

IPR2023-00348
U.S. Patent No. 10,188,930

lululemon athletica canada inc. et al.

v.

Nike, Inc.

April 4, 2024

Roadmap

- 1. '930 Patent**
- 2. Claim Construction**
- 3. Lofi**
- 4. Kitagawa**
- 5. Maeueller**

'930 Patent

'930 Patent

US010188930B2

(12) **United States Patent**
Winsper et al.

(10) **Patent No.:** US 10,188,930 B2
(45) **Date of Patent:** *Jan. 29, 2019

(54) **COMBINATORY SCORE HAVING A FITNESS SUB-SCORE AND AN ATHLETICISM SUB-SCORE**

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(73) **Assignee:** NIKE, Inc., Beaverton, OR (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

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A63F 9/24 (2006.01)
A63B 71/06 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC A63B 71/06 (2013.01); A63B 24/0062 (2013.01); A63B 24/0075 (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC A63B 24/0062; A63B 2024/0065; A63B 2024/0081; A63B 24/0075;
(Continued)

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(Continued)
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(57) **ABSTRACT**
Example embodiments may relate to a system, method, apparatus, and computer readable media configured for monitoring a user performing an athletic movement and/or exercise and generating a combinatory fitness athleticism score. The score may comprise a fitness sub-score and a

20 Claims, 18 Drawing Sheets

900A

906

905A

h1

900B

906

905A

h2

lululemon athletica canada inc. and lululemon usa inc. Exhibit 1001 Page 1

Example embodiments may relate to a system, method, apparatus, and computer readable media configured for monitoring a user performing an athletic movement and/or exercise and generating a combinatory fitness athleticism score. The score may comprise a fitness sub-score and a

'930 Patent (Ex. 1001), Abstract

Aspects relate to systems and methods for estimating a combined or a combinatory fitness-athleticism score comprised of a fitness sub-score and an athleticism sub-score.

'930 Patent (Ex. 1001), 1:49-51

'930 Patent, Claim 1

What is claimed is:

1. A computer-implemented method for providing first instructions to a user to perform an athletic movement;

receiving, from a sensor, first a
the first athletic movement;

calculating with a processor, based on the input data, a first combinatory fitness function; and providing, in response to a first set of instructions to the user to perform a movement;

receiving, from the sensor, second
ing the second athletic move

calculating, with the processor, based on the second activity data, a second combinatory fitness-athleticism score,

wherein the first and the second athleticism scores each comprise a sum of a separate athleticism score and a separate athleticism sum of squares.

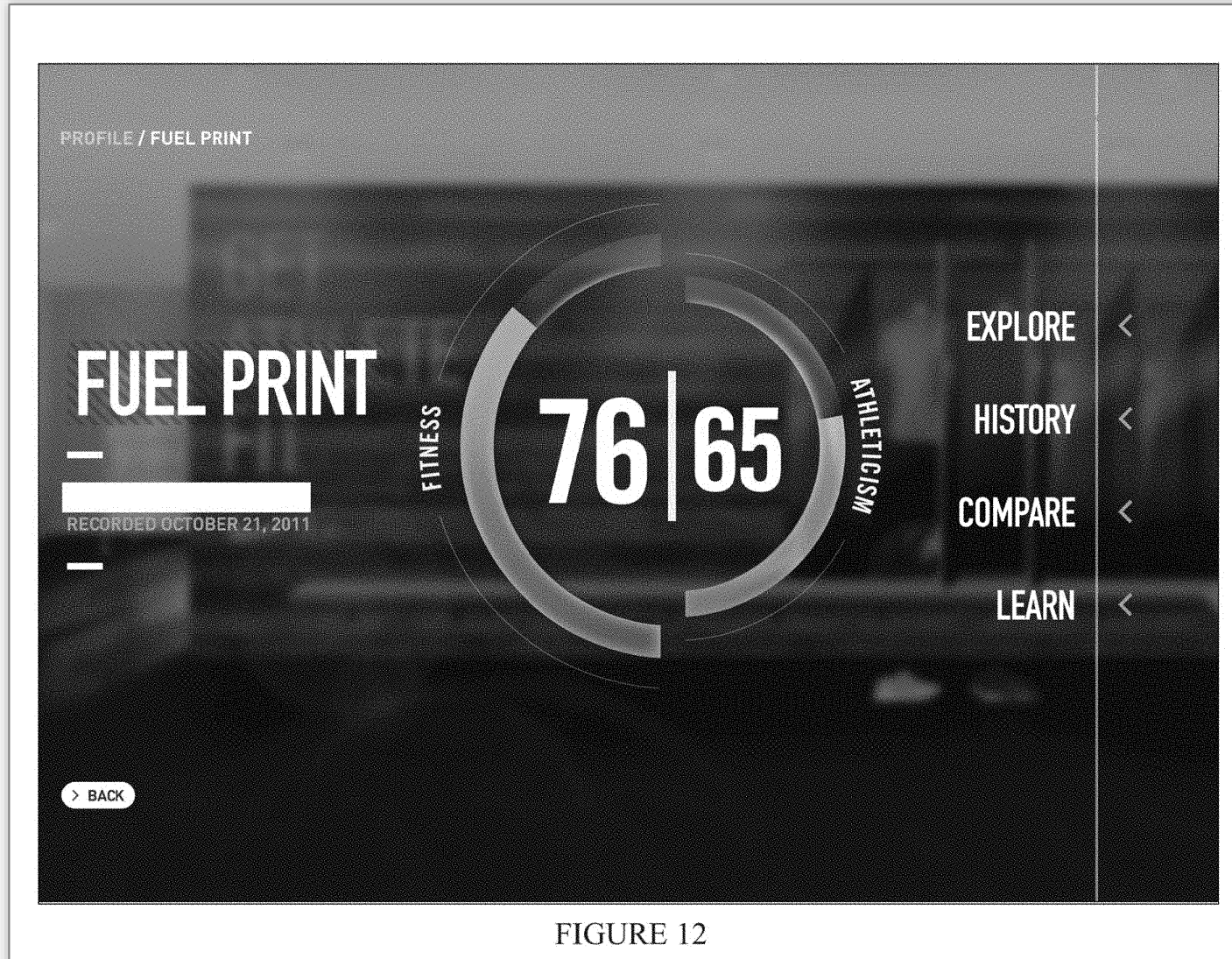
wherein the fitness sub-score is calculated by the processor, using one or more of an energy expenditure, a flexibility fitness attribute, a strength fitness attribute, or a cardiovascular fitness attribute of the user, and

wherein the athleticism sub-sc
processor, using one or mor
attribute, an agility athletic
athleticism attribute, a power
a balance athleticism attribute

receiving, from a sensor, first activity data representing the first **athletic movement**;
calculating with a processor, based on the first activity data, a first combinatory fitness-athleticism score;

wherein the first and the second combinatory fitness-athleticism scores each comprise a fitness sub-score and a separate athleticism sub-score of the user,

'930 Patent: Combinatory Fitness-Athleticism Score



'930 Patent (Ex. 1001),
Fig. 12

'930 Patent, Claim 1

wherein the first and the second combinatory fitness-athleticism scores each comprise a **fitness sub-score** and a separate athleticism sub-score of the user,

wherein the **fitness sub-score** is calculated, by the processor, using one or more of an **endurance** fitness attribute, a **flexibility** fitness attribute and a **strength** fitness attribute of the user, and

'930 Patent: Endurance Fitness Attribute

In one embodiment, the endurance attribute may be determined from drills comprising or consisting of vertical jumps. As one example, the quantity of vertical jumps the

'930 Patent (Ex. 1001), 23:48-50

'930 Patent: Flexibility Fitness Attribute

utilized. The flexibility attribute may be determined from reps of leg raises and/or reverse reaches. As one example,

'930 Patent (Ex. 1001), 23:52-53

'930 Patent: Strength Fitness Attribute

The strength attribute may be determined from the user's performance of reps of static lunges and/or push-ups. As one

'930 Patent (Ex. 1001), 23:55-56

'930 Patent, Claim 1

wherein the first and the second combinatory fitness-athleticism scores each comprise a fitness sub-score and a separate **athleticism sub-score** of the user,

wherein the **athleticism sub-score** is calculated, by the processor, using one or more of a **speed** athleticism attribute, an **agility** athleticism attribute, a **reaction** athleticism attribute, a **power** athleticism attribute and a **balance** athleticism attribute of the user.

'930 Patent: Speed, Agility, and Reaction Athleticism Attribute

user's stability may be measured. A value indicative of the user's speed, agility and reaction may be determined from drills comprising or consisting of cone sprints. As one

'930 Patent (Ex. 1001), 24:1-3

'930 Patent: Power Athleticism Attribute

The **power attribute** may be determined from drills comprising or consisting of **vertical jumps**. In one embodiment,

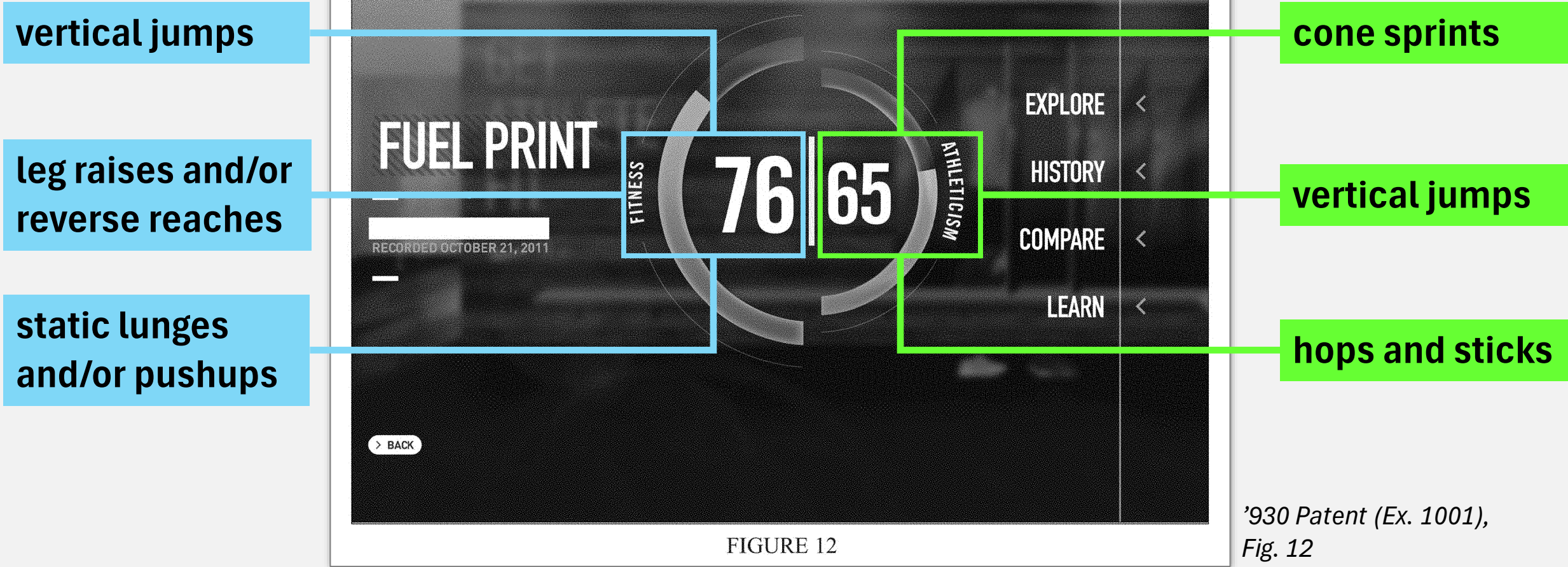
'930 Patent (Ex. 1001), 23:60-61

'930 Patent: Balance Athleticism Attribute

power. The **balance attribute** may be determined from drills comprising or consisting of **hop and sticks**, in which the user's stability may be measured. A value indicative of the

'930 Patent (Ex. 1001), 23:66-24:1

'930 Patent: “athletic movement”



Claim Construction: “athletic movement”

Proposed Constructions of “athletic movement”

Petitioner’s Construction	Patent Owner’s Construction
“includes movements relating to fitness, exercise, flexibility, including movements that may be part of one or more single and multiple participant athletic competitions, exercise routines, and/or combinations thereof”	“a single type of exercise or athletic activity”

Reply (Paper 24), 2

Sur-Reply (Paper 25), 2

Decision on Institution

Indeed, the ’930 patent explicitly defines an “athletic *movement*” to “include[] *movements* [plural] relating to fitness, exercise, flexibility, including *movements* that may be part of one or more single and multiple participant athletic competitions, exercise routines, and/or combinations thereof” (Ex. 1001, 4:7–11 (emphases added)), and explains that “[t]he

DI (Paper 13), 18

The Specification's Definition of “athletic movement”

'930 Patent

124, shown in FIG. 1A. As used herein, an “athletic movement” includes movements relating to fitness, exercise, flexibility, including movements that may be part of one or more single and multiple participant athletic competitions, exercise routines, and/or combinations thereof.

'930 Patent (Ex. 1001), 4:7-11

Petitioner's Construction

“includes movements relating to fitness, exercise, flexibility, including movements that may be part of one or more single and multiple participant athletic competitions, exercise routines, and/or combinations thereof”

Reply (Paper 24), 2

Patent Owner

The inventors' lexicography of “athletic movement” demonstrates that the term “athletic movement” in claim 1 refers only to a single athletic movement.

The '930 specification discloses:

* * *

Ex. 1001, 4:7–11 (emphasis added). A POSITA reading this lexicography in view

POR (Paper 20), 18-19

Patent Owner's Constructions for “athletic movement”

Patent Owner Response

The inventors' lexicography of “athletic movement” demonstrates that the term “athletic movement” in claim 1 refers only to a single athletic movement.

POR (Paper 20), 18

Patent Owner Sur-Reply

movement.” See Reply, 2. There is no dispute that an “athletic movement” may include multiple movements. See Response, 20. The '930 patent uses “athletic movement” to describe a single type of exercise or athletic activity, such as running, swimming, cycling, pushups, or squats. See Ex. 2004, ¶40; Response, 20–21 (citing Ex. 1001, 23:61–64). As Nike has explained, an “athletic movement” may include

Sur-Reply (Paper 25), 3

Patent Owner's Construction for "athletic movement"

'930 Patent

prising or consisting of vertical jumps. In one embodiment, the user's performance during the **vertical jumps** utilized as part of determining endurance may also be used to determine power. As one example, the user's vertical distance

'930 Patent (Ex. 1001), 23:61-64



Patent Owner's Construction

"a single type of exercise or athletic activity"

Sur-Reply (Paper 25), 2

The '930 Patent's Definition

124, shown in FIG. 1A. As used herein, an “athletic movement” includes movements relating to fitness, exercise, flexibility, including movements that may be **part of** one or more single and multiple participant athletic competitions, **exercise routines**, and/or combinations thereof.

'930 Patent (Ex. 1001), 4:7-11

Different Types of Exercise for Each Sub-Score

a single session. In one embodiment, a workout session or drill may consist of a single athletic activity (e.g., run 10 miles), and sub-scores may be calculated therefrom. Yet in another embodiment, **at least a first exercise** may be designed to specifically test attributes of athleticism and **at least a second exercise** may be utilized to specifically test attributes of fitness. In yet another embodiment, a single

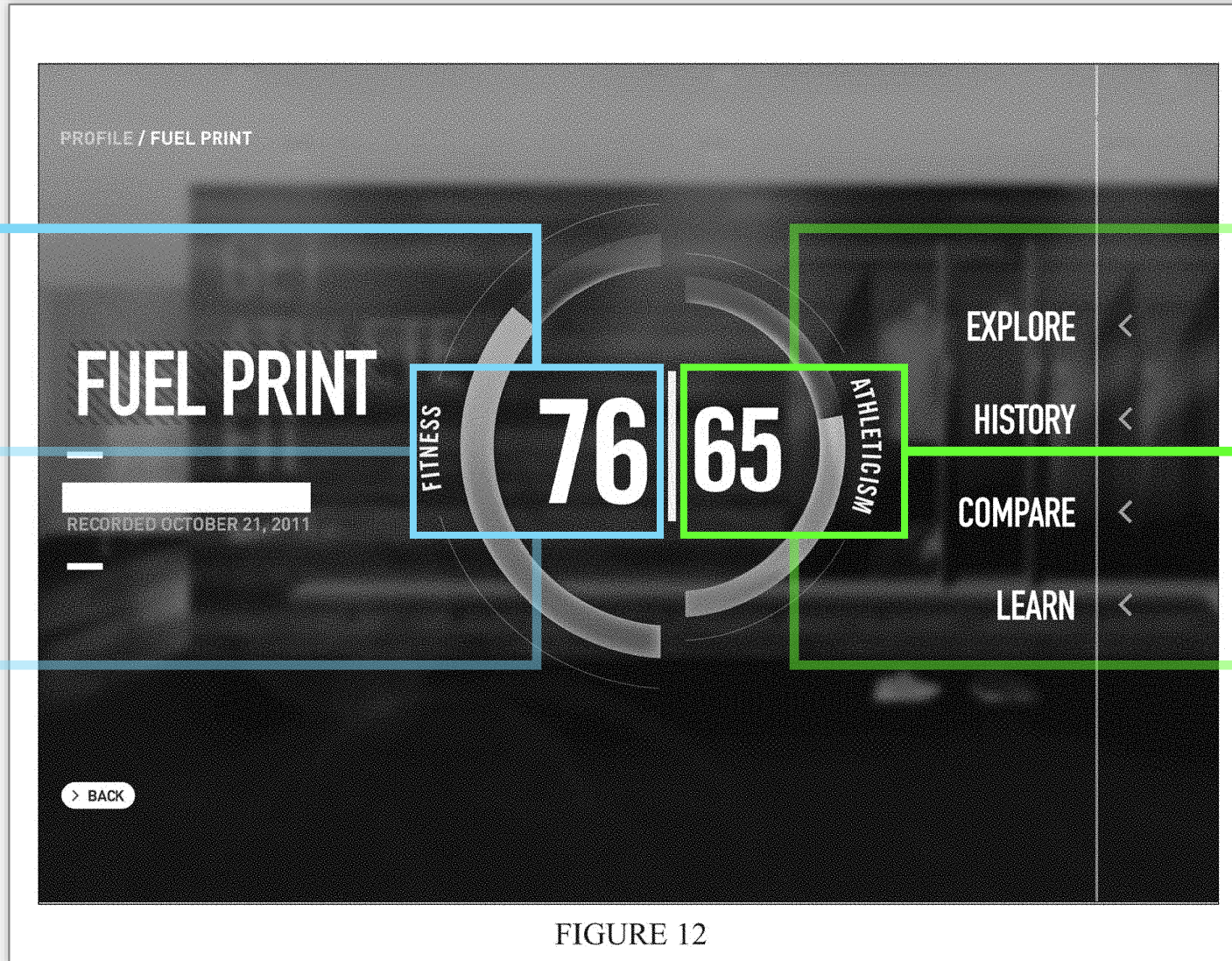
'930 Patent (Ex. 1001), 23:25-33

Patent Owner's Construction Excludes Embodiments

vertical jumps

~~leg raises and/or
reverse reaches~~

~~static lunges
and/or pushups~~



~~cone sprints~~

~~vertical jumps~~

~~hops and sticks~~

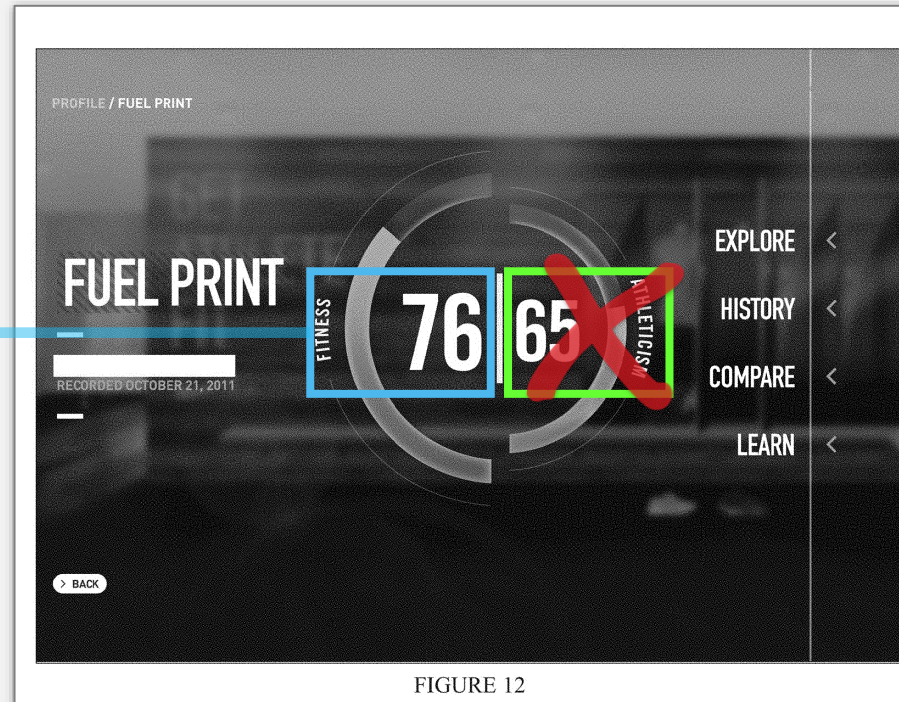
'930 Patent (Ex. 1001),
Fig. 12

Excluded “athletic movement” for One Attribute

Claim 1 receiving, from a sensor, first activity data representing the first athletic movement;
* * *
receiving, from the sensor, second activity data representing the second athletic movement;

leg raises and/or
reverse reaches

fitness attribute



athleticism attribute

Instituted Grounds

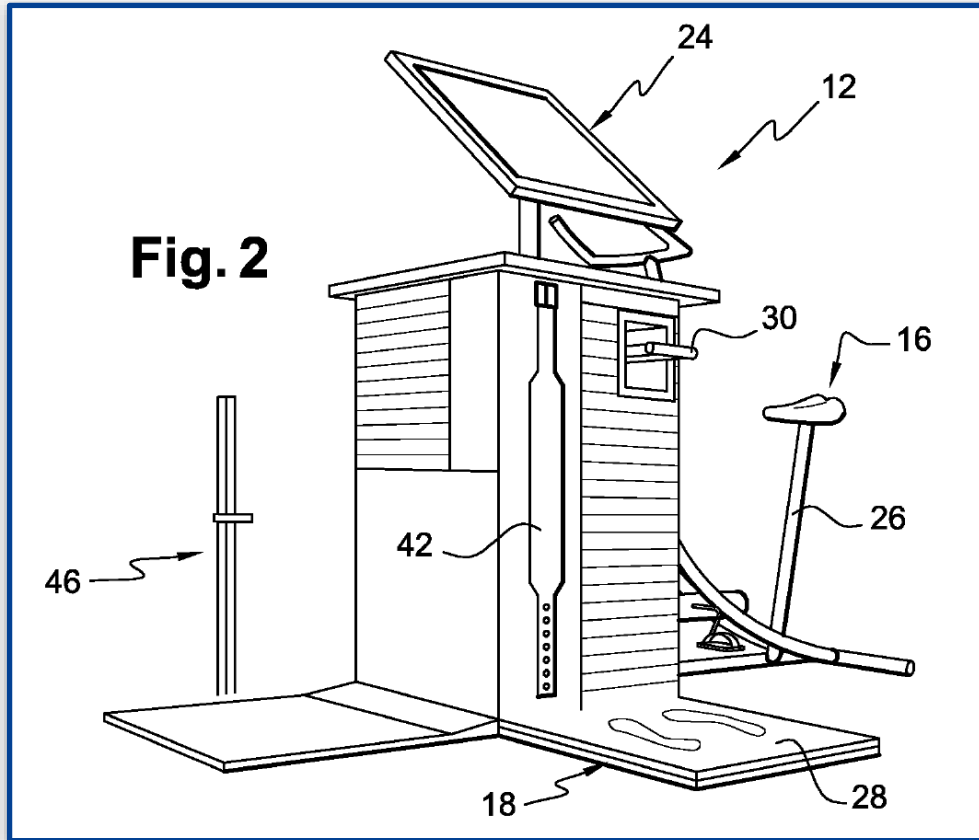
Instituted Grounds

Ground	35 U.S.C. §	Claims	Prior Art References
1	102(b)	1 and 5-7	Lofi
2	103	1 and 5-7	Lofi and Kitagawa
4	103	1, 5-7 and 12	Maeueler and Kitagawa

Petition (Paper 2), 15

Lofi

Lofi



Lofi (Ex. 1002), Fig. 2

(57) Abstract: The invention relates to a device for evaluating the physical fitness of a person comprising an endurance measuring means (16), body composition measuring means (18), muscular strength measuring means (20), means (22) for measuring at least one co-ordination or motricity characteristic, storage means (62) provided

Lofi (Ex. 1002), Abstract

The processing means 60 analyse the measurements and decide on the scores. The means of return display the overall score of physical fitness together with scores for each measure. The return in question may be accompanied by comments and/or

Lofi (Ex. 1002), 11:20-23

Lofi's 8-Minute Pedal Test

According to an example test, to achieve the measurement, the person is asked to pedal for a period of 8 minutes and the workload is increased progressively. The first

Lofi (Ex. 1002), 4:7-8

Hence, the means 16 of measurement of endurance transmits to the processing means a signal proportionate to a measurement indicated as a result of the endurance means, in Watts, corresponding to the maximum oxygen consumption.

Lofi (Ex. 1002), 4:20-22

fitness attribute

athleticism attribute

Lofi's Leg Strength Test

According to an operating procedure, the person is asked to pedal as fast as possible for a short period of approximately 10 seconds. During this period of time, the means

* * *

increasingly greater, the speed of pedalling decreases after a few seconds. The peak of the strength/speed curve corresponds to the maximum capacity of legs expressed in Watts.

Lofi (Ex. 1002), 5:13-18

fitness attribute

athleticism attribute

Lofi's Other Tests

Hence, the means to measure the quality of the abdominal muscles transmit to the means of processing a signal proportionate to a measurement indicated as a result of measurement of the abdominal **strength**, in kg.

Lofi (Ex. 1002), 7:8-9

To measure the **flexibility** of the person, a portable pallet 46, illustrated in Figure 3, can be used. The portable pallet 46 is connected to a belt 48, stretched between two

Lofi (Ex. 1002), 7:20-21

To measure the **balance**, the preference is to use a statokinesimeter 56, as illustrated in figure 5. Scales 28, fitted with pressure sensors 58 distributed over the scales pan

Lofi (Ex. 1002), 8:8-9

Advantageously, screen 24 can be used to measure **reflexes** of the person. Hence, the person is asked to press a button or touch screen 24 if they hear or see a signal.

Lofi (Ex. 1002), 7:13-14

fitness attribute

athleticism attribute

Lofi's Scores

Hence, for each measurement, the means of processing determine a **score** comparing the measured value with the distribution curve corresponding to the person's population group.

Lofi (Ex. 1002), 10:7-9



The score corresponding to physical fitness is equivalent to the average **scores** with a coefficient 1 for the measurement of body composition, a coefficient 1 for measurement of endurance, a coefficient 1 for measurement of the muscular strength (1/3 for measurement of the strength of upper limbs, 1/3 for measurement of the strength of lower limbs and 1/3 for measurement of abdominal strength) and a coefficient 1 for measurement relating to motricity (1/3 for the measurement of reflexes, 1/3 for measurement of flexibility and 1/3 for measurement of balance).

Lofi (Ex. 1002), 10:17-23

Claim 1

'930 Patent, Claim 1

What is claimed is:

1. A computer-implemented method of providing first instructions to a user to perform an athletic movement;
receiving, from a sensor, first activity data representing the first athletic movement;
calculating with a processor, based on the first activity data, a first combinatory fitness-athleticism score;
providing, in response to the first instructions, instructions to the user to perform a second athletic movement;
receiving, from the sensor, second activity data representing the second athletic movement;
calculating, with the processor, based on the second activity data, a second combinatory fitness-athleticism score;
wherein the first and the second combinatory fitness-athleticism scores each comprise a fitness sub-score and a separate athleticism sub-score;
wherein the fitness sub-score is calculated based on one or more of an endurance fitness attribute, a flexibility fitness attribute, a speed fitness attribute, an agility fitness attribute, a power fitness attribute, and a balance fitness attribute of the user, and
wherein the athleticism sub-score is calculated based on one or more of an endurance athleticism attribute, a flexibility athleticism attribute, a speed athleticism attribute, an agility athleticism attribute, a power athleticism attribute, and a balance athleticism attribute of the user.

receiving, from a sensor, first activity data representing the first **athletic movement**;
calculating with a processor, based on the first activity data, a first combinatory fitness-athleticism score;

wherein the first and the second combinatory fitness-athleticism scores each comprise a **fitness sub-score** and a **separate athleticism sub-score** of the user,

Lofi's Tests

8-minute Pedal Test

Hence, the means 16 of measurement of endurance transmits to the processing means a signal proportionate to a measurement indicated as a result of the endurance means, in Watts, corresponding to the maximum oxygen consumption.

Lofi (Ex. 1002), 4:20-22

Leg Strength Test

increasingly greater, the speed of pedalling decreases after a few seconds. The peak of the strength/speed curve corresponds to the maximum capacity of legs expressed in Watts.

Lofi (Ex. 1002), 5:13-18

fitness attribute

athleticism attribute

'930 Patent, Claim 1

wherein the **fitness sub-score** is calculated ... using one or more of an **endurance** fitness attribute, ... and a **strength** fitness attribute of the user, and

wherein the **athleticism sub-score** is calculated ... using one or more of a **speed** athleticism attribute, ... a **power** athleticism attribute ... of the user.

Claim 7

'930 Patent, Claim 7

7. The method of claim 1, wherein the first instructions and the second instructions include a predefined ordering of drills that are configured to be provided to the user during a single workout session.

Lofi's Predefined Order of Drills

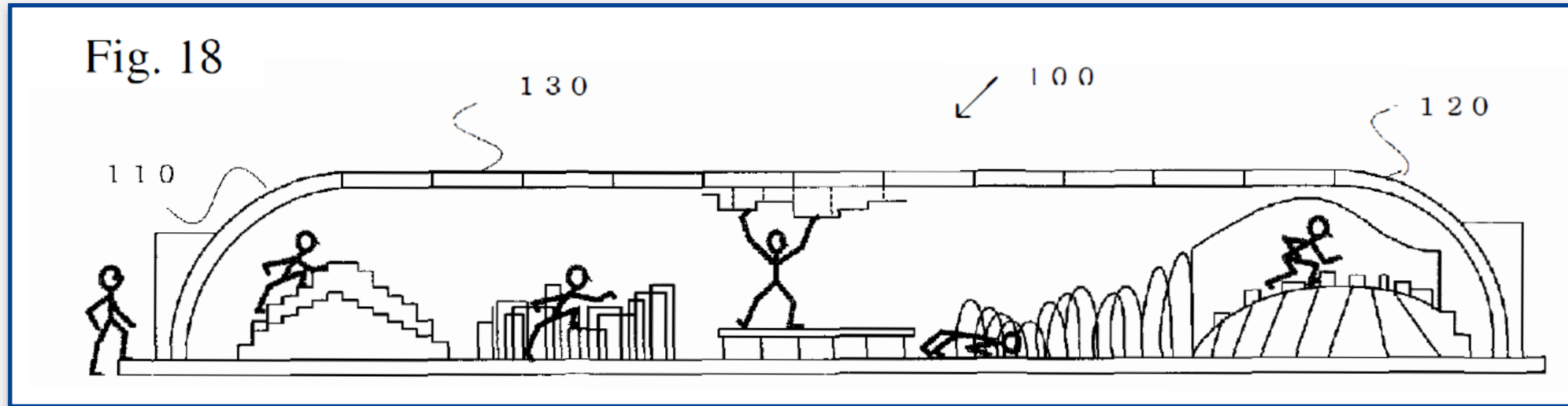
Subsequently, the following tests are carried out: measurement of reflexes, measurement of the strength of upper limbs, measurement of abdominal strength, measurement of flexibility, measurement of strengths of lower limbs and measurement of endurance.

Lofi (Ex. 1002), 11:15-18



Kitagawa

Kitagawa



Kitagawa (Ex. 1004), Fig. 18

The present invention's system for measuring physical-strength age includes multiple exercise courses that include various types of exercise-related devices/features, with the exercise courses structured such that a user utilizes a variety of physical abilities, including muscle strength in multiple parts of his/her body, flexibility of the body, balance of the body, and agility of the body, the extent to which a user

Kitagawa (Ex. 1004), 2:25-31

Kitagawa

TABLE 3

Course	Flexi-			Intelli-		
	Legs	Arms	bility	Balance	Agility	gence
Log Range	6	4	9	10	4	6
Climb of Grief	7	6	6	6	8	6
Divided Pathway	7	2	9	9	9	2
Road of Torsion	7	3	6	10	5	3
Wall of Stagnation	4	8	7	7	4	4
Cave of Bones	4	5	10	7	4	4
Stretch with Hanging Rings	4	6	10	3	5	2

Kitagawa (Ex. 1004), Table 3

fitness attribute

athleticism attribute

Ground 2: the Lofi and Kitagawa Combination

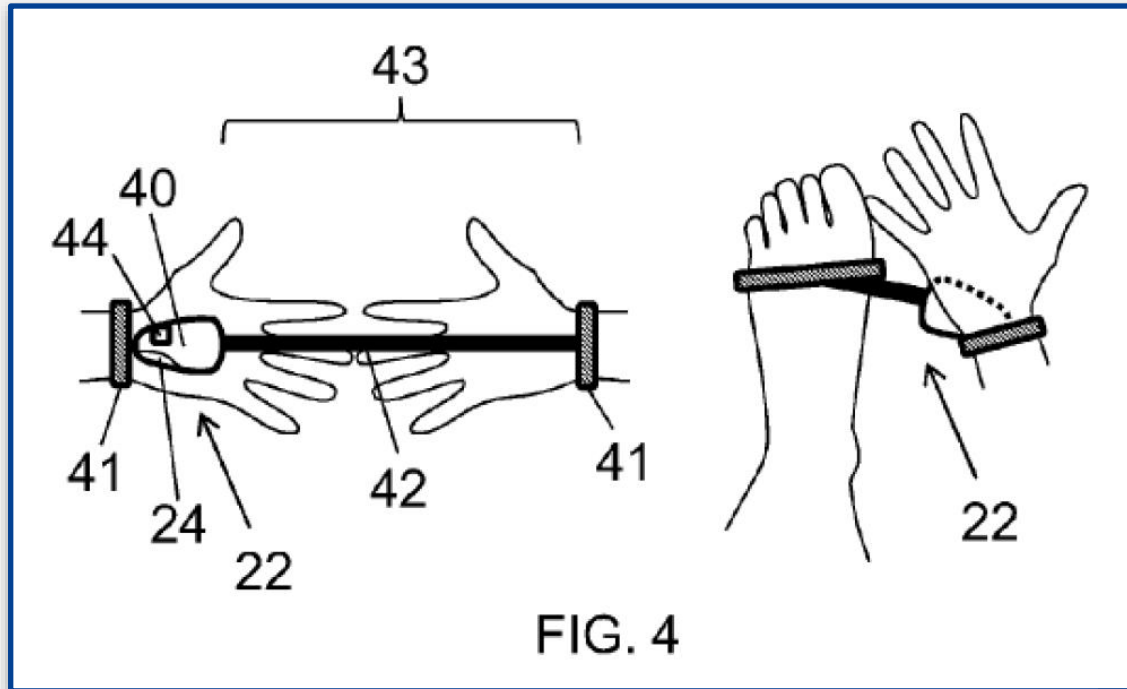
1017, 19:9-15.) As the Petition explains, it would have been obvious to combine Kitagawa's multiple combinatory scores specific to each exercise course together with known fitness devices equipped with sensors, such as Lofi's sensors or Kitagawa's pulse meter. (Petition, 34-36; Ex. 1005, ¶¶ 126-128.)

Reply (Paper 24), 15-16



Maeueler

Maeueler



Maeueler (Ex. 1003), Fig. 4

(57) The present invention relates to a fitness test system for determining a fitness test result indicative of a user's fitness, for a plurality of components of physical fitness such as endurance, strength, flexibility, balance, and body composition. The fitness test system comprises

Maeueler (Ex. 1003), Abstract

[0051] The result of a fitness test may be represented by a fitness index in the form of a numerical score value, such as a value ranging from 0 to 5 for each of the components of physical fitness, as well as a combined (average or weighted average) aggregate fitness index. The result may be presented graphically, an example of which is provided in Figure

*Maeueler (Ex. 1003),
[0051]*

Maeueler's 12-minute Run Test

[0031] There exist different alternatives for testing the endurance. The endurance is tested by estimating the maximal oxygen consumption (VO₂max) of the user. This can be tested by a run test, a walk test or a step test. In an embodiment, the computing module presents an enquiry to the user regarding which test to perform. In an example the user may select the run test. The run test may be the standard Cooper test where a person runs as fast as possible for 12 minutes. It is known that a good approximation of the VO₂max value can be obtained by using the following formula:

$$VO_2\text{max} = (D - 504.9) / 44.73$$

with D being the run distance in meters.

Maeueler (Ex. 1003), [0031]

athleticism attribute

fitness attribute

Maeueller's Other Tests

[0038] The **strength** of the upper body can be tested by counting the number of push-ups that can be performed according to a prescribed rhythm. In order to perform the test, the user may position his or her hands on the exercise

Maeueller (Ex. 1003), [0038]

[0041] The **flexibility** test may in embodiments be tested by averaging the test result of two flexibility tests: a sit-and-reach test and a shoulder flexibility test. In an embodiment, the flexibility tests are performed by using a peripheral device

Maeueller (Ex. 1003), [0041]

[0044] The **balance** test may in embodiments be tested by a single test, the Stork balance stand test. In an embodiment, the balance test is performed by using a peripheral device in the form of the exercise mat. The test is used to measure balance ability of the body. It is done by standing on the ball of one foot while the hands are kept on the hips and the

Maeueller (Ex. 1003), [0044]

athleticism attribute

fitness attribute

Maeueller's Scores

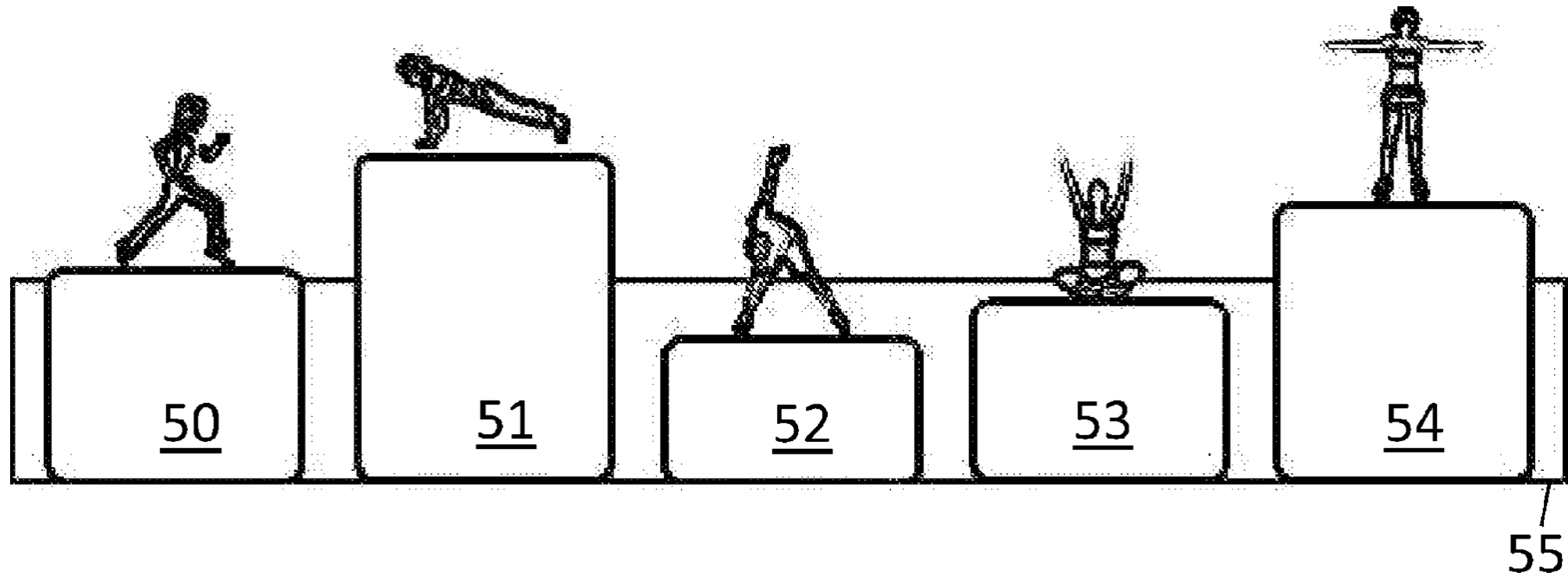


FIG. 5

Maeueller (Ex. 1003), Fig. 5

Claim 1

'930 Patent, Claim 1

What is claimed is:

1. A computer-implemented method of providing first instructions to a user to perform an athletic movement;
receiving, from a sensor, first activity data representing the first athletic movement;
calculating with a processor, based on the first activity data, a first combinatory fitness-athleticism score;
providing, in response to the first instructions, instructions to the user to perform a second athletic movement;
receiving, from the sensor, second activity data representing the second athletic movement;
calculating, with the processor, based on the second activity data, a second combinatory fitness-athleticism score;
wherein the first and the second combinatory fitness-athleticism scores each comprise a fitness sub-score and a separate athleticism sub-score;
wherein the fitness sub-score is calculated by the processor, using one or more of an endurance fitness attribute, a flexibility fitness attribute, a speed fitness attribute of the user, and
wherein the athleticism sub-score is calculated by the processor, using one or more of a strength fitness attribute, an agility athleticism attribute, a power athleticism attribute, a balance athleticism attribute of the user.

receiving, from a sensor, first activity data representing the first **athletic movement**;
calculating with a processor, based on the first activity data, a first combinatory fitness-athleticism score;

wherein the first and the second combinatory fitness-athleticism scores each comprise a **fitness sub-score** and a **separate athleticism sub-score** of the user,

Maeueller Teaches “athletic movement”

Maeueller’s 12-minute Run Test

[0031] There exist different alternatives for testing the endurance. The endurance is tested by estimating the maximal oxygen consumption (VO₂max) of the user. This can be tested by a run test, a walk test or a step test. In an embodiment, the computing module presents an enquiry to the user regarding which test to perform. In an example the user may select the run test. The run test may be the standard Cooper test where a person runs as fast as possible for 12 minutes. It is known that a good approximation of the VO₂max value can be obtained by using the following formula:

$$VO_2\text{max} = (D - 504.9) / 44.73$$

with D being the run distance in meters.

Maeueller (Ex. 1003), [0031]

athleticism attribute

fitness attribute

The Maeueller and Kitagawa Combination

TABLE 3

Course	Flexi-			Balance	Agility	Intelli- gence
	Legs	Arms	bility			
Log Range	6	4	9	10	4	6
Climb of Grief	7	6	6	6	8	6
Divided Pathway	7	2	9	9	9	2
Road of Torsion	7	3	6	10	5	3
Wall of Stagnation	4	8	7	7	4	4
Cave of Bones	4	5	10	7	4	4
Stretch with Hanging Rings	4	6	10	3	5	2

fitness attribute

athleticism attribute

which need improvement.” (Ex. 1003 at [0010].) In order to more comprehensively understand which components need improvement, it would have been obvious to a POSITA to look to Kitagawa and incorporate Kitagawa’s simultaneous monitoring of multiple physical abilities (*e.g.*, flexibility, balance, agility) into Maeueller. (Ex. 1005, ¶ 136.) As noted above, Maeueller already

Petition (Paper 2), 57-58

Certificate of Service (37 C.F.R. § 42.6(e)(4))

I hereby certify that the attached PETITIONER'S DEMONSTRATIVES
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Dated: April 2, 2024

/s/ Jean Nguyen
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