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# VM5: Manual Thermal Evaluation

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## Class Introduction

- Mechanical Dialogue carried to a whole new level...
  - transitioning from VM1-4 to VM5
  - even if primarily emotional, it still has a primary physical point where it started
- JPB's experiences with Manual Thermal Evaluation
- Understanding Thermosensitivity
  - looking at the ability of our hand to feel a change → MTE
- Practical Application of MTE
- Abdomen and Pelvis test
- Cranium and Neck
  - eyes
- Thorax
- Posterior listening
- Self Awareness and Energy
- Introduction to Visceroemotional Listening
  - more detail in VM6
- Practical integration of Visceral Techniques

## Class Goals

- class is very experiential
  - like the Listening Techniques classes
- weaved throughout the courses are concepts and theories that we hope are becoming part of your awareness

## Class Concepts

- *How do we evaluate for something more difficult to feel or see?*
  - all anatomy has relationships with each other
  - know your anatomy

- General listening: “let the body speak”
- local listening: “only the tissues know”
- extended listening: “trust your hands”
  - listening off of the body as well
- relationship with the body: “do not judge”
  - getting into the emotional world of the person
  - same reading in different people will express differently
- “listen and follow”
  - bringing hands back to the body after evaluating off the body
  - is the tissue saying “no”?
- “wake up a little something”
  - mechanical dialogue
  - helps to respect the body and allow it to express itself
- “precision”/be specific
  - size, shape, and intensity of the heat
- keep it simple
- “be generous with your hands”
- we are assisting the communication throughout the entire body
- mechanoreceptors and proprioceptors
  - hands have thermosensitivity
  - viscera also have thermosensitivity
    - organs can express themselves thermally
- only the tissues know
  - MTE is just reading a different aspect of the tissues
- JPB – success comes from working with the fluids
  - tune into the fluids
  - lymph, venous, arterial, etc.

## **T S o VM**

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- the spirit of this work is how to effect the human being – the wholeness of the person
- **“We must respect the deep life of the person”** – JPB
  - example: client who was infertile → had uterosacral torsion
  - even though we may be as specific as the uterosacral ligament – how does this restriction effect the entire body?
    - Function of
      - uterus (menses, endometrial cells)
      - reproduction (fertility)
      - function of associated organs (ovaries, tubes)
      - function of hormones (endocrine system, liver)
      - function of thalamus, hypothalamus (as body regulatory center)
      - function of behavior, emotions (as part of the limbic system)
      - function of fluid dynamics (vascular center of pelvis)
      - function of nervous system (lumbar, sacral plexuses, sympathetic and parasympathetic systems)
    - structural changes in
      - sacrum
      - structural changes in pelvic bones
      - structural changes in lumbar curvature
      - structural changes in spine and torso, therefore diaphragm
      - structural changes in occiput, therefore cranium
    - structural and functional changes in gait and movement, therefore ADL

## **Ou go**

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- is to help somebody
- read a little part of the history to know what the body wants to tell you

- discharge tension with precision
- encourage tissue communication

## VM1-4 R

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- begins with structure
  - sense of how organs move (mobility, motility)
    - could be a functional issue and the body would best be served with motility work to help wake it up first
  - better knowledge of how organs function (anatomy/physiology)
  - how organs effect the body (lines of tension)
  - which techniques have been found to have the greatest results with discharging information and assisting communication
- when changes not occurring ... what else could the body tell us
  - JPB experience with MTE
  - reality of emotions playing a role in Visceral Dysfunctions

## VM5+ T                      Pl

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1. GL
2. MTE
3. LL
4. set up treatment plan
5. clinical application

## H                      o MTE

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- 1970 patient with thoracic heat
- used ortoscan, US, radiography, CT scans, fluoroscopy, Doppler to compare with his manual diagnoses
- 1973 JPB developed a thermal topographic map
- found that thermal projections can be correlated with specific disorders
- found MTE useful to differentiate between **functional, structural, and emotional disorders**
  - emotional disorders found more in brain
  - might have 2 or 3 levels
  - use listening and inhibition to determine primary one
- research literature does not really respect thermography

## JPB' E                      w MTE

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- discovery of how to evaluate emotional information within the tissues
- development of emotional listening
- development of emotional touch
  - one the edge of the organ
- discovery that if he just did emotional work, without working the structure, he would only get temporary results

## VM5 G

### C o n c e p t a D i f f e r e n c e s

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#### **"B** *i* **VM5**

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- Anatomically speaking, the skin is part of the body.
  - In fact, it is the largest and heaviest organ of the body.
- For our purposes in this guide, however, we need to differentiate between the skin and the rest of the body.
- Although it may be confusing, we will hereafter use the term "body" to refer to all human tissues and organs except the epithelial layer of the skin (epidermis) and its underlying connective tissue layer (dermis).
- In other words, the word "body" will refer to all living tissues situated deep to the skin, i.e., muscles, blood, bone, digestive organs, lungs, etc.

#### **E** *a* **H**

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- energy is the physical factor needed for producing work
- heat is a form of energy
- heat energy is part of the electromagnetic spectrum

#### **I** *R* **(3)**

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- Infrared is the term applied to electromagnetic (EM) radiation with a greater wavelength and lower frequency than that of visible red light.
  - The range of wavelength for infrared is defined as 800 to 1000 nanometers (nm).
  - One nanometer is  $10^{-9}$  m, or one-billionth of a meter.
  - The range for microwaves begins at 1250 nm.
- The visible spectrum extends only from 400nm (violet) to 800nm (red).
  - Therefore, the human eye is not able to detect infrared.
- All bodies give off EM radiation in the form of waves.
  - Some EM waves are capable of transporting thermal energy.
  - Heat energy, as dissipated by or sensed by the human body, is carried by radiation in the infrared range.

#### **E** *S* **(4)**

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### D i f f e r e n c e s n o P

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- The period of a defined phenomenon is the duration from beginning to end of the phenomenon.
- Period is measured in units of time (milliseconds, seconds, minutes, etc.).
- For example, if the phenomenon being discussed is a heartbeat, and we observe that there are 60 heartbeats per minute, we can

say that the period of one heartbeat is one second.

- EM waves have period considerably less than one second.

## **H a E R (5-6)**

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### **T h e**

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- when two bodies of unequal temp are in contact, energy is transmitted from the warmer body toward the colder body
- the heat of the body is transmitted to the skin by:
  - conduction (solid, no movement)
  - convection (liquid, movement)
  - radiation/radiance (emission of EM waves or particles)
    - might feel pressure, temperature
    - might need to vary distance to find where the person's body expresses
- the skin emits and absorbs radiation in all environments it encounters

### **Conduction**

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- Conduction is the transmission of heat between two solid object through direct contact, or through a medium without perceptible motion of the medium itself.
- Tissue conduction occurs when two tissues of unequal temperature are in contact.
  - Heat is conducted from the warmer to the colder tissue.
  - Normally, heat is conducted from the interior body toward the fasciae near the surface, toward the epidermis, and finally to the exterior.

### **Convection**

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- In convection, there are currents or movements in a liquid or gas medium, and these currents transfer heat from one region to another.
  - For example, blood is a liquid medium which move and carries heat.
- In general, the difference between conduction and convection involves type of matter (solid versus liquid or air) and molecular currents within the matter (absent versus present).
  - Natural convection: liquid molecules (e.g. in the body) move in response to density differentials created by temperature changes
  - Forced convection: Some force acts on liquid or gas molecules to displace them. Movement of molecules may be turbulent (in many direction) or laminar (mostly in one direction).
  - Convection via blood flow: More heat transfer occurs by this route than by direction conduction between tissues. Blood picks up heat as it flows through an active muscle or internal organ. The heat is transmitted to the skin, which loses it to the exterior since the temperature of the air is usually lower than that of the skin. Variation in skin temperature is usually felt by the hand as a zone of relative heat, even though thermal recordings may indicate a hypothermic zone.

### **Radiation**

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- Radiation is the electromagnetic phenomenon sharing some of the properties of light.
  - It is a process of energy propagation involving emission of EM waves or particles.
  - It is characterized by its nature, its energy (expressed in volts), and its flow.
  - Flow (sometimes called flux) means the number of particles striking a unit surface area per unit time.
- The skin is an efficient radiator of heat energy.
  - The wavelengths emitted cover a broad spectrum.
  - According to Wien's Law, the frequency at which maximal energy is emitted depends on the temperature of the emitting object.
  - At 37°C (body temperature), radiation from human skin is maximal at a wavelength around 950 – 1000nm, i.e., toward the high end of the infrared portion of the EM spectrum.
  - J.D. Hardy (1961) showed that around 30°C maximal skin radiation is at wavelengths between 900 and 1000nm.
- Radiation, as an EM phenomenon, does not rely on the molecules of its medium (e.g. air).

- It occurs even in a vacuum.
- It is not greatly affected by the temperature of the medium.
- For example, your skin can feel the radiant heat from an infrared lamp even if the intervening air is cold.
- Although wavelengths of radiation from the skin are strongest in the infrared portion of the spectrum, other wavelengths (from a few hundred nm to several meters) are also given off.
  - Of special interest are frequencies in the range of one to 10 GHz, as we will see later.
- An object with a temperature neat that of the body, let's say 33°C, also emits radiation primarily in the infrared range.
  - At these wavelengths, the skin acts something like a “black body”, emitting and absorbing radiation at a coefficient near one.
  - An idealized black body absorbs all of the radiation that reaches it.

## B Te

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- heat is an end product of many metabolic and mechanical transformations that take place in an organism
  - times when the body produces extra heat
    - stomach will be warmer after eating
  - times when your body goes cold
  - relates to timing of when you would do your evaluation and treatments
- heat produced in the body is transmitted to the external environment
- human maintain a fairly constant  $T_B$ 
  - vary with physical activity, fever, hormonal activity, and emotional status
- The hypothalamus in the brain regulates body temperature.
- Thermal control is achieved through:
  - feedback loops which involved thermoreceptors
  - heat regulating centers in the brain
  - motor effector neurons
- brain and heart need steady blood supply and O<sub>2</sub>
- venous blood in torso is warmer than arterial blood
- extremities is opposite so conduction of arterial heat moves toward veins
- **the temperature of a given part of the body is the result of metabolic activity in all surrounding tissues**
  - different zones may have slightly different values
- Body temperature varies in response to:
  - physical activity
  - $T_A$  (ambient temperature)
  - Hormone level
- Body temperature is relative – a change in organ temperature does not always mean a change in overall body temperature.

## I D i B Te

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- different body regions have natural temperature differences
  - temperature gradients are normal – you're looking for abnormal gradients
  - cranium/middle of head to heart > trunk > shoulders/hips > arms/legs
  - thorax has more venous exchange of heart
  - extremities have more arterial exchange
- hypothermic regions
  - extremities
  - scrotum
  - cellulite
  - breasts (non-pregnant)
  - gaseous intestines
  - scars
  - gluteals (extra muscle/fat)
  - stretch marks
- hyperthermic regions
  - skin folds

- sup/med thigh
- suboccipital region
- rectum (relates to amount of venous supply)
- breasts (pregnant)