

MERIDIAN STRESS ASSESSMENT

By

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the clinical project of Aran D. Galway find it satisfactory and recommend that it be accepted.

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Abstract

Keywords: Meridian Stress Assessment (MSA), *Electrodermal Screening (EDS)*, *electroacupuncture according to Voll (EAV)*, *meridians*, *measurement point (MP)*, *control measurement points (CMP)*, *traditional Chinese medicine (TCM)*, *bioenergetic medicine (BEM)*,

This paper presents a review of the history and current use of Meridian Stress Assessment (MSA), MSA instruments, and bioenergetic medicine (BEM). The use of MSA devices, treatment selection using MSA, homeopathy, nutritional therapy, acupuncture, and other complimentary modalities has been a mainstay of diagnosis and treatment for decades among health care providers throughout the world, and most recently, in the United States. More importantly, people are learning about alternatives. We are being inundated through the media with information about complimentary modalities and the possibilities that they offer. The consumer is beginning to demand more from their health care dollars. Entrenched medical and political paradigms are breaking down and the general public and scientific communities are beginning to recognize the benefits of the various complimentary modalities. The Journal of the American Medical Association (Eisenberg et al., 1998) reveals that visits to complementary medical practitioners now exceed those to orthodox practitioners. Eisenberg et al. report that four out of ten Americans used “alternative” therapies in 1997. Total out-of-pocket expenditures for alternative therapies during this same period were estimated at \$27-34 billion dollars. In addition, 50% of the visits were 35 to 49 year olds with annual incomes above \$50,000. Visits to alternative or integrative medical practitioners has increased by nearly 50% from 1990 to 1997.

This paper includes advantages and challenges of MSA, the importance in assessing the bioenergetic systems, and instrumentation. Meridian stress assessment and bioenergetic medicine can be valuable adjuncts to conventional diagnosis and treatment and potentially a new paradigm in medicine. The integration of MSA instrumentation into clinical settings significantly augments the ability to rapidly and accurately evaluate tissues. Meridian stress assessment offers the clinician a scientifically documented quantitative method useful as a diagnostic supplement to case histories, physical assessment, laboratory diagnostics, and radiographic imaging. Given reliable MSA instruments, early diagnosis of disease states via measurable changes in electrical conductance is possible, which could facilitate prevention or early and more effective treatments (Brewitt, 1996). Further study of bioenergetic function using meridian stress assessment and the tools used in the assessment seems clearly warranted.

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Meridian Stress Assessment

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Abstract

Keywords: Meridian Stress Assessment (MSA), *Electrodermal Screening (EDS)*, *electroacupuncture according to Voll (EAV)*, *meridians*, *measurement point (MP)*, *control measurement points (CMP)*, *traditional Chinese medicine (TCM)*, *bioenergetic medicine (BEM)*,

This paper presents a review of the history and current use of Meridian Stress Assessment (MSA), MSA instruments, and a brief overview of the energy meridian system. Meridian stress assessment has been additionally referred to as electrodermal screening (EDS), electroacupuncture according to Voll (EAV). The use of MSA devices, treatment selection using MSA, homeopathy, nutritional therapy, acupuncture, and other complimentary modalities has been a mainstay of diagnosis and treatment for decades among health care providers throughout the world, and most recently, in the United States. More importantly, people are learning about alternatives. We are being inundated through the media with information about complimentary modalities and the possibilities that they offer. The consumer is beginning to demand more from their health care dollars. Entrenched medical and political paradigms are breaking down and the general public and scientific communities are beginning to recognize the benefits of the various complimentary modalities. The Journal of the American Medical Association (Eisenberg et al., 1998) reveals that visits to complementary medical practitioners now exceed those to orthodox practitioners. The researchers report that four out of ten Americans used “alternative” therapies in 1997. Total out-of-pocket expenditures for alternative therapies during this same period were estimated at \$27-34 billion dollars. In addition, 50% of the visits were 35 to 49 year olds with annual incomes above \$50,000. Visits to alternative or integrative medical practitioners has increased by nearly 50% from 1990 to 1997.

This paper includes a brief historical perspective, electrical properties of the meridian system, the importance in assessing the bioenergetic systems, advantages and challenges of MSA and instrumentation. Meridian stress assessment and bioenergetic medicine can be valuable adjuncts to conventional diagnosis and treatment and potentially a new paradigm in medicine. The integration of MSA instrumentation into clinical settings significantly augments the ability to rapidly and accurately evaluate bioenergetic status of tissues. Meridian stress assessment offers the clinician a proven quantitative method useful as a diagnostic supplement to case histories, physical assessment, laboratory diagnostics, and radiographic imaging. Given reliable MSA instruments, early diagnosis of disease states via measurable changes in electrical conductance is possible, which could facilitate prevention and/or early and more effective treatment. This would facilitate provision of early and more effective treatment. The integration of MSA instrumentation into the clinical settings significantly augments the ability to rapidly and accurately evaluate tissues. Meridian stress assessment offers the clinician a scientifically documented quantitative method useful as a diagnostic supplement to laboratory diagnostics, radiographic imaging, and case histories (Brewitt, 1996). Further study of bioenergetic function using meridian stress assessment and the tools used in the assessment seems clearly warranted.

Introduction

Energy meridians and the points that lay along them have been subjectively reported in great detail by acupuncturists for over 3000 years. According to traditional Chinese medicine (TCM) there is a connection between these energy channels, measurement points (MPs) on the skin, and every physiologic system. The term “meridian” includes both the lines on which the MPs are located and the internal organs or systems that are associated with the particular points and lines. There are twelve main meridians and eight extra meridians. There is a control measurement point (CMP) for each of the twenty meridians corresponding to each half of the anatomy located on the fingers and toes of both hands and feet (Table 1 & Figures 1 through 4). Additionally, there are over 2000 other MPs that correspond to virtually every sub-component of each major physiological system that have been identified to date (Soochow University, 1997). The premise is that energetic processes, that include electrical and magnetic processes, vibrational resonance, and bio-photon emission, are essential to all life processes. The bioenergy that flows through the meridian system is the carrier of bio-information and is crucial to biological self-regulation. This is referred to in traditional Chinese medicine as chi or qi (Tsuei, 1996). This energetic system is the “master” homeostatic control mechanism for every physiologic function.

All the studies reviewed in this paper have statistical agreement that the meridian system is physiologically different from the vascular, lymphatic, musculoskeletal or neuronal systems (Darras, deVernejoul & Albarede, 1992; Darras, 1989; Tiller, 1987; Chen, 1996; Motoyama, 1996). All functions of human beings are energetically interconnected through these meridians. Several organs can be affected by a single

meridian system and its various branches. A disease process will begin when there is an imbalance to an affected energy system. The imbalance within a given system will in turn affect one or more organs located along that meridian. This imbalance will often manifest as signs and symptoms somewhere along the causal chain when physiologic compensatory mechanisms are inadequate (Tsuei, 1996).

Historical Perspective

While the meridian system is ancient in its' subjective origin, the first objective inquiry of the meridian system began in 1945, with de la Fuye's work.. The meridian system did not begin to be understood scientifically until 1950, when Nakatani discovered the electrical conductance properties of the meridians. In 1953, Voll, a German neurosurgeon, was the first to measure the electrical response of MP's along the meridians and use this information to diagnose patients. Voll developed the first meridian stress assessment (MSA) device (thus known as the "Father" of MSA) and procedure known as "electro-acupuncture according to Voll" or EAV (Voll, 1975). Thus began the era of electro-diagnosis using the first generation of MSA devices and a system of evaluation (Royal & Royal, 1991).

The use of ECG, EEG, electromyography, MRI, ultrasound is widely accepted. Meridian stress assessment, assisted by a measured stress stimulus (1-5 volts DC and 10-50 micro-amperes), offers the practitioner a system to assess, by non-invasive means, the degree of order or disorder in the whole client. It can also measure the impact of a disease in a particular organ thereby obtaining a specific statement about the regulatory capabilities of the client (Maiwald, 1988).

Orthodox medicine strives to overcome morphologic changes inherent in natural disease processes to affect a “cure” for the patient. Bioenergetic medicine is designed to identify and assist innate forces within a patient to effect a self-cure (Royal & Royal, 1992).

It is widely recognized that, prior to morphologic manifestations of a disease process, there is a pre-clinical phase whereby the physiologic system attempts to compensate. When the system fails to compensate, clinical symptoms become manifest. Orthodox medicine endeavors to help patients with all the modalities it employs, specifically with differential diagnosis, clinical findings, diagnostic techniques, pharmacologic interventions, and surgery. Orthodox medicine appears to work well if one does not take into account the iatrogenic effects of those efforts which are well-known and documented (Trunet, 1980). Bioenergetic medicine, with the use of meridian stress assessment, endeavors to detect and recognize energetic and regulatory disturbances which precede and/or accompany morphologic and biochemical alterations of a disease process. During the pre-clinical phase, meridian stress assessment can determine acute causative factors. Estimates are that at least 70% of patients in any general practice suffer from disturbances that no specific tissue, organ damage, or orthodox diagnostics can explain (Shimmel & Penzer, 1996).

Instrumentation

There are a number of manufacturers of MSA equipment around the world and the last study conducted doing comparative analysis was done in 1988 (Lam, Tsuei & Zhao, 1988). Many improvements and modifications have been made by all manufacturers since this study. There continues to be operational parameter differences

between instruments. However, all of the instruments tested in this study effectively measured electrical dermal conductance and/or resistance. Most instruments in use today elicit physiologic responses using 1-5 volts DC and 10-15 micro-Amperes registering dermal responses in K-ohms on a scale of 1-100 (Figure 5). For the purpose of this review, and in general practice, a reading of 50 on the scale is considered optimal. Readings below 50 are classified as degenerative conditions while readings above 50 are classified as inflammatory (Figure 6). Each study reviewed used different instruments and parameters with the normal, degenerative, and inflammatory classification ranges slightly different. The idea of 50 being normal function and above and below 50 being inflammatory and degenerative, respectively, can be extrapolated to all MSA devices and testing procedures.

Review of Research Literature

Professor Chen of Soochow University Department of Physics in Taiwan has been quantitatively studying the electrical properties of meridians for the past ten years. In one study, a Wilcoxon signed-rank test was used to discriminate between the electrical properties of meridian points and control point groups. The paired t-test was used to determine preferential direction of current. The study was conducted using two traditional acupuncture arm points (“Chin-tsa” HE3 and “Nei-Kuan” HE6) of the pericardium meridian and two non-meridian points located 1-centimeter away from the true meridian points. The meridian points demonstrated higher conductivity than the non-meridian points ($p < 0.001$). Meridian stress assessment can objectively measure the conductance of this elicited current through selected meridians corresponding to specific anatomical areas and determine hypo, normal, or hyper-function. This study offers

statistically significant evidence that meridians are preferential pathways for electrical current as compared to neighboring tissues (Chen, 1996).

Darras, deVernejoul and Albaredo conducted a study on 250 healthy control subjects and 80 subjects with renal pathology to examine whether injected radioactive isotope (Technetium-99m) coincides with the acupuncture meridians as described in traditional Chinese medicine (TCM) and, that these pathways were distinguishable from either lymphatic or vascular routes. Imaging was conducted using a Siemens SAM digital scintillation camera with computerized analysis. Morphologic studies found those radioactive tracer migrations from acupoints (MPs) in both healthy and pathologic groups followed identical pathways with those described as meridians in TCM. These results suggest that the pathways are different from vascular or lymphatic pathways (Darras, deVernejoul & Albaredo, 1992).

Using quantitative analysis of electrical skin conductance in diagnosis, Brewitt (1996), attempted to replicate research findings from four previous studies. Using the LISTEN meridian stress assessment device from Bio-Meridian™ International of Orem, Utah, electrical conductance measurements on patient groups were analyzed for differences at immune related measurement points. The four groups consisted of non-viral, non-cancer controls (N=34), patients with various inflammatory conditions, (N=22) (eg, carcinoma in situ, chronic Epstein Barr infection, rheumatoid arthritis, and leukemia), degenerative conditions, (N=7) (cancer and AIDS), and HIV asymptomatic group, (N=10). Controls were found to have normal range at MPs corresponding to both the immune and spleen areas. Patients with chronic inflammatory conditions had higher

than normal (>50) electrical conductance at the peripheral MP for the immune system. Spleen MP was in normal range, but statistically higher than the control group.

Brewitt, 1996, found that early stages of cancer, chronic viral infection (Epstein Barr and HIV) and chronic inflammatory conditions are characterized by hyper-conductance at MPs associated with lymphatics, skeletal joints, and connective tissue compared to the same MPs in the control group. In contrast, terminal or degenerative stages of cancer and AIDS were characterized by lower than normal electrical conductance, especially at the spleen MPs (Brewitt, 1996).

Saku, Mukaino, Ying & Arakawa (1993), studied the characteristics of MP's on the auricles (ears) in patients with coronary heart disease. The researchers demonstrated significant correlation's between heart conditions and the heart MPs used. Four groups were used including old myocardial infarction (OMI), (n=17), acute myocardial infarction (AMI), (n=30), angina pectoris (AP), (n=16), and controls, (n=19). Using MSA instrumentation (type not revealed) electrical conductance was measured at six MPs on the auricle (heart I-shin, heart II-shinzo, small intestine, lung, heart III-shinyu, and shoulder), (see figure 7). Small intestine and shoulder MPs demonstrated no significance in or between any of the four groups. Heart I and heart II MPs on the auricle demonstrated significance ($p < 0.001$) between the OMI and control, AMI and control, and the AP and control groups. Although larger and age comparative groups could further objectify a similar study, one can conclude that heart I (shin) and heart II (shinzo) points on the auricle do correspond to the functional anatomy of the heart (Saku, et al., 1992).

Tsuei, Lam, Mi, Zhao (1989) used MSA to diagnose diabetes mellitus (control N=95 and confirmed diabetics N=55). The findings demonstrated a 95% to 97.5% correct classification rate by MSA testing using discriminant analysis.

A small study involving confirmed lung cancer patients (n=3) and healthy subjects (n=20) demonstrated a significant level of agreement (p=0.02) between the MSA testing and conventional diagnosis using chest x-ray (Sullivan, Eggleston, Martinoff & Kroening, 1985).

Discussion

The challenges and advantages of meridian stress testing and bioenergetic medicine, as it pertains to MSA, will be the subject of this final discussion.

Bioenergetic medicine and meridian stress assessment involve a paradigm shift in our approach to health and illness as the current medical paradigm is reluctant to make room for energetic processes and evaluation. Since the presence and movement of meridian energy is not expressed chemically, it is impossible to monitor quantitatively or qualitatively using standard chemical based testing procedures. Applied research in well-designed clinical trials is the only convincing method to establish efficacy, and in MSA, the questions of mechanism of action have not been completely resolved (Tsuei, Lam & Chou, 1996). Operator/technician ability and training has not been standardized causing reproducibility to be variable and related to technician expertise. Inadequate regulatory enforcement and standardization of instrumentation is a compelling problem. The cost of meridian stress assessment systems ranges from \$12,000 to \$30,000.

Federal laws are in place regulating the use of MSA devices. The FDA label of non-significant risk (NSR) device and an investigational device exemption (IDE)

number—G930148 has been granted to the LISTEN system (Currently the BEST [Bio-Energetic Stress Test] system) from BioMeridian International of Orem, Utah (Figure 8). Early detection of disease processes will facilitate earlier and less harmful (or harmless) interventions with greater efficacy. MSA is non-invasive and completely harmless to the client. An MSA screening, physically and visually integrates the client in every aspect through sight, sound, and touch of the initial and follow-up evaluations. Meridian stress assessment is extremely cost effective by virtue of its simplicity, non-invasiveness, and earlier disease detection (resulting in earlier and therefore more effective interventions). Meridian stress assessment can provide causative determination of acute or chronic disease processes (Tsuei, Lam & Chou, 1996).

Conclusion

Orthodox and bioenergetic medicine need to recognize and embrace the great qualities that each has to offer and work together toward a system of health care that is safe, cost effective, more accessible and individualized. The quality of health outcomes can improve with the integration of meridian stress assessment, and its many capabilities, into modern medical practice. “With its solid theoretical foundation in physics and quantum mechanics, meridian stress assessment is perhaps the most modern medical methodology available today. The device, the tests that it performs, and the system may prove to be the greatest set of tools against disease created this century (Tsuei, 1996).” Although meridian stress assessment is used extensively around the world by over 70,000 practitioners as a primary diagnostic tool, it has clearance only as a biofeedback system in the United States. Considerable amounts of data are currently being gathered and analyzed, using scientific methods, for future publication and further validation of MSA

and BEM. This is happening not only in the United States, but in clinics and research centers around the world. Further interest and research is warranted and encouraged in MSA and it is the hope of this author that the readers of this review will recognize the potential of MSA and BEM and be stimulated to such interest and research. Many of the most eminent holistic health care providers in the United States, and around the world, have recognized the benefits of meridian stress assessment and bioenergetic medicine and have incorporated them into daily practice. Incorporation of MSA systems into health care practices can only enhance orthodox practice and potentially assist in the bridging of long-held “cure-the-symptoms” model and a true holistic health care model. Meridian stress assessment is the most comprehensive system developed in medicine to date that has the ability to provide a truly holistic system of health care delivery (Tsuei, 1996).

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Table 1

GLOSSARY OF MEASUREMENT POINTS

| Point Name | Abbreviation | Location |
|--------------------------|--------------|------------|
| Allergy CMP | AL-cmp-L | left hand |
| Allergy CMP | AL-cmp-R | right hand |
| Joints CMP | AR-cmp-R | left foot |
| Joints CMP | AR-cmp-L | right foot |
| Urinary bladder CMP | BL-cmp-L | left foot |
| Urinary bladder CMP | BL-cmp-R | right foot |
| Circulation CMP | CI-cmp-L | left hand |
| Circulation CMP | CI-cmp-R | right hand |
| Fatty degeneration CMP | FA-cmp-L | left foot |
| Fatty degeneration CMP | FA-cmp-R | right foot |
| Fibroid degeneration CMP | FI-cmp-L | left foot |
| Fibroid degeneration CMP | Fi-cmp-R | right foot |
| Gallbladder CMP | GB-cmp-L | left foot |
| Gallbladder CMP | GB-cmp-R | right foot |
| Heart CMP | HT-cmp-L | left hand |
| Heart CMP | HT-cmp-R | right hand |
| Kidney CMP | KI-cmp-L | left foot |
| Kidney CMP | KI-cmp-R | right foot |
| Large Intestine CMP | LI-cmp-L | left hand |
| Large Intestine CMP | LI-cmp-R | right hand |
| Lung CMP | Lu-cmp-L | left hand |
| Lung CMP | Lu-cmp-R | right hand |
| Liver CMP | LV-cmp-L | left foot |
| Liver CMP | LV-cmp-R | right foot |

Table 1 (cont)

GLOSSARY OF MEASUREMENT POINTS

| Point Name | Abbreviation | Location |
|--|--------------|------------|
| Lymph CMP | Ly-cmp-L | left hand |
| Lymph CMP | Ly-cmp-R | right hand |
| Nervous System (degeneration) CMP | NV-cmp-L | left hand |
| Nervous System (degeneration) CMP | NV-cmp-R | right hand |
| Organ degeneration (cellular metabolism) CMP | OD-cmp-L | left hand |
| Organ degeneration (cellular metabolism) CMP | OD-cmp-R | right hand |
| Pancreas CMP | PA-cmp | right foot |
| Small Intestine CMP | SI-cmp-L | left hand |
| Small Intestine CMP | SI-cmp-R | right hand |
| Skin CMP | SK-cmp-L | left foot |
| Skin CMP | SK-cmp-R | right foot |
| Spleen CMP | SP-cmp | left foot |
| Stomach CMP | ST-cmp-L | left foot |
| Stomach CMP | ST-cmp-R | right foot |
| Endocrine (triple warmer) CMP | TW-cmp-L | left hand |
| Endocrine (triple warmer) CMP | TW-cmp-R | right hand |

Glossary of points names, abbreviations, and general body locations.
See Figures 1 through 4 for specific locations.

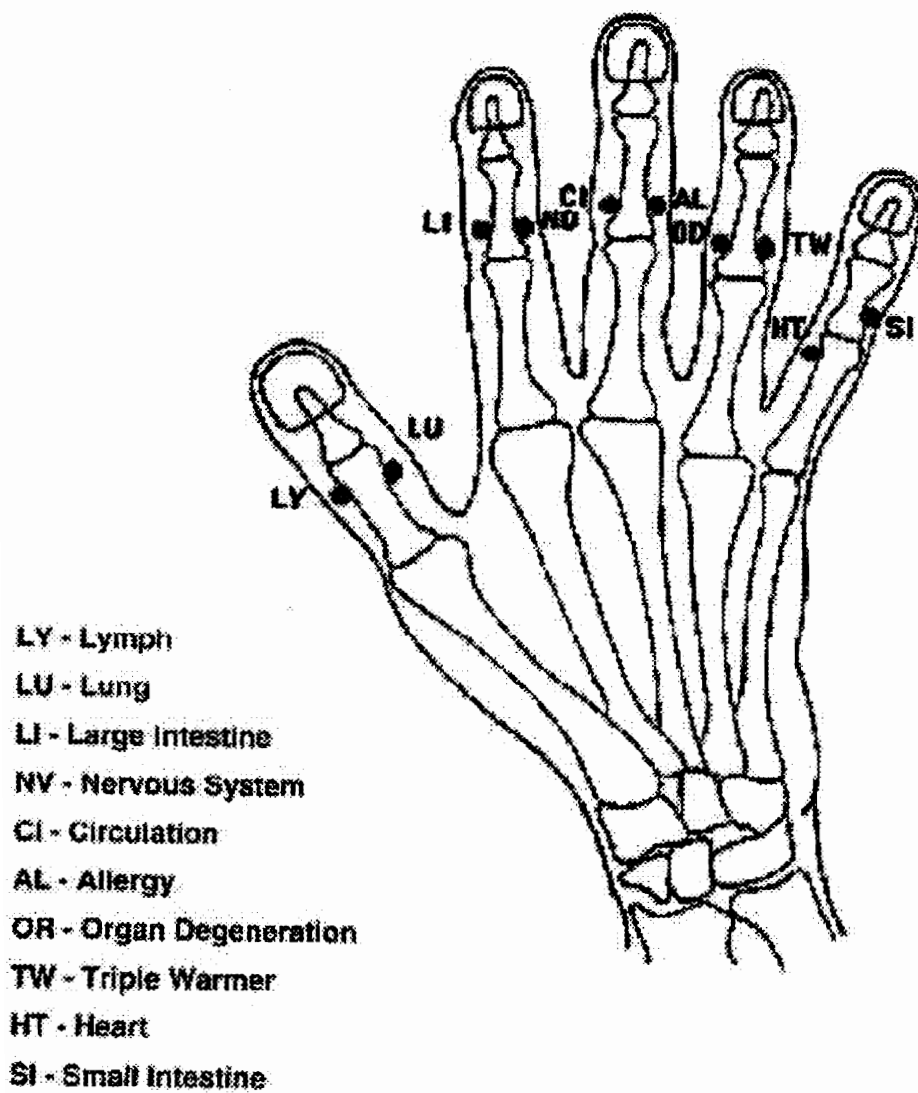


Figure 1
Control measurement points (CMP) locations on right hand

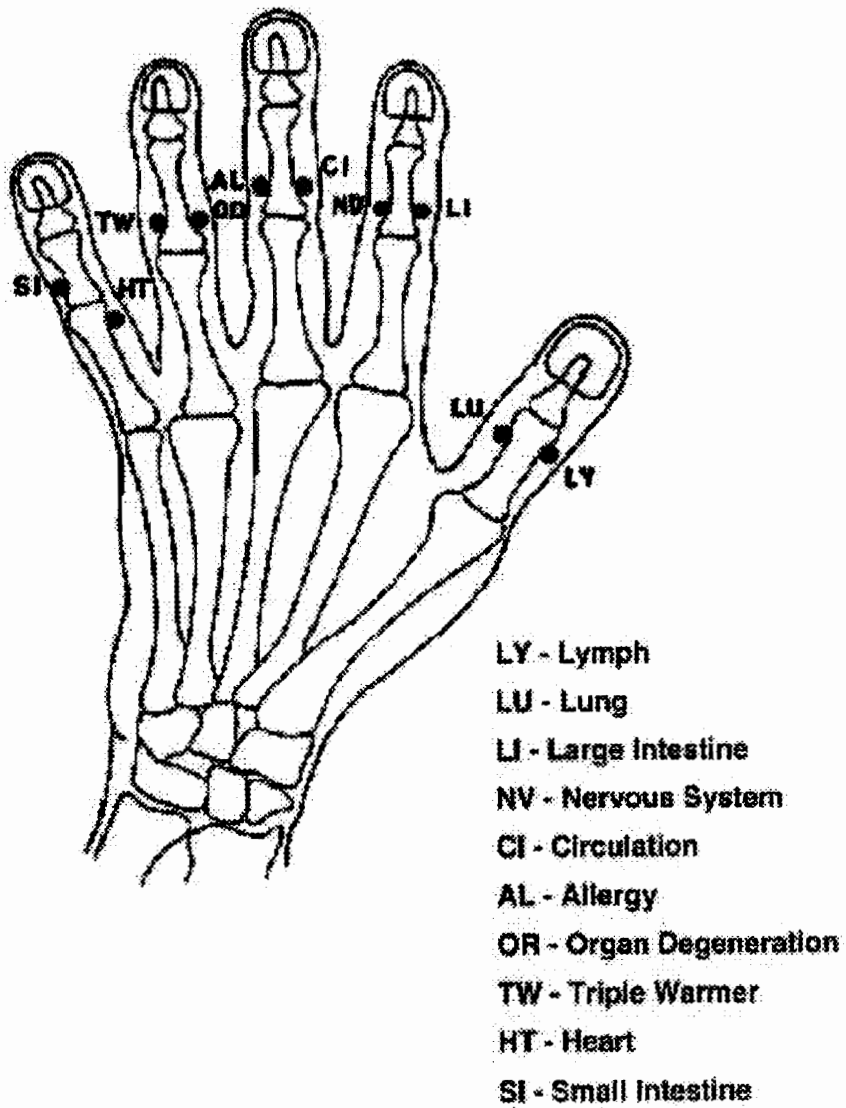
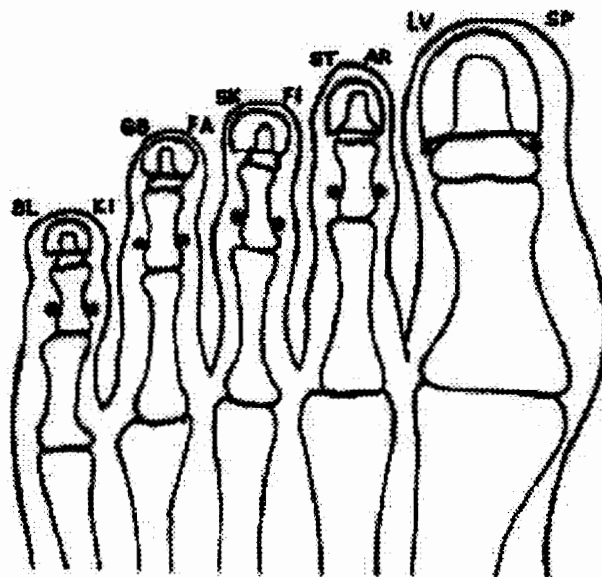
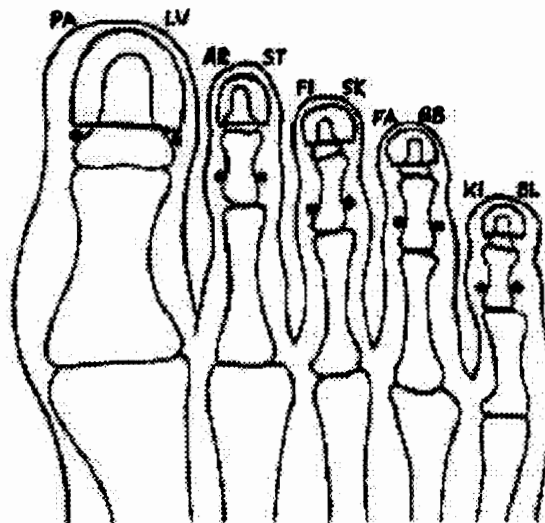


Figure 2
Control measurement points (CMP) locations on left hand



SP - Spleen
LV - Liver
AR - Articulation
ST - Stomach
FI - Fibroid
SK - Skin
FA - Fatty Degeneration
GB - Gall Bladder
KI - Kidney
BL - Bladder

Figure 3
Control measurement points (CMP) of the left foot



- PA - Pancreas
- LV - Liver
- AR - Articulation
- ST - Stomach
- FI - Fibroid
- SK - Skin
- FA - Fatty Degeneration
- GB - Gall Bladder
- KI - Kidney
- BL - Bladder

Figure 4
Control measurement points (CMP) of the right foot

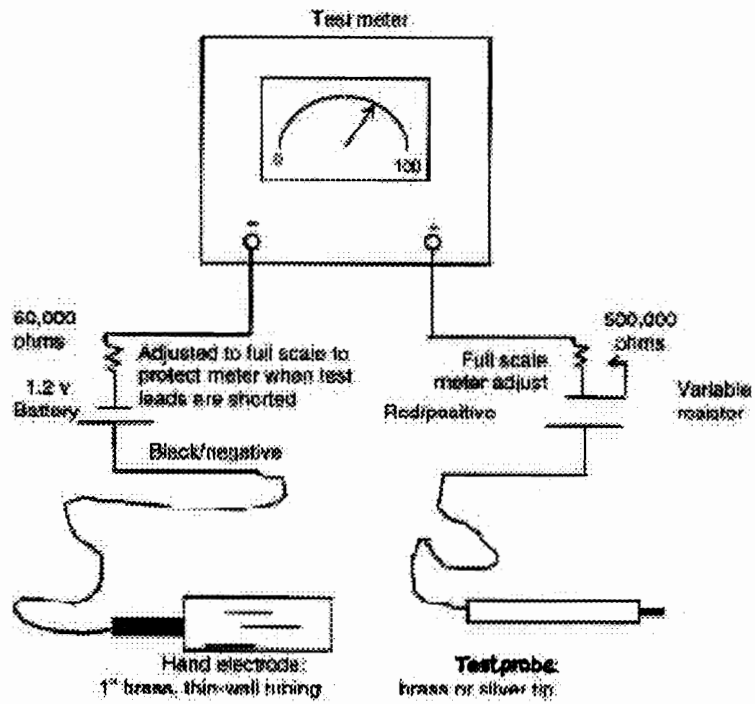


Figure 5
Basic schematic of meridian stress assessment instruments

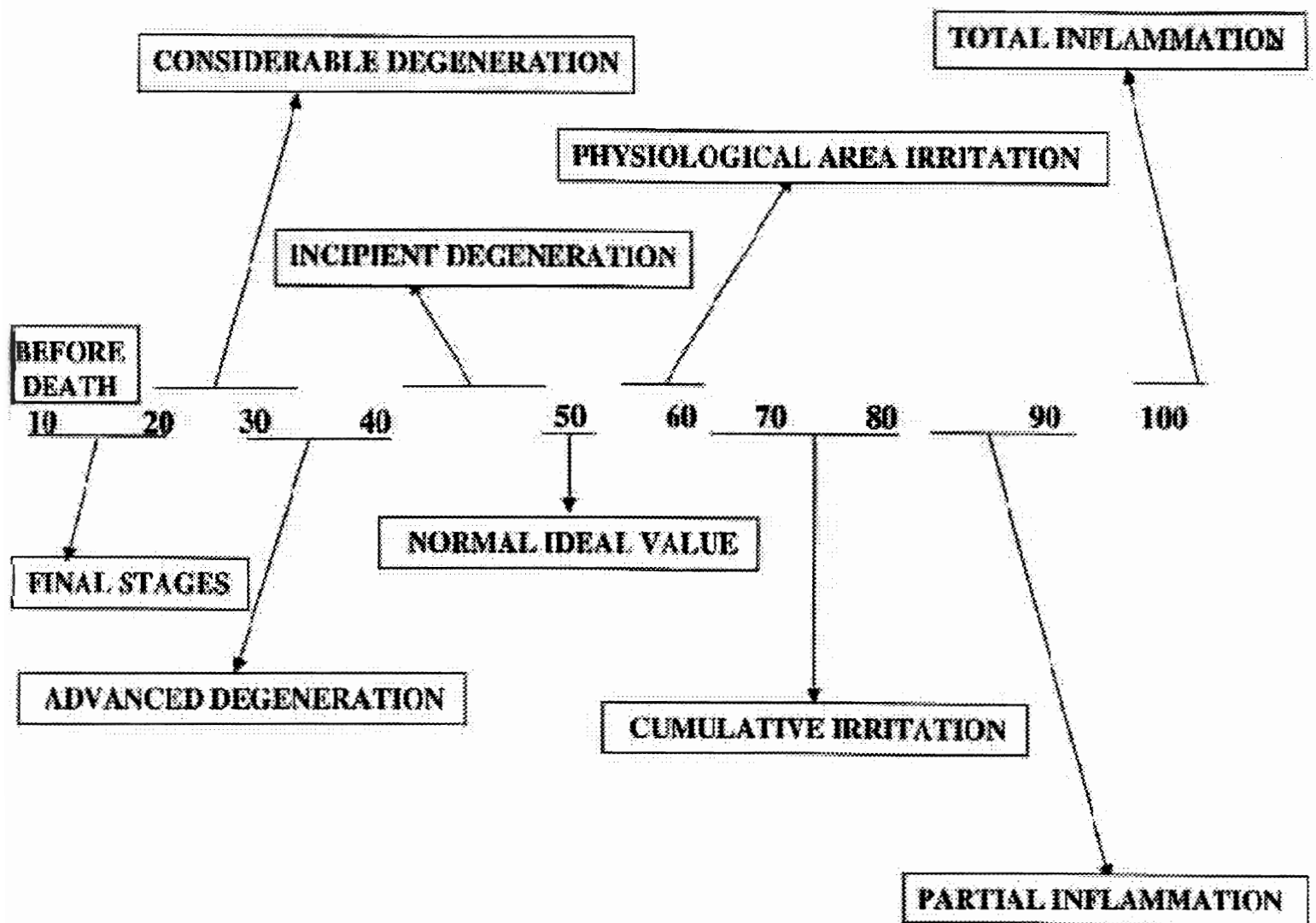


Figure 6
General interpretation of measurement on the 0-100 scale

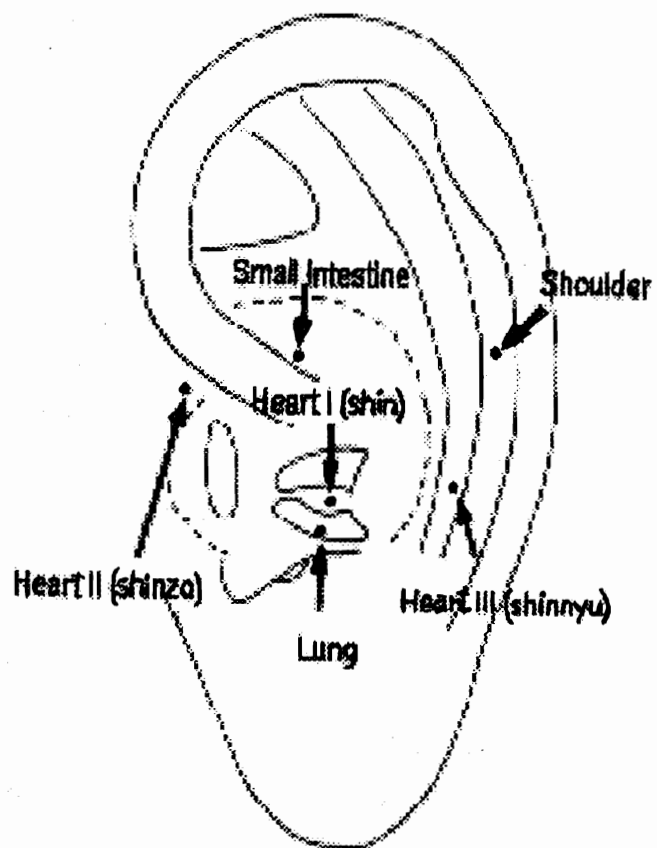


Figure 7
Auricle (ear) points and control points used in Saku, Mukaino, Ying, and Arakawa's
1993 study

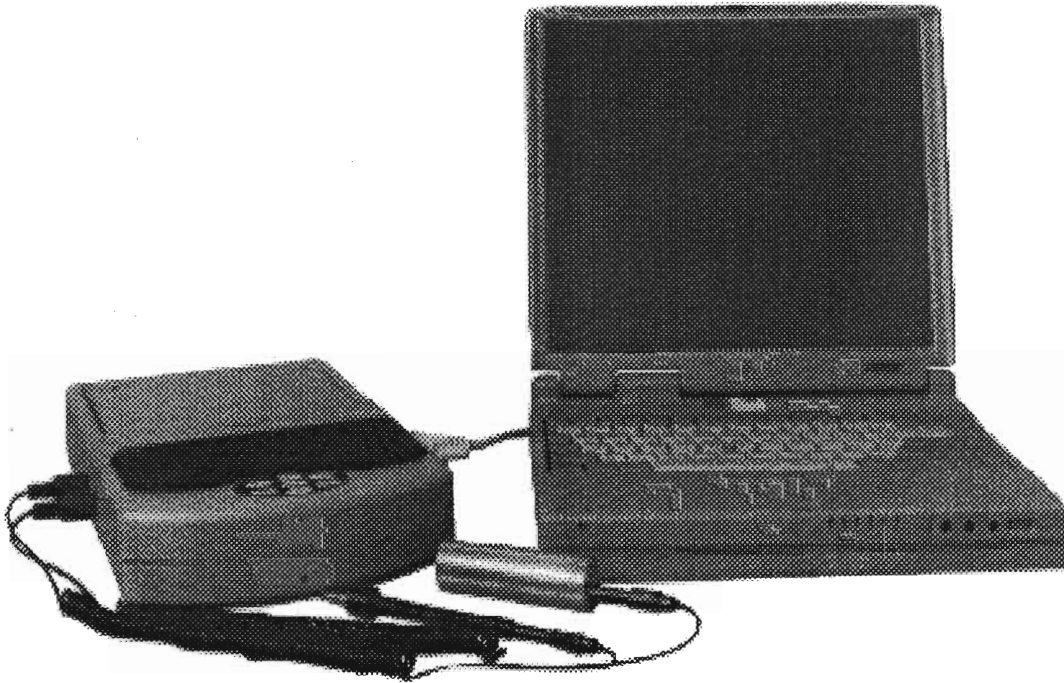


Figure 8
Picture of meridian stress assessment system