Title: A METHOD FOR BODY TONING AND AN INTEGRATED DATA MANAGEMENT SYSTEM FOR THE SAME

Abstract: Tracking toning history of a subject and determining parameters of a current toning session is provided by recording and storing into the memory of a toning device, or a computer or some other processing device, parameters of each of the preceding tissue toning procedures, as well as segments of the subject body affected by such toning procedures. Next, the recorded data is analyzed and one or more protocols related to the current tissue toning session are then derived. Concurrently, with executing the protocol, recommendations on skin care options, new products adapted for skin care and complementary to the skin/tissue toning, and any other skin care news that may be relevant to the subject skin care are identified and provided.
A METHOD FOR BODY TONING AND AN INTEGRATED DATA MANAGEMENT SYSTEM FOR THE SAME

TECHNICAL FIELD

[001] The method and the system relate to the field of body toning and in particular to the field of management and operation of body toning devices.

BACKGROUND

[002] External appearance is of concern practically to every person. In recent years, methods and apparatuses have been developed for different skin toning and cosmetic treatments. Among these methods and apparatuses are hair removal, treatment of vascular lesions, wrinkle removal, body shaping, fat removal or reduction and skin rejuvenation. In these treatments a volume of skin or tissue to be treated is heated to a temperature that is sufficiently high as to achieve a desired effect. Such temperature is typically in the range of 38-60 degrees Celsius.

[003] One method that has been used for heating the skin is application to the skin of pulsed or continuous radio-frequency (RF) energy. In this method, electrodes are applied to the skin and an RF voltage in continuous or pulse mode is applied across the electrodes. The properties of the RF voltage are selected so as to generate an RF current in the tissue to be treated, current which heats the tissue to the required temperature.

[004] Concurrently, a number of light based skin surface or deeper skin layer treatments have been developed. These treatments usually employ a laser, a LED, a Xenon lamp (Intense Pulsed Light or IPL) or incandescent lamp radiation to expose a surface of skin where vascular lesions, varicose veins, acne, mole marks and similar disorders are present. The optical radiation may be of a single wavelength or include several wavelengths. The wavelengths are selected to be optimal for the color of the contrasted component of the target, and are typically in the range of 400 to 1800 nm.

[005] Reduction of subcutaneous fat layers, or adipose tissue, is another skin treatment for which there is a growing demand. Among the different physical therapies
available, the application of ultrasound is emerging as another adipose tissue removal and body shaping technology. Methods associated with this technology are based on the delivery of a dose of electromagnetic energy (RF) or ultrasound waves through the skin of a recipient into the subcutaneous adipose tissue to a volume of tissue to be treated.

[006] The above described equipment is both costly and bulky, and it is typically operated in an ambulatory set-up by a qualified operator and frequently requires presence of medical personnel specialized in such treatments or toning. Recently, equipment allowing application of any one of the listed above treatments or a combination of them by a non-professional person in a conventional residential setting has been developed. When such equipment is in use, the user has no means for tracking the toning progress, select most appropriate for him/her tissue affecting energy parameters, apply the energy in the most effective way to the segments of tissue to be treated or toned.

[007] There is a need for an integrated system that would collect the toning process parameters related to the application of tissue affecting energy to the user skin or tissue, analyze it, and recommend to the user current toning session tissue affecting energy parameters. There is also a need in a device capable of collecting such data and communicating it to the system as well as receiving and operating according to the recommended tissue affecting energy parameters.

BRIEF SUMMARY

The problem of tracking the toning history of a person (subject) and determining parameters of the current toning session can be solved by recording and storing into the memory of a toning device, or a computer or some other processing device, parameters of each of the preceding tissue toning procedures, as well as segments of the subject body affected by such toning procedures. Next, the recorded data can be analyzed and one or more protocols related to the current tissue toning session can then be derived. Concurrently, with the protocol, recommendations on skin care options, new products adapted for skin care and complementary to the skin/tissue
toning, and any other skin care news that may be relevant to the subject skin care can be identified and provided.

GLOSSARY

[008] The terms "tissue" or "skin" as used in the present disclosure have the same meaning and are used interchangeable through the text of the disclosure.

[009] The term "tissue affecting energy" as used in the present disclosure means energy capable of causing a change in the tissue, or enabling such change. Such energy for example, may be RF energy, optical radiation in visible or invisible part of electromagnetic spectrum, ultrasound waves energy, and kinetic energy provided by a massaging device.

[0010] The term "tissue toning device" as used in the present disclosure means any device providing energy affecting the tissue. Such device for example, may apply to the tissue RF energy, optical radiation existing in the visible or the invisible part of spectrum, ultrasound waves energy, kinetic energy provided by a massaging device or some other source of energy.

[0011] The term "tissue toning" as used in the present disclosure includes operations that provide, among other things, skin rejuvenation treatment, cellulite management treatment, body contouring procedures, acne treatment procedures, hair removal, and other skin or tissue treatments.

[0012] The term "current tissue toning protocol" means a protocol according to which the immediate tissue toning will be performed.

[0013] The term "terminations" and "terminations configured to couple energy to the tissue" as used in the present disclosure includes electrodes that couple RF energy to the tissue, transducers that couple ultrasound waves to the tissue, windows, lenses, and optical waveguides that facilitate skin by optical radiation exposure, and rollers or balls of the massaging device that couple kinetic energy to the skin, as well as similar devices that are able to communicate energy from a source to the tissue.

[0014] The term "computer" as used in the present disclosure means a device capable of receiving data or information, processing it, and delivering the data processing results to another device. As such, a computer may include, as non-limiting
examples, a personal computer, a PDA computer, a mobile telephone, and similar
devices. Typically, a computer as defined herein would have a display but, other
forms of user feedback, prompting and user interface may also be used such as a sound,
voice detection, braille screens, or the like.

[0015] As used herein, the terms "person" and "subject" have the same meaning and
refer to any human or animal subject, as well as synthetic objects.

[0016] As used herein, the terms "optical radiation sources" and "optical radiation
emitters" have the same meaning and refer to any source or emitter of visible or
non-visible optical radiation.

[0017] The terms "treatment" or "toning" as used in the present disclosure have the
same meaning and are used interchangeable through the text of the disclosure.

[0018] The term "video" as used in the pressed disclosure is related to the visual
presentation of information, usually on a display screen.

BRIEF LIST OF DRAWINGS

[0019] For a better understanding of the system and the method, reference is made to
the following description, taken in connection with the accompanying drawings, in
which like reference characters refer to the same parts throughout the different
views. The drawings are not necessarily to scale, emphasis instead being placed
upon illustrating the principles of the method and/or apparatus.

[0020] Figure 1 is a schematic illustration of an exemplary embodiment of the present
system for personal tissue toning.

[0021] Figure 2 is a schematic illustration of an exemplary computer display indicating
locations of desired tissue affecting energy coupling.

[0022] Figure 3A is a schematic illustration of an exemplary embodiment of the present
tissue toning device.

[0023] Figure 3B is a schematic illustration of the bottom view of an exemplary
embodiment of the tissue toning device of Figure 3A.
DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0024] In the following detailed description, reference is made to the accompanying drawings that form a part hereof and wherein like reference numerals denote like elements through the several views.

[0025] Reference is made to Figure 1 which is an exemplary embodiment of a personal tissue toning system. System 100 includes a tissue toning device 104, a computer 108 with a display 112, and a data transmission link 116 operative to transmit bi-directionally data between tissue toning device 104 and computer 108. The data transmission link 116 is shown as being a physical connection but, it will be appreciated that the connection may be wireless or optical as well. Computer 108, which will be termed the local computer may be of a variety of devices such as a personal computer, a palm computer, or a mobile telephone as non-limiting examples. Practically, any device having a processor and capable of processing data may be used in place of computer 108. Computer 108 is configured to communicate with a memory device or component 134 of tissue toning device 104 with the help of interface 138 and may be programmed to receive (or read) from memory 134 of device 104 the historical toning data accumulated in memory 134, analyze the historical toning data and issue a current tissue toning protocol. It should also be appreciated that the tissue toning device 104 may also include an embedded processing unit, for instance memory device 134 may be a microcontroller, and the processing unit may perform some or all of the analysis of the historical toning data and/or issue a current tissue toning protocol. Thus, the processing unit may be internal to the toning device 104, external in a computer or distributed between the two. The current tissue toning protocol optionally may include a video or virtual user image and suggestions for complementary skin care elements such as the use of various topical creams and lotions, vitamins or other tissue care related food additives or the like. Computer 108 downloads the current protocol to device 104 through the data transmission link 116. The communication between toning device 104 and computer 108 may be according to Ethernet, Bluetooth, or any other communication protocols and utilizing any of a variety of connection technologies. Local computer 108 would typically communicate with
one or more remote computers 120 through dedicated communication links or via a
network such as the Internet. Remote computer 120, with its display 124, may be
located at a remote site 130 to which a proper qualified medical personnel has
access. The personnel may review the tissue toning protocols, their effects on the
subject and issue additional recommendation.

[0026] System 100 may include a digital or analog video camera 142 configured to take
user 200 (Figure 2) images and/or video and display them on the local computer
display 112, as well as to communicate the same to remote computer 120.
Experienced medical personnel at the remote site 130 may mark on the video
images of user 200 (Figure 2) target tissue segments locations 204 (Figure 2) to
which according to the current protocol, tissue affecting energy should be applied or
coupled. The user can optionally have the ability to modify or change the locations
204 to which the tissue affecting energy should be applied. In an alternative
embodiment, the user image 200 may be a virtual symbolic image.

[0027] Tissue toning device 104 is configured to apply a tissue affecting energy to a
target segment 204 of tissue 212 (Figure 2). Tissue toning device 104 typically
includes at least a memory 134 (Figure 3A) configured to store and accumulate data
related to historical or earlier performed tissue toning results and a computer
interface 138 facilitating connection and communication with local computer 108,
and an optional display 142. The toning history may include data indicating to the
user the time of the earlier performed or historic tissue toning procedures, their
duration, the tissue affecting energy parameters, segments of the body treated, and
the expected toning results in textual or graphical representation. The user may
display the segments of the body to be treated, and the expected toning results in
textual or graphical representation on an optional display 142 of device 104. The
display 142 may assist guiding the user in proper locations of tissue toning energy
application.

[0028] Figure 3 is a schematic illustration of an exemplary embodiment of the present
tissue toning device. Tissue toning device 104 for personal skin toning further may
include one or more types of terminations, which are elements configured to couple
to the tissue, the tissue affecting energy provided by the respective energy sources.
The energy sources may be incorporated in the tissue toning device or packed in a
stand-alone housing (not shown). The sources of tissue affecting energy may be such as one or more optical radiation sources 304 shown by their power supplies, RF energy source 308, ultrasound waves source 312, and kinetic energy sources (not shown). Tissue toning device 104 may include any one of the tissue affecting energy sources 304, 308, or 312 and any combination of them. Terminations couple the tissue affecting energy to a segment 204 of user/subject 200 (Figure 2) tissue 212 to be toned. The terminations may be one or more RF electrodes 316, ultrasound transducers 320, and optical radiation sources 324, and optical radiation emitting and conveying elements, such as lamps, lenses, light guides, optical windows, and kinetic energy sources (not shown) such as massagers equipped with rollers or balls.

[0029] RF electrodes 316 may have elongated and curved bodies and may be solid, flexible, and hollow electrodes made of a heat conductive metal, or metal coated plastic, or composite material. RF electrodes 316 may be permanently attached to tissue toning device 104 or may be detachable from tissue toning device 104. Ultrasound transducers 320 may be conventional or phased array transducers. Optical radiation emitting elements 324 expose the target tissue segment to the radiation generated by the elements emitting optical radiation, such as incandescent lamps and lamps optimized for emission of red and infrared radiation and a reflector, Intense Pulse Light (IPL) source, a LED, and a laser diode (as non-limiting examples). Optionally, toning device 104 may include a massaging device (not shown) coupling to the target segment of the tissue with the help of rollers or balls kinetic energy. Tissue toning device 104 may include one or more of such sources or any combination of them.

[0030] Each of the terminations of tissue toning device 104 applies to the skin an appropriate type of skin affecting energy. One or more RF electrodes 316 that are in contact with skin 328 apply to the skin RF energy provided by RF energy sources. Ultrasound waves transducers 324 couple to the skin ultrasound energy generated by the ultrasound waves source 312, and the optical radiation emitting and conveying elements couple the optical radiation to skin 328 by exposing the skin to the energy generated by one or more optical radiation emitters 324.
Since all of the tissue affecting energies and methods disclosed alter the skin temperature at least to some degree, monitoring of the temperature is frequently used to control the toning process. Accordingly, tissue toning device 104 for personal skin toning may also include one or more tissue temperature sensors 332 (illustrated in Figure 3B) configured to measure the temperature of the target segment of the tissue. Even with performing the temperature monitoring, certain potential skin damage risk still exist because the sensor response time depends on heat conductivity from the skin to the sensor and inside the sensor, and may be too long and even damaging the skin before the sensor reduces or cuts off the skin heating power. In order to avoid such potential skin damage, temperature sensors 332 communicate the measured temperature to a processing circuit capable of deriving in the course of the tissue toning the rate of the temperature change of the target segment.

It has been experimentally discovered that the temperature change of the treated skin segment, and in particular a skin segment located between the RF electrodes and of the electrodes, being in contact with the skin depends on the applicator displacement speed. Heat transfer from the skin to the electrode and accordingly the temperature measured by the temperature sensor is largely dependent on the quality of the contact between the electrode and the skin. Differences in the quality of the contact could cause large variations in the temperature measurements. The quality of the skin-to-electrode contact may, for example, be monitored by monitoring the skin impedance and correcting the temperature change rate by an appropriate value or offset. Temperature sensor 332 may be of a variety of types, such as a thermistor, a thermocouple, or resistance temperature detectors as non-limiting examples. Further, temperature sensor 332 may be incorporated into a temperature probe 336 or into an electrode 316.

The displacement speed of the applicator can be determined in a variety of manners. On such non-limiting example includes the use of an accelerometer. Another non-limiting example includes the use of optical sensors that can determine movement relative to a target tissue segment.

The coupling of tissue affecting energy to tissue 328 may be improved by application to the tissue of a gel 340 (shown in Figure 3A) that improves one or
more of the tissue properties. For example, for RF coupling, the gel may have an electrical resistance higher than that of the tissue. Whereas for ultrasound waves, the coupling the gel may have acoustic coupling properties similar to those of the skin. The tissue toning device may optionally be equipped by a gel dispenser 344 that may be manually or automatically operated and configured to dispense over the skin/tissue 328 gel 340 that may have an electrical resistance higher than that of skin 328 and have acoustic coupling properties similar to those of the skin.

[0035] Although the user conducting treatment may be implementing the current protocol provided by the computer, the practical implementation of the protocol may differ from the recommended one and the user has to be given a continuous feedback on the status of interaction of the tissue affecting or heating energy with the tissue. The temperature change rate may be a basis for such feedback. For example, when tissue toning device 104 displacement speed is faster than the desired speed, the tissue does not receive enough heat and the treatment is not producing a desired effect and vice versa. The temperature change rate would be low for a rapidly displaced tissue toning device and vice versa. A visual or an audio signal indicator may be configured to provide the status of interaction of the tissue heating energy with the tissue. Accordingly, tissue toning device may include a visual signal indicator 348 that may be operative to indicate that the tissue toning device displacement speed is faster than the one set by the current protocol and/or that the tissue heating energy level is lower than the desired one. The audio indicator 352 may be operative to signify that the tissue toning device displacement speed is slower than the one set by the current protocol tissue toning device displacement speed and/or that the skin heating energy level is higher than the desired one (high temperature change rate) and may cause skin burns. Either the visual signal of different colors or the audio signal of different tones or a combination of them may be used in various embodiments.

[0036] The method of use of system 100 in tissue toning procedures is now described. For tissue treatment, tissue toning device 104 connects to a computer, which may be local computer 108 (Figure 1) or remote computer 120 and upon request, communicates or uploads to the computer the earlier performed or historic toning data presently stored in memory 134. The historical toning data may include sex
and age of the treated subject, tissue affecting energy parameters of the earlier performed tissue toning, segments of the subject body that were treated, and what were the toning results in textual or graphical representation. The computer may also hold updated information on relevant topics from the medical field or the device manufacturer as well as studies on different populations and age groups.

[0037] The computer analyzes the toning data received and issues one or more current tissue toning protocols. The current tissue toning protocol includes at least one or more tissue affecting energies, their respective power, duration, and coupling location or target tissue segment 204 (Figure 2) on the subject 200 body. The segments of the subject body to be currently treated may be displayed in textual or graphical representation on the local computer display 112 or on the tissue toning device display 142. In case there is a need to consult with a medical specialist, communication with a company expert or an experienced user at the remote computer site 130 may be initiated, or a telephone call via conventional or Internet based lines may be placed to clear some of the issues that may exist.

[0038] The computer (local or remote) downloads the current tissue toning protocol into device 104 memory 134. Alternatively, local computer 108 (Figure 1) may control the tissue current tissue toning session. User 200 brings device 104 in contact with tissue 204 and couples to the skin/tissue the tissue affecting energy, which may be RF energy, optical radiation, and/or ultrasound waves or the like. Each of the energies may be coupled alone or, a combination of energies may be coupled simultaneously or in any desired order or combination to the tissue. By displacing or moving device 104 over the tissue, the user applies the current protocol to a target segment 204 and additional to be treated tissue segments of the subject 200 body. In order to facilitate the tissue toning procedure, the target segment 204 of the tissue may be displayed on the device 104 display 142 or on local computer 108 display 112. Concurrently with displaying the current toning location the expected current toning procedure results may be displayed on the same display.

[0039] The user/subject controls the tissue toning device displacement speed and the quality of at least one type of tissue affecting energy with the skin coupling by observing one of the signal indicators. The visual signal indicator 348 may be
operative to indicate that the tissue toning device 104 displacement speed is faster than determined by the current protocol speed, and accordingly that the skin heating energy level is lower than necessary. The audio signal indicator 352 may be operative to signify that the tissue toning device displacement speed is slower than the displacement speed determined by the current protocol and accordingly that the skin heating energy level is higher than the desired one. For optimal toning results the subject adapts the speed so as to avoid any signal indicator activation.

A number of embodiments have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the method. Accordingly, other embodiments are within the scope of the following claims:
What is claimed is:

1. A personal tissue toning system, said system comprising:
   a tissue toning device that applies a tissue affecting energy to a target tissue segment, the tissue toning device comprising a memory for maintaining historical toning results and a computer interface;
   at least one computer with a user interface, the computer is communicatively coupled to the tissue toning device memory to receive the historical toning data, and accumulates the historical toning data, analyzes the historical toning data and issues a current tissue toning protocol; and
   a data transmission system that communicatively couples the tissue toning device and the computer, where by the computer provides the current tissue toning protocol to the tissue toning device.

2. The personal tissue toning system according to claim 1, wherein the tissue toning device accumulates historical toning data and stores the accumulated toning data into the memory.

3. The personal tissue toning system according to claim 1, wherein the current tissue toning protocol includes a user image.

4. The personal tissue toning system according to claim 1, wherein the tissue toning device further comprises:
   a processing unit;
   one or more tissue affecting energy sources;
   one or more terminations that communicate the tissue energy provided by the tissue affecting energy sources to the target tissue segment;
   at least one tissue temperature sensor that measures the temperature of the target tissue segment and communicates the temperature to the processing unit, whereby the processing unit obtains temperature values during the course of the tissue energy being provided to the target tissue segment.

5. The personal tissue toning system according to claim 4, wherein the tissue affecting energy sources are selected from a group of energy sources comprising optical radiation sources, RF energy sources, ultrasound waves sources and kinetic energy sources.
6. The personal tissue toning system according to claim 1, wherein the historical toning results include the time stamp that toning was performed, the duration of the toning, a set of tissue affecting energy parameters, the identification of the target tissue segment treated, and the expected toning results.

7. The personal tissue toning system according to claim 1, wherein the current tissue toning protocol comprises parameters that include suggestions for additional skin care elements to be applied to the target tissue segment.

8. The personal tissue toning system according to claim 1, wherein the computer is selected from a group of devices comprising a personal computer, a PDA computer, and a mobile telephone.

9. The personal tissue toning system according to claim 1, wherein the computer reads the tissue toning device memory and uploads to the tissue toning device the current tissue toning protocol.

10. The personal tissue toning system according to claim 8, wherein the computer is proximate to the tissue toning device and comprises a graphic display and, wherein the computer is communicatively coupled with a remote computer.

11. The personal tissue toning system according to claim 1, further comprising a video camera communicatively coupled to the processing unit.

12. The personal tissue toning system according to claim 1, wherein the user interface of computer comprises a display and, the computer renders a user image on the display.

13. A tissue toning device for providing a personal skin toning procedure that applies tissue affecting energy to a target tissue segment, said tissue toning device comprising:
   a processing unit;
   a memory device;
   a computer interface;
   one or more terminations configured to communicate the tissue energy provided by one or more tissue affecting energy sources to the target tissue segment;
   at least one tissue temperature sensor configured to measure the temperature of the target tissue segment during the toning procedure; and communicate the temperature to a processing unit;
   the processing unit deriving the temperature change rate during the toning procedure;
at least one indicator configured to indicate the status of at least one type of tissue affecting energy being communicated to the target tissue segment.

14. The tissue toning device according to claim 13, wherein the one or more tissue affecting energy sources is selected from a group of sources comprising an optical radiation source, an RF energy source, and an ultrasound waves source and the terminations are selected from a group of terminations comprising RF electrodes, ultrasound transducers, optical radiation conveying elements, and kinetic energy sources.

15. The tissue toning device according to claim 13, wherein the one or more tissue affecting energy sources includes an RF energy source and applies the RF energy to the target tissue segment through terminations that include one or more RF electrodes.

16. The tissue toning device according to claim 15, wherein the electrodes are selected from a group of electrodes types comprising elongated bodies and curved bodies and wherein the electrodes further selected from a group of electrode types comprising solid, flexible, and hollow electrodes, with each electrode being made of a material selected from a group of materials comprising heat conductive metal, metal coated plastic and composite material.

17. The tissue toning device according to claim 15, wherein the electrodes are detachable electrodes.

18. The tissue toning device according to claim 13, wherein the one or more tissue affecting energy sources includes an ultrasound waves source and applies the ultrasound energy to the target tissue segment through terminations that include one or more ultrasound wave transducers.

19. The tissue toning device according to claim 18, wherein said ultrasound transducers are phased array transducers.

20. The tissue toning device according to claim 13, wherein the one or more tissue affecting energy sources includes an optical radiation source and applies the optical radiation to the target tissue segment through terminations that include one or more optical radiation emitters.

21. The tissue toning device according to claim 20, wherein the optical radiation source is selected from a group of sources comprising an incandescent lamp and a lamp
optimized for emission of red and infrared radiation and a reflector, an Intense Pulse Light source, an LED, and a laser diode.

22. The tissue toning device according to claim 13, wherein the one or more tissue affecting energy sources includes a kinetic energy source and applies the kinetic energy to the target tissue segment through terminations that include a massaging device.

23. The tissue toning device according to claim 13, wherein the temperature sensor is selected from a group of sensors comprising thermistors, thermocouples, and resistance temperature detectors and wherein the temperature sensor is coupled to a temperature probe.

24. The tissue toning device according to claim 13, further comprising gel dispenser that dispenses over the target tissue segment a gel that has an electrical resistance higher than that of the target tissue segment and has acoustic coupling properties that are similar to that of the target tissue segment.

25. The tissue toning device according to claim 13, further comprising a visual signal indicator and an audio signal indicator, said indicators provide the status of one or more tissue affecting energy sources.

26. The tissue toning device according to claim 25, further comprising a displacement detector, and wherein the visual signal indicator is operative to indicate that the tissue toning device displacement speed is faster than necessary and the audio indicator is operative to signify that the tissue toning device displacement speed is slower than the proper tissue toning device displacement speed.

27. The tissue toning device according to claim 25, wherein the visual signal indicator is operative to indicate that the skin heating energy level is lower than necessary, and the audio indicator is operative to signify that the skin heating energy level is higher than necessary.

28. The tissue toning device according to claim 13 wherein the computer interface supports at least one of a group of communication protocols comprising Ethernet and Bluetooth communication protocols.

29. The tissue toning device according to claim 13, further comprising a display communicatively coupled to the processing unit.

30. A method of providing personal tissue toning to a target tissue segment of a subject, said method comprising:
applying to the target tissue segment a tissue toning device and coupling a tissue affecting energy to the target tissue segment, the tissue toning device including at least a memory for storing data representing earlier performed toning and a computer interface;

communicating to at least one computer the data representing the earlier performed toning, said computer analyzing the toning data and issuing one or more current tissue toning protocols;

applying the one or more current issued toning protocols to treat the target tissue segment and displaying the expected current toning results on a display.

31. The method according to claim 30, wherein coupling the tissue affecting energy to the target tissue segment further comprises coupling at least one energy type selected from a group of energy types including RF energy, optical radiation, and ultrasound waves.

32. The method according to claim 30, wherein communicating to at least one computer the data representing the earlier performed toning further comprises communication the sex and age of the subject, tissue affecting energy parameters of the earlier performed toning, the identity of the target tissue segments of the subject that were treated, and the toning results.

33. The method according to claim 30, wherein issuing one or more current tissue toning protocols includes identifying at least one or more tissue affecting energies, the respective power for the one or more tissue affecting energies, the duration for coupling the tissue affecting energy to the target tissue segment, and the location of the target tissue segment on the subject.

34. The method according to claim 30, wherein communicating to at least one computer further comprises communicating to a remote computer.

35. The method according to a claim230, wherein the computer and toning device include a display and the target tissue segment of the subject to be toned is displayed on at least one of the computer display or the tissue toning device display.

36. A method of providing personal tissue toning, said method comprising:

applying to a target tissue segment, a tissue toning device and coupling a tissue affecting energy to the target tissue segment, the tissue toning device including at least a memory, a computer interface, a temperature sensor, and one or more signal
indicators configured to indicate the status of at least one type of tissue affecting energy;

receiving from a computer that is communicatively coupled to the tissue toning device, a current toning protocol;

displacing the tissue toning device over the target tissue segment and applying the received protocol to treat additional target tissue segments; and

providing an indicator on at least one of the signal indicators that indicates the status of at least one type of the tissue affecting energies.

37. The method according to claim 36, wherein the toning device comprises a displacement speed detector and the signal indicators further comprises a visual signal indicator and an audio signal indicator, and wherein the providing an indicator further comprises providing a visual signal indicator when the tissue toning device displacement speed is faster than determined by the speed identified in the current toning protocol, and providing an audio indicator when the tissue toning device displacement speed is slower than the displacement speed identified in the current toning protocol.

38. The method according to claim 37, wherein providing the visual signal indicator is performed when the skin heating energy level is lower than that identified in the current toning protocol and providing the audio indicator is performed when the skin heating energy level is higher than that identified in the current toning protocol.
1. A personal tissue toning system, said system comprising:
   a tissue toning device that applies tissue affecting energy to a target tissue segment and including:
   a processing unit;
   one or more tissue affecting energy sources;
   one or more terminations that communicate to said processing unit the tissue energy provided to the target tissue segment by the tissue affecting energy sources; and
   at least one tissue temperature sensor that provides a continuous feedback to the processing unit regarding temperature values of said target tissue segment during the course of energy delivery to said target tissue segment and wherein said processing unit derives from said temperature values the status of the interaction of at least one type of tissue affecting energy with said target tissue segment.

2. The tissue toning device according to claim 1, wherein said device also comprises R.K electrodes and means for measuring skin impedance and wherein said processing unit is also operative to derive from measured skin impedance the quality of skin-to-electrode contact.

3. The tissue toning device according to claim 2, wherein said processing unit is also operative to correct the temperature change rate by an appropriate value or offset in accordance to said derived quality of skin-to-electrode contact,

4. The personal tissue toning system according to claim 1, wherein the tissue affecting energy sources are selected from a group of energy sources comprising
optical radiation sources, RF energy sources, ultrasound waves sources and kinetic energy sources.

5. The personal tissue toning system according to claim 1, wherein said tissue toning device further including:

   a memory for maintaining historical toning results and a computer interface;

   at least one computer with a user interface, the computer is communicatively coupled to the tissue toning device memory to receive the historical toning data, and accumulates the historical toning data, analyzes the historical toning data and issues a current tissue toning protocol; and

   a data transmission system that communicatively couples the tissue toning device and the computer, where by the computer provides the current tissue toning protocol to the tissue toning device.

6. The personal tissue toning system according to claim 5, wherein the historical toning results include the time stamp that toning was performed, the duration of the toning, a set of tissue affecting energy parameters, the identification of the target tissue segment treated, and the expected toning results.

7. The personal tissue toning system according to claim 5, wherein the current tissue toning protocol comprises parameters that include suggestions for additional skin care elements to be applied to the target tissue segment.

8. The personal tissue toning system according to claim 5, wherein the computer is selected from a group of devices comprising a personal computer, a PDA computer, and a mobile telephone.

9. The personal tissue toning system according to claim 5, wherein the computer reads the tissue toning device memory and uploads to the tissue toning device the current tissue toning protocol.
10. The personal tissue toning system according to claim 8, wherein the computer is proximate to the tissue toning device and comprises a graphic display and wherein the computer is communicatively coupled with a remote computer.

11. The personal tissue toning system according to claim 5, further comprising a video camera communicatively coupled to the processing unit.

12. The personal tissue toning system according to claim 5, wherein the user interface of computer comprises a display and, the computer renders a user image on the display.

13. A tissue toning device for providing a personal skin toning procedure that applies tissue affecting energy to a target tissue segment, said (issue toning device comprising:
   a processing unit;
   a memory device;
   a computer interface;
   at least one termination configured to communicate the tissue energy provided by at least one tissue affecting energy source to the target tissue segment;
   at least one tissue temperature sensor configured to measure the temperature of the target tissue segment during the toning procedure and provide continuous feedback regarding the change rate of said temperature to said processing unit;
   at least one displacement sensor operative to determine displacement of said device relative to said target tissue segment and provide continuous feedback regarding the device displacement speed during the toning procedure to said processing unit; and
   at least one indicator communicating with said processing unit and indicating changes in the status of the interaction of said device and at least one type of tissue affecting energy with said target tissue segment based on said temperature and displacement speed feedbacks.

14. The tissue toning device according to claim 13, wherein also comprising means for measuring skin impedance and wherein said processing unit is also
operative to derive from measured skin impedance the quality of skin-to-electrode contact and correct the temperature change rate by an appropriate value or offset in accordance to said derived quality of skin-to-electrode contact.

15. The tissue toning device according to claim 13, wherein said at least one tissue affecting energy source is selected from a group of sources comprising an optical radiation source, an KP energy source, and an ultrasound waves source and the terminations are selected from a group of terminations comprising Rl electrodes, ultrasound transducers, optical radiation conveying elements, and kinetic energy sources.

16. The tissue toning device according to claim 13, wherein said at least one tissue affecting energy sources includes an RF energy source and applies the RF energy to (he/her) target tissue segment through terminations that include at least one RF electrode.

17. The tissue toning device according to claim 16, wherein said RF electrode is selected from a group of electrodes types comprising elongated bodies and curved bodies and wherein the electrodes further selected from a group of electrode types comprising solid, flexible, and hollow electrodes, with each electrode being made of a material selected from a group of materials comprising heal conductive metal, metal coated plastic and composite material.

18. The tissue toning device according to claim 16, wherein said electrode is detachable from said tissue toning device.

19. The tissue toning device according to claim 13, wherein said at least one tissue affecting energy source includes an ultrasound waves source and applies the ultrasound energy to the target tissue segment through terminations that include at least one ultrasound wave transducer.

20. The tissue toning device according to claim 19, wherein said ultrasound transducer is a phased - array transducer-
21. The tissue toning device according to claim 13, wherein said at least one tissue affecting energy source includes an optical radiation source and applies the optical radiation to the target tissue segment through terminations that include at least one optical radiation emitters.

22. The tissue toning device according to claim 21, wherein the optical radiation source is selected from a group of sources comprising an incandescent lamp and a lamp optimized for emission of red and infrared radiation and a reflector, an Intense UlSe Light source, an LLiD and a laser diode.

23. The tissue toning device according to claim 13, wherein said at least one tissue affecting energy source includes a kinetic energy source and applies the kinetic energy to the target tissue segment through terminations that include a massaging device.

24. The tissue toning device according to claim 13, wherein the temperature sensor is selected from a group of sensors comprising thermistors, thermocouples, and resistance temperature detectors and wherein the temperature sensor is coupled to a temperature probe.

25. The tissue toning device according to claim 13, further comprising a gel dispenser that dispenses over the target tissue segment a gel that has an electrical resistance higher than that of the target tissue segment and has acoustic coupling properties that are similar to that of the target tissue segment.

26. The tissue toning device according to claim 13, further comprising a visual signal indicator and an audio signal indicator, said indicators provide the status of one or more tissue affecting energy sources.

27. The tissue toning device according to claim 26, further comprising a displacement detector, and wherein the visual signal indicator is operative to indicate that the tissue toning device displacement speed is faster than necessary and the audio
indicator is operative to signify that the tissue toning device displacement speed is slower than the proper tissue toning device displacement speed.

28. The tissue toning device according to claim 26, wherein the visual signal indicator is operative to indicate that the skin heating energy level is lower than necessary, and the audio indicator is operative to signify that the skin heating energy level is higher than necessary.

29. The tissue toning device according to claim 13 wherein the computer interface supports at least one of a group of communication protocols comprising F.hernct, filuetooth, and Infrared communication protocols.

30. The tissue toning device according to claim 13, further comprising a display communicatively coupled to the processing unit.

31. The tissue toning device according to claim 29, further comprising at least one remote computer communicating with said processing unit through said computer interface and wherein qualified personnel may review the tissue toning protocols, their effects on the subject and issue additional recommendations.

32. A method of providing personal tissue toning, said method comprising:
   applying to a target tissue segment a tissue toning device and coupling tissue affecting energy to the target tissue segment;
   receiving from a computer, communicatively coupled to the tissue toning device, a current toning protocol;
   displacing the tissue toning device over the target tissue segment and applying the received protocol to treat additional target tissue segments;
   continuously receiving feedback regarding changes in target tissue temperature and toning device speed of displacement;
   deriving from said feedback changes in status of the interaction of at least one type of tissue affecting energy with said target tissue segment; and
   indicating said changes in the status of the interaction on at least one signal indicator.
33. The method according to claim 32, wherein also providing a visual signal indication when the tissue toning device displacement speed is faster than determined by the speed set in the current toning protocol, and providing an audio indication when the tissue toning device displacement speed is slower than the displacement speed set in the current toning protocol.

34. (Previously Presented, Currently Amended) The method according to claim 33, wherein providing a visual signal indication when the skin heating energy level is lower than that set in the current toning protocol and providing an audio indication when the skin heating energy level is higher than that set in the current toning protocol.

35. The method according to claim 31, wherein said tissue affecting energy is at least one energy type selected from a group of energy types including RF energy, optical radiation, and ultrasound waves.

36. The method according to claim 32, wherein also communicating to at least one computer data representing the earlier performed toning including the sex and age of the subject, tissue affecting energy parameters of the earlier performed toning, the identity of the target tissue segments of the subject that were treated and the toning results.

37. The method according to claim 32, wherein said a current toning protocol includes identifying at least one tissue affecting energy, the respective power for the at least one tissue affecting energy, the duration of coupling of the tissue affecting energy to the target tissue segment and the location of the target tissue segment on the subject.

38. The method according to claim 36, wherein communicating to at least one computer further comprises communicating to a remote computer.
39. The method according to claim 32, wherein said computer and toning device include a display and the target tissue segment of the subject to be toned is displayed on at least one of the computer display or the tissue toning device display.

40. The method according to claim 32, wherein also comprising measuring skin impedance and deriving from the measured skin impedance the quality of the coupling affecting energy to the target tissue segment.

41. The method according to claim 40, wherein also correcting the temperature change rate by an appropriate value or offset in accordance with said quality of the coupling affecting energy to the target tissue segment.
FIG. 1
## A CLASSIFICATION OF SUBJECT MATTER

**IPCl(8) - A63B 24/00 (2010.01)**  
**USPC - 482/4**

According to International Patent Classification (IPC) or to both national classification and IPC

## B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
**IPC(8) - A63B 24/00 (2010.01)**  
**USPC 482/4**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
**IPC A63B 23/00, A61H 1/00, A61H 23/00, A61H 7/00**  
**USPC 482/1, 482/8, 482/14, 482/601, 482/71, 482/15, 482/23, 482/DIG1 2, 482/DIG21**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWEST/USPT/PGPB/EPAJ/PAB, Google Patents, Google

Search terms used: tissue toning, tone, body, visual, audio, heating, skin, memory, computer, sensor, gel, electrodes, RF energy, ultrasound, history, graphic, transducers, LED, laser, log, schedule, historical, data

## C DOCUMENTS CONSIDERED TO BE RELEVANT

### Citation of document, with indication, where appropriate, of the relevant passages

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
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</thead>
<tbody>
<tr>
<td>X</td>
<td>US 2007/027241 (Ella et al.) 01 February 2007 (01 02 2007) Figs 6a-6c, para [0016]-[0023], [0033], [0049]-[0050], [0061]-[0062], [0069], [0079], [0150], [0197], [0200], [0258], [0306], [0316]-[0317], [0327]-[0330], [0346], [0368], [0371], [0375]-[0378], [0412], [0456]-[0448], [0455], [0475], [0502], [0507], [0529], [0529], [0546], [0549], [0599]</td>
<td>1-2, 4-10</td>
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<td>Y</td>
<td>US 4,602,280 A (Maksoonian) 22 July 1986 (22 07 1986) col 1, In 24-35, col 2, In 4-10</td>
<td>3, 11-12 and 35</td>
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## D Further documents are listed in the continuation of Box C

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### Date of the actual completion of the international search

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### Date of mailing of the international search report

15 JUN 2010

### Name and mailing address of the ISA/US

Mail Stop PCT, Attn ISA/US, Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No 571-273-3201

### Authorized officer

Lee W Young

PCT Helpdesk, 571 272-4300  
PCT OSP 571 272 7774

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