positioned at 1.5 chon lateral to Gv3 which is positioned between the 4th and 5th lumbar vertebrae on the median line (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and dorsal ramus of the 2nd, 3rd, and 4th lumbar nerves. The inner constituents are the longissimus muscle tendon, multifidus, rotatores lumbaris, lateral intertransversi muscle, and iliolumbar ligament (Fig. 4, 5, 7).

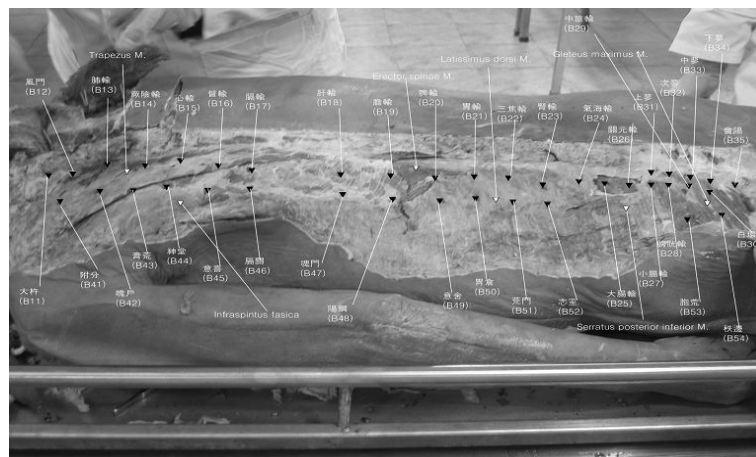


Fig. 5. Photograph shows bladder meridian points (BL 11-54) at deep fascia upon superficial dissection of back and the inside of deep fascia.

26. Gwanwonsu (BL 26)

This point is positioned at 1.5 chon lateral to the hallow which is positioned between the 5th lumbar vertebrae and sacral cristae (Fig. 8, 3). The composition is almost the same as that of *Daejangsu* except that the nerve at the outer layer is not the dorsal ramus of the 2nd, but that of the 5th lumbar nerve(Fig. 4, 5, 7).

27. Sojangsu (BL 27)

This point is positioned at the same level with the 1st posterior sacral foramen and at 1.5 chon lateral to the median line (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and the dorsal ramus of the 1st sacral nerve. The inner constituents are the longissimus muscle tendon, multifidus, rotatores lumbaris muscle, and posterior sacroiliac ligament (Fig. 4, 5, 7).

28. Banggwangsu (BL 28)

This point is positioned at the same level with the 2nd posterior sacral foramen and at 1.5 chon lateral to the median line (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and dorsal ramus of the 2nd sacral nerve. The inner constituents are the longissimus muscle tendon, multifidus muscle,

and posterior sacroiliac ligament (Fig. 4, 5, 7).

29. Jungnyeosu (BL 29)

This point is positioned at the same level with the 3rd posterior sacral foramen and at 1.5 chon lateral to the median line (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and dorsal ramus of the 3rd sacral nerve. The inner constituents are the longissimus muscle tendon, multifidus muscle, and posterior sacroiliac ligament (Fig. 4, 5, 7).

30. Baekwansu (BL 30)

This point is positioned at the same level with the 4th posterior sacral foramen and at 1.5 chon lateral to the median line (Fig. 8, 3). The outer constituents are the gluteus maximus muscle and dorsal ramus of the 4th sacral nerve. The inner constituents are the same as those of *Jungnyeosu* (Fig. 4, 5, 7).

31. Sangnyo (BL 31)

This point is positioned at the 1st posterior sacral foramen (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and the 1st sacral nerve. The inner constituents are the longissimus, multifidus, and rotatores lumbaris muscle (Fig. 4, 5, 7).

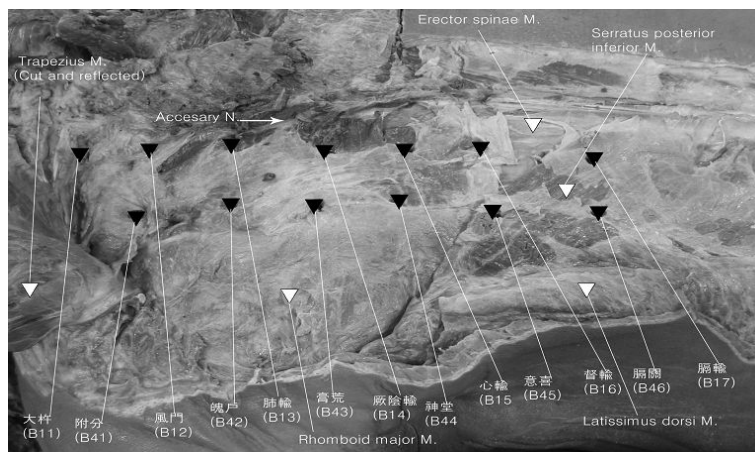


Fig. 6. Photograph shows bladder meridian points (BL 11-17, BL 41-46) upon deep dissection of back. (△: Muscle, →: Nerve, ▲: Meridianpoint)



32. Charyo (BL 32)

This point is positioned at the 2nd posterior sacral foramen (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and the 2nd sacral nerve. The inner constituents are the longissimus muscle tendon and multifidus muscle (Fig. 4, 5, 7).

33. Jungnyo (BL 33)

This point is positioned at the 3rd posterior sacral foramen (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and the 3rd sacral nerve. The inner constituents are the same as those of *Charyo*(Fig. 4, 5, 7).

34. Haryo (BL 34)

This point is positioned at the 4th posterior sacral foramen (Fig. 8, 3). The outer constituents are the thoracolumbar fascia and the 4th sacral nerve. The inner constituents are the same as those of *Jungnyo*(Fig. 4, 5, 7).

35. Hoeyang (BL 35)

The small intestine meridian, governing vessel meridian and bladder meridian are united at this acupuncture point. This point is positioned at 0.5

chon lateral to Gv1 which is positioned at the tip of the coccyx (Fig. 8, 3).

The outer constituents involve the gluteus maximus muscle and the 3rd, 4th, and 5th sacral nerve. The middle constituents involve the levator ani muscle and anicoccygeal nerve, while the inner constituent involves the coccygeal nerve (Fig. 4, 5, 7).

36. Bubun (BL 41)

The small intestine and bladder meridian are crossed at this acupuncture point. This point is positioned at 3.0 chon lateral to the hallow which is positioned between the 2nd and 3rd thoracic vertebrae, or at 1.5 chon lateral to BL 12 (Fig. 8, 3).

Here there are the trapezius muscle at the outer layer, the rhomboideus minor, and the serratus posterior superior muscle at the middle layer, and the iliocostalis muscle at the inner layer. With relation to constituent nerves there are the dorsal ramus of the 2nd thoracic nerve at the outer layer, and the accessory nerve at the middle layer (Fig. 4, 5, 6).

37. Baekho (BL 42)

This point is positioned at 3.0 chon lateral to the hallow which is positioned between the 3rd and 4th

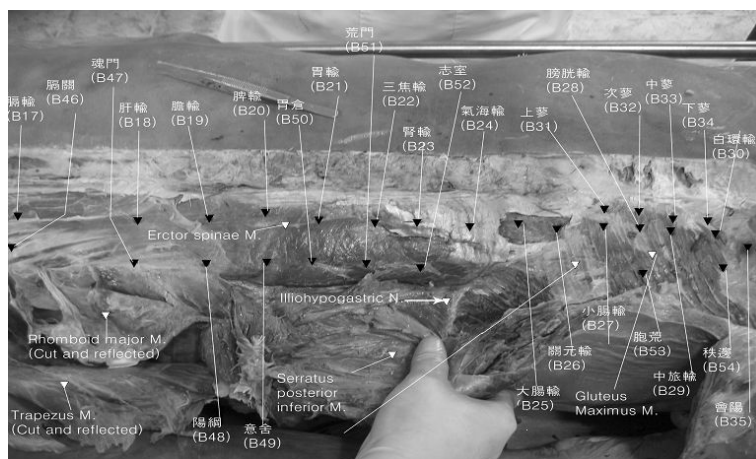


Fig. 7. Photograph shows bladder meridian points (BL 18-35, 47-54) upon deep dissection of back. (△: Muscle, →: Nerve, ▲: Meridianpoint)



hallow (Gv8) which is positioned between the 9th and 10th thoracic vertebrae, at 1.5 chon outward to BL 18 (Fig. 8, 3).

Here there are the latissimus dorsi muscle at the outer layer, the serratus posterior inferior m. at the middle layer, and the iliocostalis m. at the inner layer. With relation to the constituent nerve there are the dorsal ramus of the 8th and 9th thoracic nerves (Fig. 4, 5, 7).

#### 43. Yanggang (BL 48)

This point is positioned at 3.0 chon lateral to the hallow (Gv7) which is positioned between the 10th and 11th thoracic vertebrae, at 1.5 chon outward to BL 19 (Fig. 8, 3).

The composition is almost the same as that of *Honmun* except that the constituent nerve is only the 9th thoracic nerve (Fig. 4, 5, 7).

#### 44. Uisa (BL 49)

This point is positioned at 3.0 chon lateral to the hallow (Gv6) which is positioned between the 11th and 12th thoracic vertebrae (Fig. 8, 3). The composition is almost the same as that of *Yanggang* except that the constituent nerves are the dorsal ramus of the 9th and 10th thoracic nerves (Fig. 4, 5, 7).

#### 45. Wichang (BL 50)

This point is positioned at 3.0 chon lateral to the place which is positioned between the 12th thoracic and 1st lumbar vertebrae (Fig. 8, 3).

The composition is almost the same as that of *Uisa* except that the constituent nerves are the dorsal ramus of the 11th thoracic nerve instead of the 9th thoracic nerve (Fig. 4, 5, 7).

#### 46. Hwangmun (BL 51)

This point is positioned at 3.0 chon lateral to the hallow (Gv5) which is positioned between the 1st and 2nd lumbar vertebrae (Fig. 8, 3). The composition is almost the same as that of *Wichang* except that constituent nerves are the dorsal ramus of the 11th

and 12th thoracic nerves (Fig. 4, 5, 7).

#### 47. Jisil (BL 52)

This point is positioned at 3.0 chon lateral to the hallow (Gv4) which is positioned between the 2nd and 3rd lumbar vertebrae (Fig. 8, 3).

The composition is almost the same as that of *Yanggang* except that the constituent muscle at the outer layer is the latissimus muscle or thoracolumbar fascia, and the constituent nerves are the dorsal ramus of the 12th thoracic and 1st lumbar nerves (Fig. 4, 5, 7).

#### 48. Pohwang (BL 53)

This point is positioned on either side of the median line, at 1.5 chon lateral to BL 28, at 0.7 chon lateral to BL 32 which is positioned at the 2nd sacral foramen (Fig. 8, 3).

At the outer layer there are the gluteus maximus muscle and the dorsal ramus of the 1st sacral nerve (Fig. 4, 5, 7).

#### 49. Jilbyeon (BL 54)

This point is positioned at 1.5 chon lateral to BL 29, at 0.7 chon lateral to BL 33 which is positioned at the 3rd sacral foramen (Fig. 8, 3).

Here there are the gluteus maximus muscle at the outer layer, the sacrotuberous ligament and sacrospinous ligament at the inner layer, and the dorsal ramus of the 4th sacral nerve at the outer layer (Fig. 4, 5, 7).

## Discussion

BMM (*Foot Taeyang Meridian Muscle* in the truncus) originates in the angulus oculi medialis, *Jeongmyeong*, and goes upward to the parietal parts, *Tongcheon* and *Nakgak*, via the forehead. This goes down from the head to the foot. Herein, as this gets to the nucha, one fork goes down with the bilateral sides of the vertebral column to the popliteal fossa via the lumbar part, another fork goes down to the

outside of the foot via the intrad of the scapula, the greater trochanter of the femur, the lateraloposterior surface, the posterior surface of the lateral malleolus, and the tuberosity of the 5th metatarsal bone(Fig. 8).

MM in oriental medicine means a concept comprising soft tissue such as muscle, fascia ligament, and nerves on the outskirts of them<sup>1)</sup>. It is possible to know the mode of action of MM if we analyze the distribution of MM in connection with human anatomy<sup>8-10)</sup>. In the view of clinical application, MM plays an important role in the flexion & extension of muscle or joint or limb, since abnormality of MM is expressed as the abnormalities of MM-piercing part, such as stretching, convulsion, relax, rigidity, or displacement<sup>11-14)</sup>. Referring to the disability of MM, the chapter MM of *Ling Shu(Miraculous Pivot)* explains the following meaning "if *Yang* is over, the muscle extended and so long as *Yin* is over, then the muscle flexed. Cold brings about the muscle contraction, and hot, muscle slackness."<sup>15)</sup>. This means the symptom of disease induced by abnormal *meridian muscle* subsequent to *Yang* or *Yin* over.

As mentioned above, precise anatomical knowledge of the muscles is essential for the clinical application of MM. Such knowledge guarantees the exact and effective application of MM to clinics.

This study shows some differences from already established study<sup>1,16)</sup> on MM, that is, constituent elements of MM such as muscle, fascia, ligament, nerve, and furthermore, different assay method. Above all, the structure of each meridian point investigated in this study was divided into three layers according to depth from body surface but on the other hand we noted that there may be wide differences in opinion according to the disparity of real meridian points or the angle of acupuncture<sup>17)</sup>. The present study was performed with an upright position for a basis. The direction of the acupuncture needle in oriental medicine is generally composed of 3 types, upright position inserted perpendicular to the skin, down or transverse position, and inclined position inserted at the angle

of 45 degrees to the skin. For example, the upright position is required for the application of the needle to BL1, inclined or transverse position for BL2, inclined position for BL 3, 4, 5, 6, 7, etc.

## Conclusion

This study was carried out to identify the component of BMM (*Foot Taeyang Meridian Muscle* in the human truncus), dividing into outer, middle, and inner parts. Trunk and headskin were drawn back widely to demonstrate muscles, nerves and other elements, displaying the internal structure of BMM. We reached the following conclusions ;

1. BMM is composed of the muscle and the related nerves.
2. This study shows some differences from already established studies from the viewpoint of constituent elements of BMM, and also in aspect of substantial assay method.
3. In the dissection of the human trunk, a conceptual difference in a term is present between nerves which control the muscle of MM and those which pass near by MM.

## Reference

1. The department alliance of acupuncture & moxibustion, oriental medicine. *Acupuncture & Moxibustion* (1st volume). 3Eds. Seoul: Gypmundang.1991:159-170,459-499,504-514.
2. Lee JK, Bae SK. *Korean Acupuncture Medicine*. 4th Ed. Seoul: Komunsa. 1991: 43-45.
3. Song CH. Study on the 12 *Meridian Muscle* and the 12 *Skin*. *The Journal of Korean Acupuncture & Moxibustion Society*. 1989;6(1):179-86.
4. Giovanni Maciocia. *The foundations of Chinese medicine*. USA:ChurchillLivingstone.1989:1-34.
5. Lee JM, Park KS. *Anatomy of The Lung Meridian Muscle* in Human. *J. Kor. AM-Meridian & Pointology Soc.*2001;18(2):19-25.

6. Park KS. Study on the Anatomical Pericardium *Meridian Muscle* in Human. Kor. J. of Meridian & Acupoint. 2005;22(1):67-74.
7. Park KS. Anatomical Observation on the Triple Energizer *Meridian Muscle* in Human. Kor. J. of Meridian & Acupoint. 2007;24(1):65-77.
8. Abrahams PH, Hutchings RT, Marks SC Jr. Mc. Minn's Color Atlas of Human Anatomy. 4th Ed. London: Mosby-Wolfe Publishing, 1999:28-29, 84-90, 108-111.
9. Ferner H, Stubesand J. Sobotta's Atlas of Human Anatomy (Anatomy 1). 10th Ed. Urban & Schwarzenberg. 1983:133-144, 293-297.
10. Frank H. Netter. Atlas of Human Anatomy. CIBA. 1987: Plate 17-21, 76-81, 116-117, 160-164.
11. Butler P. Imaging of the Nervous System. Springer-Verlag. 1990:231-240.
12. Snell RS. Neuroanatomy. 3rd Ed. Little & Brown. 1992:149-184.
13. Liebenson C. Rehabilitation of the Spine. Williams & Wilkins Inc. 1996:135-167, 332-358.
14. Juhl JH. Roentgen Interpretation. 5th Ed. Harper & Row. 1981:317-352, 412-439, 1119-1131.
15. Jang MH. HuandiNeijing (AKorean version). Seoul: Sungbosa. 1975:145-154.
16. Ahan YK. A Collection of Meridian & Acupoint. Seoul: Sungbosa 1991:321-385, 394-411.
17. Choi HS. A Search on New Direction of Meridian Study. J. Kor. AM-Meridian & Pointology Soc. 2004;21(3):1-20.