CLAIMS

Claim 1

A method for early diagnosis and management of varicose veins by a server, comprising

acquiring varicose veins-related information from a user device;

digitizing a capillary exposure based on analysis of the varicose veins-related information;

evaluating a risk of varicose veins based on the digitized capillary exposure; and

transmitting information of varicose veins evaluation results based on the evaluated risk of varicose veins to the user device,

wherein the varicose veins-related information comprises varicose veins-related images acquired at a plurality of time points, and

the risk of varicose veins is evaluated based on a difference in capillary exposure between a plurality of images.

Claim 2

The method according to claim 1,

wherein the varicose veins-related information comprises at least any one of varicose veins-related images, varicose veins-related videos, and additional images.

Claim 3

The method according to claim 2,

wherein the varicose veins-related images are images of a lower body part of a user, and

when a capillary exposure is digitized based on analysis of the varicose veins-related information, the server derives parameters by pixel unit for the lower body part of the user from the varicose veins-related images, and

identifies capillaries by deriving a standard deviation based on a plurality of the parameters by pixel unit, and

digitizes the capillary exposure through a capillary with a preset value or higher among the identified capillaries.

Claim 4

The method according to claim 3,

wherein when the risk of varicose veins is evaluated on the basis of the digitized capillary exposure, a plurality of capillary lines is identified, and the risk of varicose veins is evaluated by weighting the degree of capillary distribution of a preset value or higher in a plurality of the capillary lines, and

when a number of capillaries with the preset value or higher are distributed in any one capillary line of a plurality of the capillary lines, the risk of varicose veins increases.

Claim 5

The method according to claim 3,

wherein the server acquires a plurality of varicose veins-related images, and a plurality of the varicose veins-related images is images for the same lower body part of the user, and

the capillary exposure is digitized and compared from each of a plurality of the varicose veins-related images, and the risk of varicose veins is evaluated by weighting the information of the comparison results.

Claim 6

The method according to claim 5,

wherein a first image of a plurality of the varicose veins-related images is an image acquired in a first time point, and a second image is an image acquired in a second time point, and

the information of the comparison results is acquired by comparing the capillary exposure

of the first image and the capillary exposure of the second image, and

the greater the difference between the capillary exposure of the first image and the capillary exposure of the second image based on the information of the comparison results, the risk of varicose veins may increase.

Claim 7

The method according to claim 6,

wherein the server collects user information of user activities between the first time point and the second time point through at least any one of the user device and a wearable device, and

the collected user information is reflected to evaluation of the risk of varicose veins.

Claim 8

The method according to claim 2,

wherein the varicose veins-related video is a video of a lower body part of a user taken vertically, and the server derives a plurality of varicose veins-related images from the varicose veins-related video.

Claim 9

The method according to claim 8,

wherein the server provides guide information for photographing the varicose veins-related video to the user device, and when the varicose veins-related video photographed by the user device based on the guide information is transmitted to the server, the varicose veins-related video is encrypted and transmitted.

Claim 10

The method according to claim 1,

wherein the server acquires user questionnaire information from the user device, and the risk of varicose veins is evaluated by reflecting the user questionnaire information.

Claim 11

A computer program stored in a computer readable medium which is combined with hardware to execute the method according to any one claim of claim 1 to claim 10.

Claim 12

A server for early diagnosis and management of varicose veins,

comprising a memory storing varicose veins-related information;

a transceiver performing communication with a user device; and

a processor controlling the memory and the transceiver,

wherein the processor,

acquires varicose veins-related information from the user device, and

a capillary exposure is digitized based on analysis of the varicose veins-related information, and

a risk of varicose veins is evaluated based on the digitized capillary exposure, and

information of the varicose veins evaluation results is transmitted to the user device based on the evaluated risk of varicose veins,

wherein the varicose veins-related information comprises varicose veins-related images acquired at a plurality of time points, and

the risk of varicose veins is evaluated based on a difference in capillary exposure between a plurality of images.