Chapter 5
Common Acupuncture Practices

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Introduction

Traditional Chinese acupuncture practice is not limited to the insertion and manipulation of needles. In fact, acupuncture stimulations include a whole host of physical stimuli, both invasive and noninvasive applications to the specific points on the body. The ancient Chinese believed that there was a vital energy "Qi" traveling throughout the body through channels called meridians. The rate of Qi flow or lack of Qi flow affects the body's wellbeing. When there is an irregularity of Qi flow, illness occurs. In order to restore health, the ancient Chinese believed that applying physical stimulations such as moxibustion and/or needles into selected area(s) (acupuncture points) of the body regulates the Qi flow and restores health [1].

Early acupuncture practice can be traced back to the Neolithic age with the use of Bian Shi (flat sharpened stone) [2]. Hieroglyphs and pictographs dating from the Shang Dynasty indicate that both acupuncture and moxibusion were practiced in early 1600–1100 BC [3]. The replacement of stone and bone needles with metal occurred around the second century BC. The earliest record of acupuncture is in Shiji (Records of the Grand Historian). The earliest official Chinese medical textbook describing the practice was compiled between 305–204 BC [4]. Later, acupuncture's use spread from China to adjacent countries such as Korea, Japan, and East Asia. From the Han to the Song Dynasty, there were multiple variations of acupuncture written and practiced. In 1023, Song Renezong (the emperor of Song Dynasty) ordered the production of a bronze statuette depicting the meridians and acupuncture points (Fig. 5.1). After the end of the Song Dynasty, acupuncture was viewed as a technique and its practitioners were viewed as technicians rather than scholars. Acupuncture became less common in the succeeding centuries, supplanted by medications and was frequently considered a less prestigious form of practice [5]. As the result, the practice has shifted from exclusively in palace to lay public.

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Y.-C. Lin, E. S.-Z. Hsu (eds.), *Acupuncture for Pain Management*,
DOI 10.1007/978-1-4614-5275-1_5,

Fig. 5.1 The bronze statuette with acupuncture points

Portuguese missionaries introduced acupuncture to the West in the sixteenth century [6]. Although acupuncture and moxibusion started gaining popularity in Europe, it was declining in China [5]. In 1822, the practice and teaching of acupuncture was banned within the Imperial Academy of Medicine, who deemed it unfit for gentleman-scholars [5]. After 1950 and the Chinese Cultural Revolution, chairman Mao ordered that traditional Chinese medicine, including acupuncture, should once again take the center stage in China's medical practice and acupuncture saw a resurgence in popularity [7]. In 1972, President Nixon visited China, and the visiting delegations watched a conscious patient undergo open-heart surgery performed under acupuncture anesthesia. The Chinese government made a stamp to commemorate

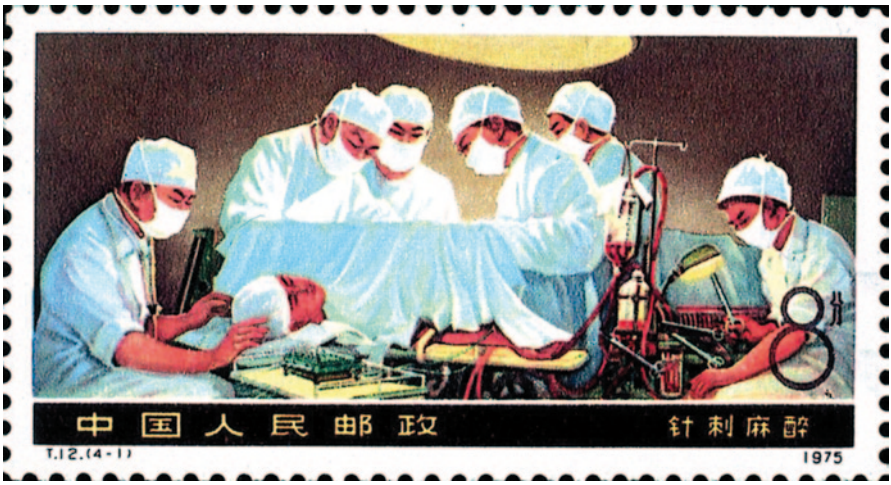

Fig. 5.2 The stamp made to celebrate the success of open heart surgery under acupuncture analgesia

the successful procedure in 1975 (Fig. 5.2) [8]. The New York Times' reporter, James Reston, who had emergency surgery for appendicitis, wrote a front-page article about his experience with acupuncture analgesia for postoperative pain. Since these events, acupuncture has been the subject of active research, including publications regarding acupuncture information and its mechanism of administration [9]. In 1972, the first acupuncture clinic was established in Washington, DC. In 1973, the Internal Revenue Service determined that acupuncture treatment fees may be considered medical deductions [10]. In 1996, the Food and Drug Administration reclassified disposal acupuncture needles from investigational to a class II device, meaning that they have accepted that the devices are safe and effective [11]. In 1999, the National Institutes of Health released a consensus statement indicating that acupuncture is effective for the treatment of nausea and vomiting in adults postoperatively, and as a treatment for chemotherapy patients [1]. However, after more than a decade of clinical trials, the efficacy of acupuncture remains controversial in managing various types of clinical problems [12, 13]. While acupuncture practices are generally becoming more publicized and accepted in the United States, there is still skepticism among general public. Many clinical research studies indicate that the benefit of acupuncture is merely a placebo effect because clinical explanatory trials consistently show a lack of statistical and clinically significant differences in effect between true and sham acupuncture. Although the recent development of nonpenetrated needling (placebo needle) (Figs. 5.3 and 5.4) was thought to provide the inert treatment to blind the patient, the treatment outcomes of placebo needles were opposite what the investigators intended. In a research study conducted in a group of orthopedic patients with either acupuncture needles or placebo needles [14], the researchers found that nearly 40% of subjects reported there were differences in the interventions between these two types of needles. The study results raises concerns with regard to the wholesale adoption of the instrument as a standard form

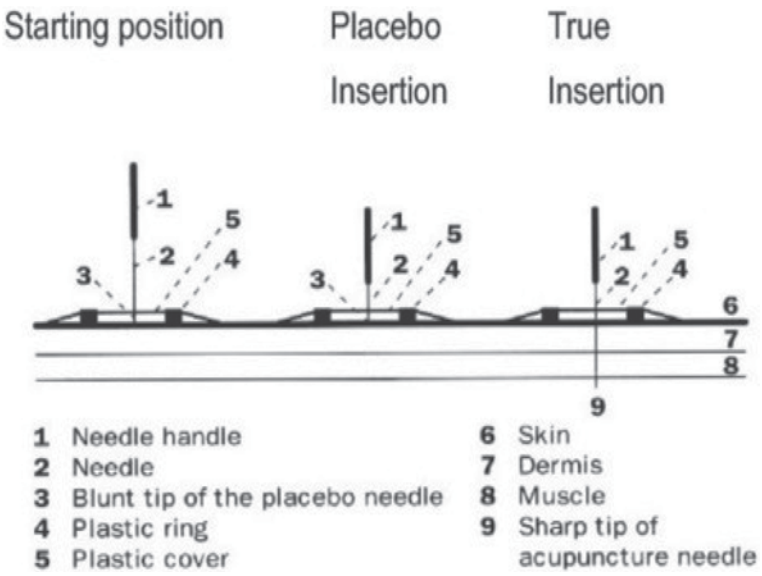

Fig. 5.3 The schematic drawing of placebo acupuncture needle developed by Streitberger [16]

of acupuncture placebo [14]. Thus, the issue of blinding the patients remains. Finally, there is a lack of consensus about what acupuncture actually is. As noted previously, acupuncture practice incorporates different systems, such as body acupuncture and somatotopic microsystem acupuncture, and there are different styles as well, such as Chinese, Japanese, Korean, etc. Different techniques may also be used, such as pressure, needle, moxa, electrical current, laser, cupping, and injection. Many clinical acupuncture trials merely compare two different forms of acupuncture stimulations. It is generally accepted that acupuncture stimulation exerts its effects through the peripheral sensorial receptors. Therefore, any interventions that activate these receptors may produce valid physiological responses. This concept has been overlooked in previous acupuncture clinical trials. The ideal inactive control (placebo) for acupuncture stimulation should not activate any somatosensory activity. While the quest for the ideal placebo control for clinical acupuncture trials continues, the data from both the met-analysis and the pragmatic trials indicate that various acupuncture techniques are cost-effective in several clinical conditions such as low back pain, migraine, osteoarthritis of the knee, etc. [15]. The purpose of this article is not to evaluate the acupuncture clinical trials, but to remind the clinical researchers, physicians, and health care providers that acupuncture is not restricted to penetrating needle manipulations.

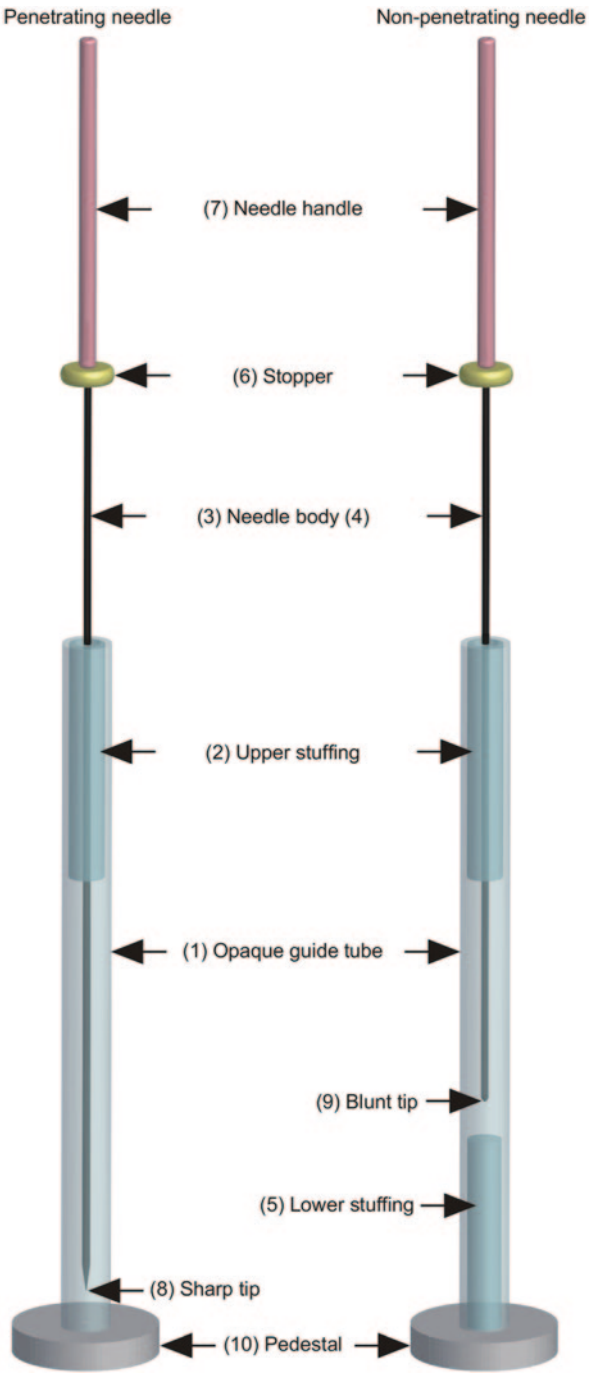

Fig. 5.4 Each needle assembly comprising an opaque guide tube (*1*) and upper stuffing (*2*) to provide resistance to the needle body during its passage through the guide tube. The body of the penetrating needle (*3*) is longer than the guide tube by an amount equal to the insertion depth. The body of the non-penetrating needle (*4*) is long enough to allow its blunt tip to press against the skin when the needle body is advanced to its limit. The non-penetrating needle contains stuffing in the lower section (*5*) to give a sensation similar to that of skin puncture and tissue penetration. Both needles have a stopped (*6*) that prevents the needles handle (*7*) from advancing further when the sharp tip of the penetrating needle (*9*) reaches the specified position. The pedestal (*10*) on each needle is adhesive, allowing it to adhere firmly to the skin surface, The diameter of the needles used in this study was 0.16 mm [17]

Systems of Acupuncture Practices

Body Acupuncture System

It is the foundation of all current acupuncture practices and is based on the traditional Chinese description of meridians (channels) that connect the internal organs to the skin surface. According to the Chinese acupuncture textbook, there are 14 meridians on the skin's surface. "Qi", vital energy-essence of life, travels along these meridians. When a person is in good health, Qi flows smoothly and regularly, however, when the Qi-flow is disrupted, or flows too quickly or too slowly, illnesses occur. Along these meridians, there are areas (acupuncture points) where Qi runs just below the skin. By applying physical stimulation at these acupuncture points, the disrupted Qi flow can be returned to its normal rhythm and the body is restored to its healthy condition. Chinese classification identifies 361 points along 14 main meridians, however, other points have been identified over time, more than doubling the number of recognized points [18]. Anatomical landmarks and a system of length measurements (cun) are used to determine the locations of acupuncture points [18]. All acupuncture points have empirically determined indications for specific illnesses or problems. Point selection to treat a complaint is typically made after a physical assessment and history is obtained from the patient. The stimulation techniques and durations are determined by the practitioner's interpretation of what is required to restore Qi balance.

Somatotopic Microsystems

It is based on particular somatotopic field comprising of specific points of correspondence (Fig. 5.5). The microsystem was mainly developed in the West and is also commonly known as reflexology. Microsystems are situated on circumscribed parts of the body, such as the hand, ear, nose, scalp, etc. As microsystems resemble cartographies of the organism, they have an allusion to the somatotopic homunculus, as represented at the cerebral hemisphere. Every one of the microsystem points has a clearly defined correlation to and interrelation with a particular organ or function. When there is pathology of an organ or dysfunction, the corresponding reflex point will exhibit pressure allodynia or discoloration, becoming an active reflex point. By applying stimuli to an active reflex point, one can restore the distant pathology or dysfunction back to its normal healthy condition [18, 19]. As a result, microsystem acupuncture is useful in diagnosing and effectively treating illness [20]. The treatment applied to the microsystem can be used alone or in conjunction with the traditional body system to achieve synergistic effects.

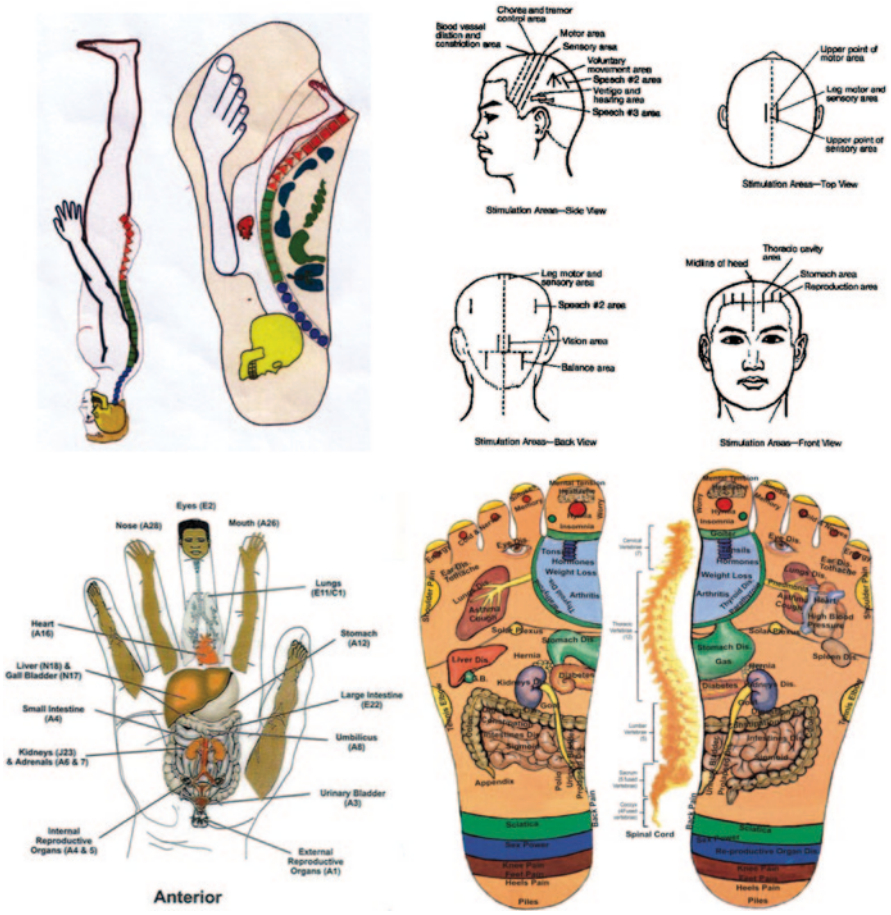

Fig. 5.5 Somatotopic microsystem

Techniques of Stimulation

Direct Pressure

Physical pressure is applied to acupuncture point or reflex point by the hand, elbow, or with various devices (Fig. 5.6). According to the principles of traditional Chinese medicine (TCM), illness occurs when the flow of "Qi" is disturbed. By applying direct pressure to the acupuncture points, one can remove blockages in the meridians and alleviate the Qi's disturbances, thereby restoring health to the body or organ. Tui Na is a form of Chinese pressure therapy, whereby the practitioner uses brushes, kneads, rolls/presses to stimulate the acupuncture points to treat both acute

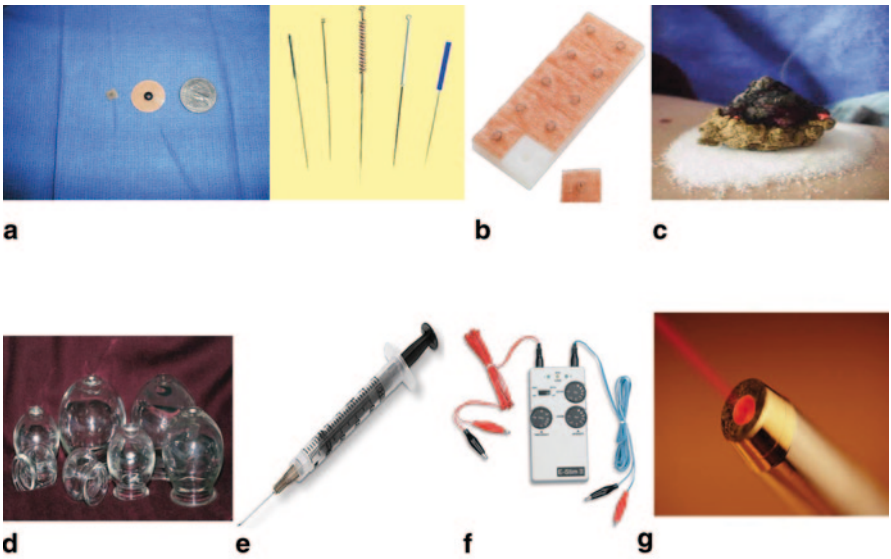

Fig. 5.6 **a** Acupressure beads. **b** Acupuncture needles and press needles. **c** Moxibustion. **d** Cupping. **e** Syringe and needle for acupoint injection. **f** Electrical stimulator and **g** laser

and chronic musculoskeletal conditions, as well as many nonmusculoskeletal conditions. There are also pressure beads, or magnetic pellets covered with adhesive tape and rollers available commercially that one can apply to the acupuncture point. This form of stimulation is commonly used to treat acute conditions or superficial diseases. In addition, there is the Tapas Acupressure Technique, developed in 1993 by Ms. Tapas Fleming, a California licensed acupuncturist, who claims that the application of light pressure to four areas (the inner corners of both eyes, one-half inch above the space between the eyebrows, and the back of the hand) releases the blockage and allows for healing [21].

Needle

In 1997, the Food and Drug Agency reclassified the acupuncture needle from an investigation device to a class II device. The modern acupuncture needle is constructed of a stainless steel shaft with a handle made of plastic, or spiraled stainless steel, copper, silver, or bronze around one quarter to one half of the needle length [11]. The needles currently used in the United States are solid, hair-thin, sterile, and single-use. Their diameters x length range from 1.2 to 1.6 mm × 15 to 60 mm. Thermoelectric phenomenon has been suggested as one mechanism of needle acupuncture's effectiveness. Scientists believe that when an acupuncture needle is inserted into the skin it creates temperature differences between the tip of the needle and the handle, which directly converts into electric voltage [21]. Another theory is

that acupuncture has neurophysiological basis. Professor Pomeranz proposed that the insertion and manipulation of acupuncture needles activate the peripheral nerve fibers, the afferent pathway, and trigger a chain of excitatory and inhibitory responses along the central nervous system [22]. Recently, theories about the connective tissue have been emerging as another mechanism of how acupuncture works. Langevin et al. demonstrated that the insertion and manipulation of acupuncture needles causes the adhesion of fibroblast to the needle, which is known as "de Qi" sensation, a therapeutic signal for both the acupuncturist and the patients [23]. The researchers further suggest that acupuncture needles trigger local connective tissue reorganization [24].

Moxibustion

"Burning of moxa-dried mugwort" is commonly used for any conditions that are considered "deficiency" or stagnation conditions. Moxa is aged mugwort herb grounded to a fluff. When ignited with fire, it generates a lot of smoke. Mugwort is believed to act as an emmenagogue, stimulating blood flow in the pelvic and uterus areas [25]. Traditional acupuncturists believe that moxibustion militates against cold and dampness in the body. Practitioners use moxa to warm regions and acupuncture points with the intention of facilitating the circulation of blood and Qi. The traditional Chinese doctors use this technique either in conjunction with acupuncture needles or alone. When applying burning moxa directly to the acupuncture point, there will be a thin barrier to separate the skin from moxa. The barrier may be a slice of ginger or garlic. Both ginger and garlic are considered to be "warm" herbs, and their combination with moxa is considered to have synergistic effect in replenishing the deficiency or expelling dampness from the body. In China, it is not uncommon for additional herbs to be mixed with moxa to enhance the effect that the practitioner intends to achieve. Finally, owing to the large quantity of smoke generated with the traditional moxibustion, this technique has been replaced by "smokeless" moxa or a heating lamp.

Cupping

This technique involves applying the "vacuum cup" over affected body parts or acupuncture points, with or without acupuncture needles in place [26, 27]. Cupping has been used commonly for hyperactive conditions. When a patient exhibits a hyperactive/excited state, traditional Chinese doctors consider that it stems from a high/rapid flow of Qi in the body. By applying suction cups to the acupuncture points, the excessive energy is drawn out and the Qi-flow returns to a normal rhythm, restoring the patient's health. This particular method is also used to remove toxins from the body and cleanse the Qi. The original cupping technique utilized a bamboo cup. Modern cups are made of glass with a smooth rim. Bruising at the cupping site is the most common adverse effect associated with this form of acupuncture stimulation.

Hydroinjection

This form of stimulation is similar to intramuscular injection. The practitioners use hypodermic needles to deposit fluid or medication into the acupuncture points [28]. According to the practitioners, the dosage of medications needed for the same outcome is less than a systemic intravenous administration and the medication is more effective. It is believed that the medication deposited into the acupuncture points can reach the target organ directly. In China, when young women experience menstrual cramps, Vitamin K3 is deposited into the Spleen 6 acupuncture point to relieve the cramps.

Electrical Stimulation

This is provided by a device that generates continuous electrical pulse to pairs of surface electrodes or pairs of acupuncture needles. There are percutaneous electroacupoint stimulations (PEAS) and electroacupuncture stimulations (EAS). The PEAS is similar to transcutaneous electrical nerve stimulation (TENS). The stimulations are delivered through a device with adjustable intensity and frequency. The major differences between TENS and PEAS are the placements of electrodes and the frequencies and intensity of electrical stimulation. For PEAS, the electrodes are placed on the skin above the traditional acupuncture points, where for TENS, the surface electrodes are placed on the skin along the nerve distribution or adjacent to the affected area [29]. The devices of TENS and PEAS differ in their abilities to adjust the intensity and frequency of electrical stimulations. EAS utilizes the acupuncture needles as electrodes. The needles are inserted into the acupuncture points [30], and once they're in position, a pair of clips attached to a device is connected. EAS has adjustable electrical intensity and frequency. Many experiments have been conducted using this form of stimulations to study acupuncture analgesia. The advantage of these forms of acupuncture stimulation (EAS and PEAS) is that they can be delivered consistently, both in experiments and clinical practice. As a result, researchers have discovered that different frequencies of electrical stimulation trigger different types of opioid peptide releases, either centrally or systemically [31].

Low Intensity Laser and Non-Thermal Laser Irradiation at the Acupuncture Points

This form of stimulation has been clinically applied since the 1970s [32]. The laser was found to be effective as a treatment for postoperative pain and wound infection [33]. The low power laser (LPL) used is also known as "soft" or "cold" laser comprising of three main types: visible red helium–neon laser (HeNe; emitted wavelength of 633 nm), invisible infrared (IR) gallium–arsenide laser (GaAs; emitted wavelength of 904 nm), and gallium–aluminum–aresenide laser (GaAIAs; emitted

wavelength of 830 nm). Biomodulatory capacity varies with the wavelengths and types of laser [34]. It is believed that the wavelength for the laser to promote healing should be more than 600 nm. Among these three types of cold laser, HeNe laser may be best for treating wounds and skin ulcers, while GaAs and GaAIAs are more effective for producing analgesia in the deep and superficial tissues. The LPL delivers less than 1 W/m^2. Laser acupuncture relies on the absorption and scattering of light within tissue [35]. Physiological changes caused by lasers include increased phagocytosis, vasodilation, increased rate of regeneration of lymphatic and blood vessels, stimulation of enzyme activity at the wound edges, fibroblast stimulation, keratinocyte and fibrocyte proliferation, scar and keloid reduction, increased ATP and DNA synthesis, and facilitation of the regeneration of muscles, tendons, and nerves. Parameters such as wavelength, output power, radiant power, waveform, and joules delivered per unit area can affect the efficacy of laser acupuncture as treatment for the condition studied [36]. Evidence suggests that the optimal dose for HeNe laser treatment through the skin is between 0.1 and 1 J per acupuncture point. Furthermore, LPL effects become cumulative after repetitive administration.

Adverse Effects

The increasing popularity of acupuncture has led to growing demands for evidence of its effectiveness and safety. Several case-reports and retrospective surveys of practitioners indicate that there are rare adverse events associated with acupuncture, including pneumothorax and hepatitis [37], however, recent prospective studies of adverse events reported by practitioners supports the assertion that "acupuncture is safe in competent hands." When combining two surveys together, over 60,000 consultations were monitored and 86 significant nonserious adverse events were reported, the most common of which were nausea, fainting, and dizziness [38, 39]. MacPherson et al. [40] conducted a nationwide survey, in which patients reported adverse events associated with acupuncture treatment. This prospective survey consists of 9,408 patients who gave consent and 6,348 who completed the 3-month questionnaires. 682 (107/1,000; 95% CI 100–115) patients reported at least one adverse event over a 3-month period. Three patients reported a serious adverse event. The adverse events were classified into three categories: treatment responses, practitioners' behaviors and equipment, and others. The top five adverse events under each category are presented as follows: severe tiredness and exhaustion, pain at the site of needling, headache or migraine, worsening of symptoms, and severe drowsiness are the major complaints under the category of treatment responses. Needles left in, moxibustion burns, too strong stimulation, especially when using electroacupuncture stimulation, being left unattended in the treatment room, and the breaking of needles are listed under the category of practitioners' behavior and equipment related issues. Lastly, bruising at the needle site, nonspecific aches and pains, emotional/psychological reaction, tiredness/drowsiness, and bleeding at the needle site were also reported by the patients. In summary, while acupuncture treatment is associated with a range of adverse events, serious adverse events were rare.

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