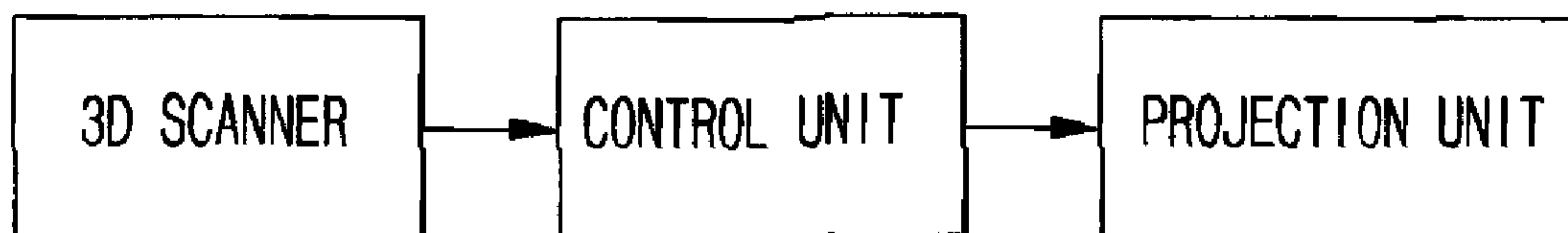




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(54) Title: APPARATUS FOR DISPLAYING ACUPUNCTURE POINTS



(57) Abrégé/Abstract:

An apparatus for displaying acupuncture points according to the present invention recognizes a curved surface of a human body via 3D scanning, and then sets acupuncture points corresponding to the body surface that has been recognized to project them onto the body. More specifically, the apparatus for displaying acupuncture points comprises: a 3D scanner for performing 3D scanning; a control unit for setting acupuncture points by using the data that has been scanned by the 3D scanner; and a projection unit for projecting the acupuncture points that have been set by the control unit onto the body. Accordingly, the present invention allows accurate selection of acupuncture points on a highly curved surface of a human body.

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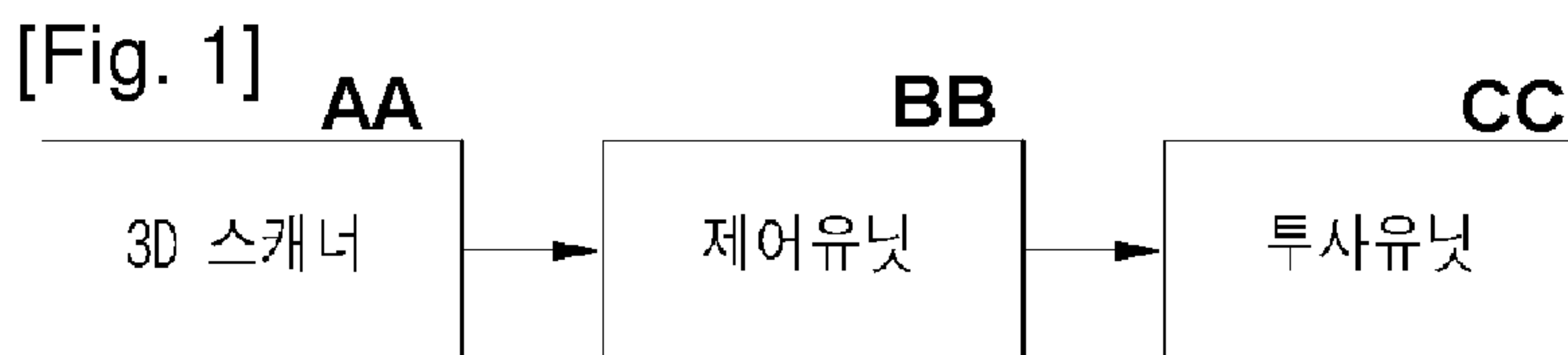
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(54) Title: APPARATUS FOR DISPLAYING ACUPUNCTURE POINTS

(54) 발명의 명칭 : 경혈표시장치



AA... 3D Scanner

BB... Control unit

CC... Projection unit

(57) Abstract: An apparatus for displaying acupuncture points according to the present invention recognizes a curved surface of a human body via 3D scanning, and then sets acupuncture points corresponding to the body surface that has been recognized to project them onto the body. More specifically, the apparatus for displaying acupuncture points comprises: a 3D scanner for performing 3D scanning; a control unit for setting acupuncture points by using the data that has been scanned by the 3D scanner; and a projection unit for projecting the acupuncture points that have been set by the control unit onto the body. Accordingly, the present invention allows accurate selection of acupuncture points on a highly curved surface of a human body.

(57) 요약서: 본 발명에 따른 경혈표시장치는, 곡면을 가진 인체의 체표면을 3D 스캔으로 인식한 후, 인식된 상기 체표면에 대응되도록 경혈점을 설정하여 상기 인체에 투사표시하며, 구체적으로, 인체를 3D 스캔하는 3D 스캐너; 상기 3D 스캐너에 의해 스캔된 데이터를 이용하여 경혈점을 설정하는 제어유닛; 및 상기 제어유닛에 의해 설정된 경혈점을 상기 인체에 투사하는 투사유닛;을 포함한다. 이에 따라, 본 발명을 통해 굴곡이 심한 인체 체표면의 경혈점을 정확하게 선정할 수 있다.

PCT/KR2011/001656

【DESCRIPTION】

【Invention Title】

APPARATUS FOR DISPLAYING ACUPUNCTURE POINTS

5 【Technical Field】

The present invention relates to an apparatus for displaying acupuncture points, capable of accurately determining acupuncture points on an uneven external body surface via three-dimensionally scanning.

10 【Background Art】

General apparatus for displaying acupuncture points recognize only an outline of a human body.

For example, when determining a navel and pubic bones as
15 reference points to measure acupuncture points on lower abdomen, there are present a Qugu(a pubic bone, CV2), Zhongji(CV3), Guanyuan(CV4), Shimen(CV5), Yinjiao(CV7), Shenque(a navel, CV8) at every Cun between the navel and the pubic bones. In this case, when straightly projecting acupuncture points in front of
20 an examinee without considering a curved surface of a human body, there occurs a serious distortion depending on a height of lower abdomen of the examinee.

Particularly, when a gradient of a pubic portion of a
25 person with abdominal obesity is about 45° and projecting

PCT/KR2011/001656

acupuncture points in front of the obese person, a display
length between pubic bones and the Zhongji(CV3) acupuncture
point is distorted as about 1.4 Cun and it is impossible to
display precision meridians, that is, the position of
5 acupuncture points.

That is, general apparatuses employ simple plane
information to determine acupuncture points, thereby distorting
determined acupuncture points according to a curved surface of a
human body, which causes imprecise determination.

10

【Disclosure】**【Technical Problem】**

To solve the problems, an aspect of the present invention
provides an apparatus for displaying acupuncture points, capable
15 of accurately determining acupuncture points of an uneven
external body surface via three-dimensionally scanning.

【Technical Solution】

According to an aspect of the present invention, there is
20 provided an apparatus for displaying acupuncture points, the
apparatus recognizing an uneven external body surface of a human
body via three-dimensionally scanning, determining acupuncture
points in response to the recognized external body surface, and
projecting the acupuncture points to the human body.

25 In detail, the apparatus includes a three-dimensional

PCT/KR2011/001656

scanner three-dimensionally scanning a human body; a control unit determining acupuncture points by using data formed via the scanning of the three-dimensional scanner; and a projection unit projecting the acupuncture points determined by the control unit
5 to the human body.

In this case, the control unit may determine the acupuncture points by converting the locations proportionally, comparing the reference and the scanned 3D body surface.

10 Also, when there is a mark on a reference point obtained through perceiving by touch of an examiner, the control unit may be provided to recognize the mark and to adjust the acupuncture points previously determined based on the external body surface by using the three-dimensional scanner by using data of the
15 recognized mark.

According to another aspect of the present invention, there is provided a method of using the apparatus for displaying acupuncture points, the method including: three-dimensionally scanning a human body; determining the acupuncture points by
20 using data formed by the three-dimensionally scanning; and projecting the determined acupuncture points to the human body.

In the determining the acupuncture points, the acupuncture points may be determined by proportionally matching data with reference to an external body surface in the data
25 scanned 3D by the three-dimensionally scanning.

Also, the method further includes, after the projecting the acupuncture points, when there is a mark on an acupuncture point obtained by perceiving by touch of an examiner, adjusting the previously determined acupuncture points by using data of the recognized mark; and projecting the adjusted acupuncture points to the human body.

【Advantageous Effects】

The present invention provides an effect of accurately determining acupuncture points on an uneven external body surface of a human body, in which the uneven external body surface is recognized via three-dimensionally scanning, the acupuncture points are determined to correspond to the recognized external body surface, and the acupuncture points are projected to the human body.

【Brief descriptions of the drawings】

FIG. 1 is a block diagram illustrating an apparatus for displaying acupuncture points according to an embodiment of the present invention;

FIG. 2 is a flowchart illustrating a method of displaying acupuncture points according to an embodiment of the present invention; and

FIG. 3 is a flowchart illustrating a method of displaying acupuncture points according to another embodiment of the

present invention.

【Best Mode】

According to an embodiment of the present invention, an uneven external body surface of a human body is recognized and
5 acupuncture points are determined corresponding to the recognized external body surface and projected to the human body.

FIG. 1 is a block diagram illustrating an apparatus for displaying acupuncture points according to an embodiment of the
10 present invention.

Referring to FIG. 1, the apparatus includes a three-dimensional scanner three-dimensionally scanning a human body, a control unit determining the acupuncture points via the three-dimensional scanner, and a projection unit projecting the
15 determined acupuncture points to the human body.

The three-dimensional scanner allows that the same data as an actual shape may be obtained by three-dimensionally scanning an external body surface of an examinee, including uneven portions, when measuring acupuncture points of the
20 examinee.

In addition, the three-dimensional scanner may automatically measure innumerable coordinates on the external body surface of the examinee at high speed and may form a three-dimensional model capable of being used to determine the
25 acupuncture points on the external body surface of the examinee.

PCT/KR2011/001656

In this case, the three-dimensional scanner may be just a unit capable of displaying the external body surface of the examinee and a kind or a scanning method thereof is not limited in the present invention.

5 Also, the control unit determines the acupuncture points by using data formed by the scanning of the three-dimensional scanner. The control unit may be, for example, a unit such as a micro computer and determines the acupuncture points by proportionally matching data with reference to an external body
10 surface in the data scanned 3D by the scanning.

On the other hand, the projection unit projects the acupuncture points determined by the control unit to the human body.

The projection unit may project and display the
15 determined acupuncture points to the external body surface of a human by using appropriate means such as photo and a unit capable of projecting is not limited in the present invention.

On the other hand, the control unit may be provided to recognize a mark shown on the external body surface of the
20 examinee.

When there is a mark on a reference point obtained by perceiving by touch of the examiner, the control unit may be provided to recognize the mark.

In this case, the control unit may be provided to adjust
25 the acupuncture points previously determined based on the

external body surface by the three-dimensional scanner by using data of the recognized mark.

For example, when a skilled examiner examines the examinee by perceiving by touch and designates a point capable
5 of being a reference point on the external body surface, the control unit may sense, that is, recognize the mark used as a recognition element.

In this case, a detailed recognition method of the control unit may be not limited in the present invention, to
10 which several methods may be applied.

FIG. 2 is a flowchart illustrating a method of displaying acupuncture points according to an embodiment of the present invention. FIG. 3 is a flowchart illustrating a method of displaying acupuncture points according to another embodiment of
15 the present invention.

Referring to FIGS. 2 and 3, a human body of an examinee is three-dimensionally scanned (S11 and S21), in which a three-dimensional scanner is used for three-dimensionally modeling.

After that, acupuncture points may be determined by a
20 control unit electrically connected to the three-dimensional scanner by using data formed by the three-dimensionally scanning (S12 and S22).

In this case, the acupuncture points may be determined by proportionally matching data with reference to an external body
25 surface in the data scanned 3D.

PCT/KR2011/001656

Finally, the determined acupuncture points are projected to a human body, that is, to an external body surface of the examinee (S13 and S23). In other words, the determined acupuncture points may be displayed on the external body surface by using a projection unit in such a way that an examiner may recognize the acupuncture points.

In addition, after projecting the determined acupuncture points, when there is a mark obtained by perceiving by touch of the examiner and the acupuncture points previously determined are adjusted using data of the recognized mark (S24).

Furthermore, the adjusted acupuncture points may be projected to the external body surface of the examinee (S25).

While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those skilled in the art that the scope of the invention is defined by the appended claims.

Clean Version

CLAIMS

1. An apparatus for displaying acupuncture points, the apparatus comprising:
 - a three-dimensional scanner three-dimensionally scanning a human body;
 - a control unit determining acupuncture points by using data formed by the scanning of the three-dimensional scanner; and
 - a projection unit projecting, onto the human body, the acupuncture points determined by the control unit;

wherein the control unit, when there is a mark on a reference point obtained by perceiving by touch of an examiner, recognizes the mark and adjusts the previously determined acupuncture points based on the external body surface via the three-dimensional scanner by using data of the recognized mark.
2. The apparatus of claim 1, wherein the control unit determines the acupuncture points by matching locations proportionally with reference to an external body surface shape data formed by the three-dimensional scanning.
3. The apparatus of claim 1, wherein the data indicates uneven portions of the human body and the acupuncture points are adjusted to the uneven portions.
4. A method of displaying acupuncture points, the method comprising:
 - three-dimensionally scanning a human body;
 - determining acupuncture points by using data formed by the three-dimensionally scanning; and
 - projecting, onto the human body, the determined acupuncture points;

Clean Version

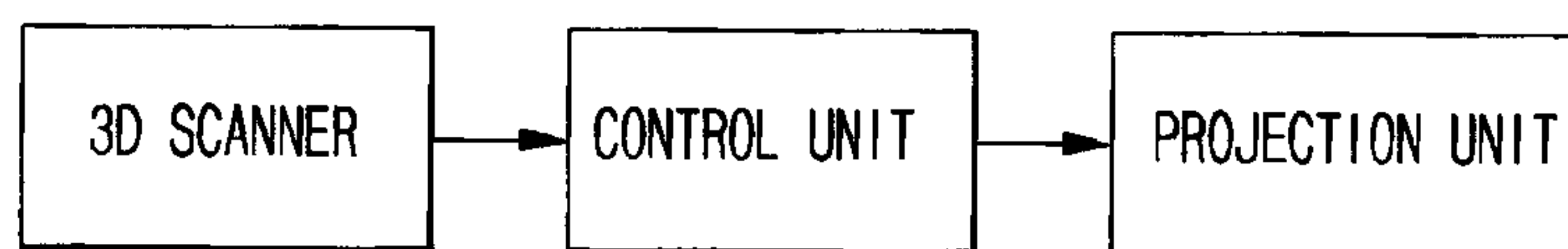
wherein after the projecting the determined acupuncture points, when there is a mark on an acupuncture point, the method further comprises:

recognizing the mark and adjusting the previously determined acupuncture points by using data of the recognized mark; and

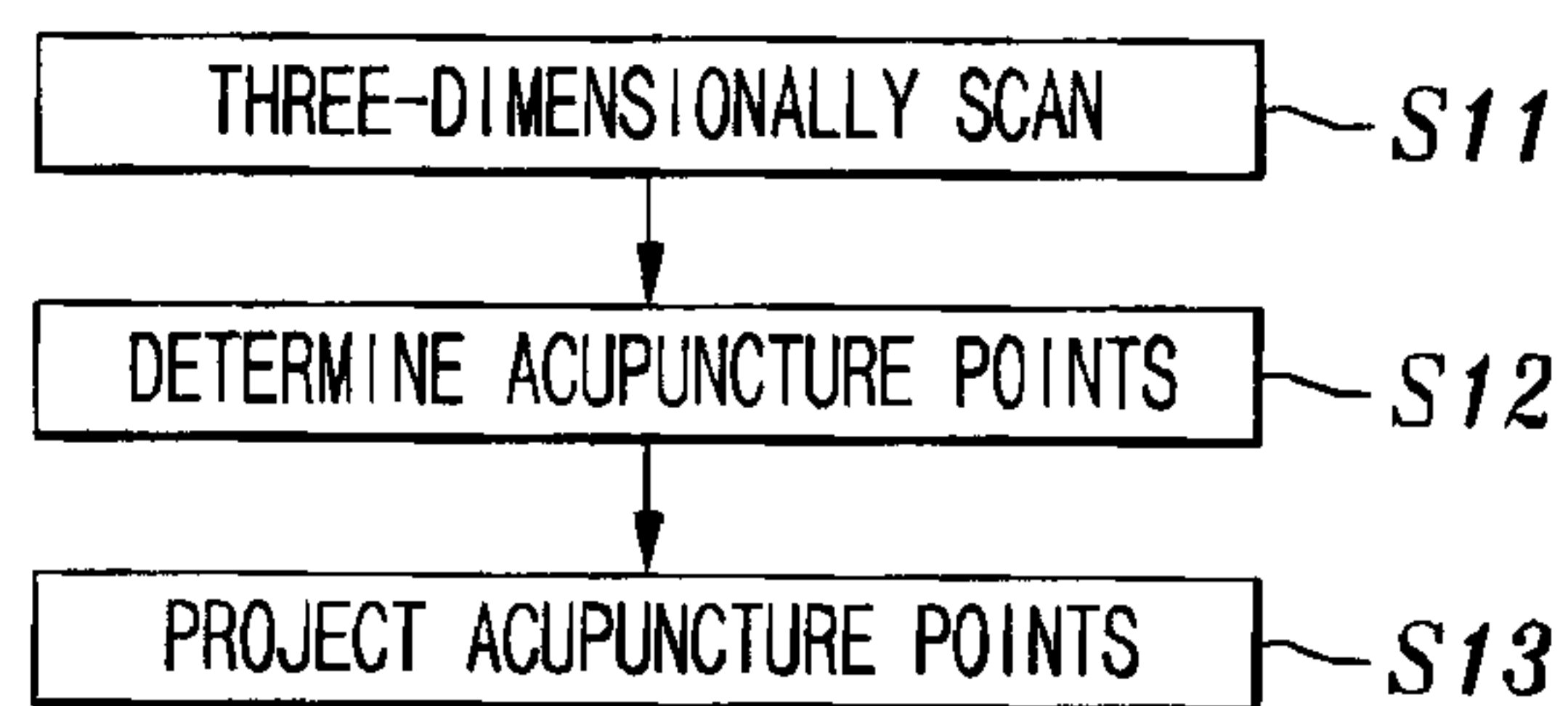
projecting the adjusted acupuncture points to the human body.

5. The method of claim 4, wherein the determining acupuncture points comprises matching locations proportionally with reference to an external body surface shape data formed by the three-dimensional scanning.

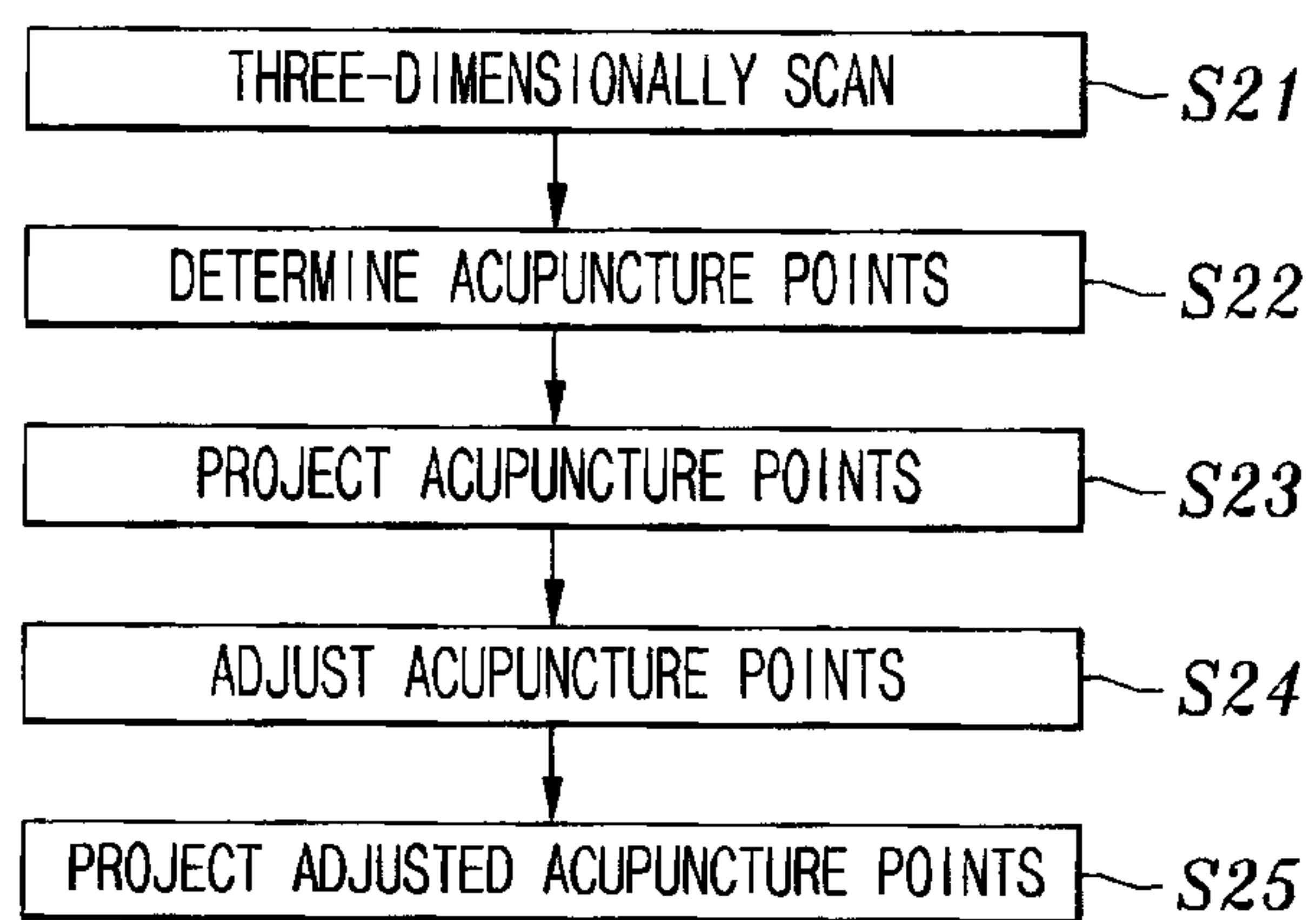
6. The method of claim 4, wherein the data indicates uneven portions of the human body and the acupuncture points are adjusted to the uneven portions.



[FIG. 1]



[FIG. 2]



[FIG. 3]

