CLAIMS

1. A computer-implemented method for producing an orthopedic device, in particular, an orthosis or prosthesis, comprising the steps:

a) receiving at least one data set with patient data (ScanData);

b) processing the patient data (ScanData) in order to create a patient model;

c) using the patient model to determine patient parameters (P1, P2);

d) generating a virtual representation of the orthopedic device while using the patient parameters (P1, P2) and device parameters (V1, V2);

e) receiving at least one input from at least one user;

f) modifying at least one of the patient parameters (P1, P2) and/or device parameters (V1, V2) on the basis of the input;

g) physical creation of the orthopedic device making use of the device parameters (V1, V2), patient parameters (P1, P2) and/or a model of the orthopedic device (OrthData) generated on the basis of the patient parameters;

characterized by

i. an authentication of a first user before the reception of the input of the first user and/or

ii. an authentication of a second user before the reception of the second input of the second user; and

further characterized by

a search in an authorization database as to which of the device parameters are amendable by the second user and a display only of the device parameters (V1, V2) for modification which are amendable by the second user according to the authorization database.

2. The method according to claim 1,
characterized in that
the step f) comprises a controlling of at least one production machine (50), in particular at least one 3D printer.

3. The method according to any of the preceding claims,
characterized by
a step d1) in which a virtual representation of the patient model is generated, wherein in step d) the orthopedic device is represented together with the patient model, in particular making use of a web server.

4. The method according to any of the preceding claims,
characterized by
a step d2) in which the virtual representation of the patient model (MeshData) is aligned relative to the virtual representation of the orthopedic device.

5. The method according to any of the preceding claims,
characterized in that
the patient parameters (P1, P2) comprise parameters which specify a neck circumference, a shoulder width, and/or the device parameters (V1, V2) comprise at least one design parameter and/or at least one functional parameter, for example, material thickness, flexibility and/or at least one design parameter, for example, the color of the orthopedic device.

6. The method according to any of the preceding claims,
characterized by
a reception of at least one first input from the first user, in particular, from a doctor or a certified prosthetist/orthotist, and a modification of the patient model and/or at least one patient parameter (P1, P2) on the basis of the input of the first user.

7. The method according to any of the preceding claims,
characterized by

a reception of at least one second input from the second user, in particular, a patient, and a modification of at least one device parameter (V1, V2) on the basis of the input of the second user.

8. The method according to one of the preceding claims,
characterized in that
the patient data (ScanData) comprises contact data of a patient, wherein the method includes:
   i. electronic transmission of a message with a [URL] to the patient making use of the contact data,
   ii. authentication of the patient making use of the contact data and/or the patient parameters such that the patient can undertake at least one input as a user, in particular as the second user.

9. A computer-readable memory store with instructions for implementing the method according to any of the preceding claims when the instructions are carried out on at least one computer unit.

10. A system for producing an orthopedic device, in particular, an orthosis or prosthesis, wherein preferably at least some of the steps of the method according to claims 1 to 8 are implemented, having:

    a design server (20) which comprises:

    - at least one digital interface (23) for receiving a data record with patient data (ScanData);

    - at least one database (25) with training data for creating a patient model on the basis of the patient data (ScanData) and the training data;

    - at least one computer unit for generating 3D data of the orthopedic device; and

- a visualization apparatus, in particular a web server (40), which is configured to display the 3D data in the form of a (virtual) representation of the device and to receive at least one input from at least one user;

wherein the computer unit uses the input in order to

a) modify device parameters (V1, V2) and/or patient parameters (P1, P2), and,

b) on the basis of the device parameters (V1, V2) and the patient parameters (P1, P2), generate production data for the physical creation of the orthopedic device.

CLAIMS

1. A computer-implemented method for producing an orthosis, comprising the steps of:

a) receiving at least one data set with patient data (ScanData) representing a specific surface structure of a patient;

b) processing the patient data (ScanData) to create a patient model using templates stored in a database (25),
wherein said processing of the patient data (ScanData) comprises obtaining a surface mesh (MeshData) and bone data (SkelData), and
wherein said creating of said patient model comprises an alignment correction of the surface mesh (MeshData) to the bone data (SkelData) using vectors, the vectors indicating distances or support points within the surface mesh (MeshData) and being obtained based on said templates;

c) using the patient model to determine patient parameters (P1, P2);

d) generating a virtual representation of the orthosis using the patient parameters (P1, P2) and device parameters (V1, V2) of the orthosis;

e) receiving at least a first input from a first user and receiving at least a second input from a second user;

f) modifying at least one of the patient parameters (P1, P2) and/or device parameters (V1, V2) on the basis of the input of the first user and modifying at least one device parameter (V1, V2) based on the input of the second user to generate modified patient parameters (P2') and modified device parameters (V1');

g) generating an updated virtual representation of the orthosis based on the modified patient parameters (P2') and the modified device parameters (V1');

h) physical creation of the orthosis using the modified device parameters (V1') and the modified patient parameters (P2');

wherein the patient parameters (P1, P2) comprise parameters indicating a circumference, a weight of a patient, one or more angles, a shoulder width and/or a position of an adapter, and

wherein the device parameters (V1, V2) comprise at least one design parameter and/or at least one functional parameter of the orthosis,

wherein the database (25) further comprises authentication information, and the method further comprises the following steps performed using the database (25):

- an authentication of the first user before the reception of the input of the first user and/or

- an authentication of the second user before the reception of the second input of the second user; and

a search in the database (25) which of the device parameters (V1, V2) are amendable by the second user and a display only of the device parameters (V1, V2) for modification which are modifiable by the second user according to the database (25).

2. The method according to claim 1,
characterized in that
the step h) comprises controlling at least one production machine (50), namely at least one 3D printer.

3. The method according to claim 1 or claim 2,
characterized by
a step d1) of generating a virtual representation of the patient model, wherein in step d) the orthosis is displayed together with the virtual representation of the patient model using a web server.

4. The method according to any one of the preceding claims, wherein the first user is a physician, prosthetist or orthotist and wherein the second user is a patient.

5. The method according to any one of the preceding claims,

characterized in that

the patient data (ScanData) comprises contact data of a patient, wherein the method includes:

i. electronic transmission of a message with a URL to the patient using the contact details,

ii. authentication of the patient using the contact information such that the patient can make the at least one second entry as the second user.

6. A non-transitory computer-readable medium containing instructions that, when executed on at least one computing unit, cause the computing device to execute the method according to any one of the preceding claims.

7. A system for producing an orthosis, wherein the method is implemented according to any one of claims 1 to 5, comprising:

a design server (20) which comprises:

- at least one digital interface (23) for receiving a data record with patient data (ScanData);

- at least one database (25) with training data for creating a patient model on the basis of the patient data (ScanData), the training data and authentication information;

- at least one computing unit for generating 3D data of the orthosis; and

- a visualization device designed to display the 3D data in the form of a virtual representation of the orthosis and to receive at least one input from at least one user;

wherein the computing unit is adapted to perform the following steps:

a) receiving the data set with patient data (ScanData);

b) processing the patient data (ScanData) to create a patient model using templates stored in the database (25),
wherein processing the patient data (ScanData) comprises obtaining a surface mesh (MeshData) and bone data (SkelData), and
wherein creating the patient model comprises alignment correction of the surface mesh (MeshData) to the bone data (SkelData) using vectors, the vectors indicating distances or support points within the surface mesh (MeshData) and being obtained based on the templates;

c) using the patient model to determine patient parameters (P1, P2);

d) generating a virtual representation of the orthosis using patient parameters (P1, P2) and device parameters (V1, V2);

e) receiving at least a first input from a first user and receiving at least a second input from a second user;

f) modifying at least one of the device parameters (V1, V2) and/or patient parameters (P1, P2) based on the input of the first user, and modifying at least one of the device parameters (V1, V2) based on the input of the second user to generate modified patient parameters (P2') and modified device parameters (V1');

g) on the basis of the modified device parameters (V1') and the modified patient parameters (P2'), generating an updated virtual representation of the orthosis;

h) based on the modified device parameters (V1') and the modified patient parameters (P2'), generating manufacturing data for the physical creation of the orthosis.

wherein the patient parameters (P1, P2) comprise parameters indicating a circumference, a weight of a patient, one or more angles, a shoulder width and/or a position of an adapter, and wherein the device parameters (V1, V2) comprise at least one design parameter and/or at least one functional parameter of the orthosis

wherein the method further comprises the following steps performed using the database (25):
- authenticating the first user prior to receiving the first user's input; and
- authenticating the second user prior to receiving the second user's second input; and

- looking up in the database (25) which of the device parameters (V1, V2) are modifiable by the second user, and
- displaying for modification only those device parameters (V1, V2) that are modifiable by the second user according to the database (25).

8. The system according to claim 7, wherein the first user is a physician, prosthetist or orthotist and wherein the second user is a patient.