

Variability in the Precision of Acupoint Location Methods

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Certificate of authorship/originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Candidate

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Abstract

The ability to precisely locate appropriate acupoints is, according to both traditional and contemporary theories, essential to deliver acupuncture treatments. More than half of the acupoints defined in acupuncture literature are sufficiently distant to anatomical landmarks, to require the use of specialised techniques in order to locate them. However no research has been conducted to investigate the precision of any manual method (electrical detection is discussed at detail with reference to numerous conflicting research papers).

This thesis details the design, conduct and results of experimentation carried out to measure the precision of four methods (named the directional, proportional, elastic and ruler methods) used to locate acupoints. The methods include two based upon the traditional Chinese anatomical unit of measurement, the *cun*, and two based upon the traditionally reported lengths of areas of the human body. The reasons for selecting these methods, and for excluding others, are explained.

Seventy two subjects were involved in testing the precision of the four methods by applying them when locating a fictitious acupoint. The subjects marked the attempts to locate the fictitious acupoint with invisible ink. The marks were transferred to plastic films and measurements made from reference points.

A significant difference was found between the methods ($F_{3,120} = 11.74$, $p < 0.0001$). No significant difference was found between the two traditional methods of point location (directional mean = 11.35, and proportional mean = 11.17) ($p < 0.998$), nor between the two variant methods of point location (elastic mean = 7.63, and ruler mean = 6.34) ($p < 0.68$). Significant differences were found between the two traditional methods and the two variant methods. The directional method was less precise than both the elastic method ($F_{3,120} = 11.74$, $p < 0.007$) and the ruler method ($p < 0.00009$).

The proportional method was also less precise than both the elastic method ($F_{3,120} = 11.74$, $p < 0.011$) and the ruler method ($p < 0.0002$).

Each subject also completed a short questionnaire regarding ease and comfort of use of the four methods. The two more precise methods were generally not well received by subjects in this study. Their two primary concerns were not with precision, but rather of application of the method, and its perceived appearance to patients.

An analysis was also carried out to describe any variation in acupoint location descriptions reported by prominent authors. 151 clinical research papers reporting acupuncture studies were selected according to a number of criteria. The five most frequently prescribed acupoints in these papers comprised the sample used in the examination of seven acupuncture texts. Variability was found between the texts, and is discussed in consideration of the presently poor understanding of the anatomical make-up of an acupoint.

Also examined was the usefulness of measures of sensitivity to palpation used when locating acupoints. No statistically significant difference was found between any of the acupoints tested and the related control points.

The thesis discusses the implications for acupuncture practice, research and education in light of the lack of precision measured, the subjects' preference for the more imprecise methods, the inability to locate or even verify the location of an acupoint using pressure, variability in reported acupoint locations between reference texts, and the related short-comings in published acupuncture research.

Glossary

Term	Definition
acupoint	a discrete area on the body regarded by acupuncturists as physiologically reactive to stimulation
AMED	Allied and complementary Medicine journal database
ANOVA	Analysis of Variance test
CAM	Complementary and/or alternative medicines
CE	Current era
CINAHL	Cumulative Index to Nursing and Allied Health journal database
CONSORT	<i>Consolidated Standards of Reporting Trials</i> . Referred to as the CONSORT Statement
<i>cun</i>	The traditional anatomical inch of TCM
EEG	electroencephalogram
ERP	Event-related potential
<i>fen</i>	One tenth of a <i>cun</i>
FP	Fictitious point used as a control point in this thesis
Laser	A modern pain-free practice in which a laser-generated light is focussed onto acupoints in the belief that they are stimulated
MANOVA	Multiple Analysis of Variance test
Moxibustion	A TCM practice, originally practiced independently of needling, involving the burning of a herbal mixture (primarily mugwort) to warm acupoints and other areas of the body
RCT	Randomised controlled trial
STRICTA	Standards for <i>Reporting Interventions in Controlled Trials of Acupuncture</i>
TCM	Traditional Chinese Medicine
UTS	University of Technology, Sydney