

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LULULEMON ATHLETICA CANADA INC.
and LULULEMON USA INC.,
Petitioner,

v.

NIKE, INC.,
Patent Owner.

IPR2023-00438
Patent 8,620,413 B2

Before JOSIAH C. COCKS, GEORGE R. HOSKINS, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

COCKS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Petitioner, lululemon athletica canada inc. and lululemon usa inc. (“Petitioner” or “lululemon”), filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–5, 7, 9, 12–14, and 17–19 (“the challenged claims”) of U.S. Patent No. 8,620,413 B2 (Ex. 1001, “the ’413 patent”). Patent Owner, Nike, Inc. (“Patent Owner” or “Nike”), filed a Preliminary Response (Paper 10, “Prelim. Resp.”). We have authority under 35 U.S.C. § 314, which provides that *inter partes* review may not be instituted unless the information presented in the Petition shows that “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see also* 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”).

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, if the Board institutes trial, it will “institute on all grounds in the petition.” PTAB Consolidated Trial Practice Guide, 5–6 (Nov. 2019)¹; 37 C.F.R. § 42.108(a); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

¹ Available at

<https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=Tri alPracticeGuideConsolidated>.

Having considered the arguments and evidence presented in the Petition, for the reasons described below, we institute *inter partes* review.

A. Real Parties-In-Interest

Petitioner identifies the following as its real parties-in-interest: lululemon athletica inc., lululemon athletica canada inc., lululemon usa inc., and Curiouser Products, Inc. Pet. 57. Patent Owner identifies Nike, Inc. (i.e., itself) as the only real party-in-interest. Paper 4, 2.

B. Related Matters

The parties identify *Nike, Inc. v. lululemon athletica inc. et al.*, No. 1:22-cv-00082-AJN (S.D.N.Y) as a related matter. Pet. 57; Paper 4, 2.

C. The '413 Patent

The '413 patent is titled “Adaptive Watch.” Ex. 1001, code (54). The Abstract of the '413 patent reads as follows:

A watch or other type of portable electronic console that employs a number of different functions in order to improve its usability. The watch may, for example, allow a user to connect the watch to one or more remote electronic devices. such as an electronic performance sensor or MP3 player. The watch then displays information related to the connected electronic devices. Still further, the watch may allow a user to control the operation of one or more connected remote electronic devices. Thus, if the watch is connected to a remote speed/distance monitor employing a calibration variable, then the watch may allow the user to adjust the calibration variable.

Id. at code (57).

Figure 2 of the '413 patent is reproduced below:

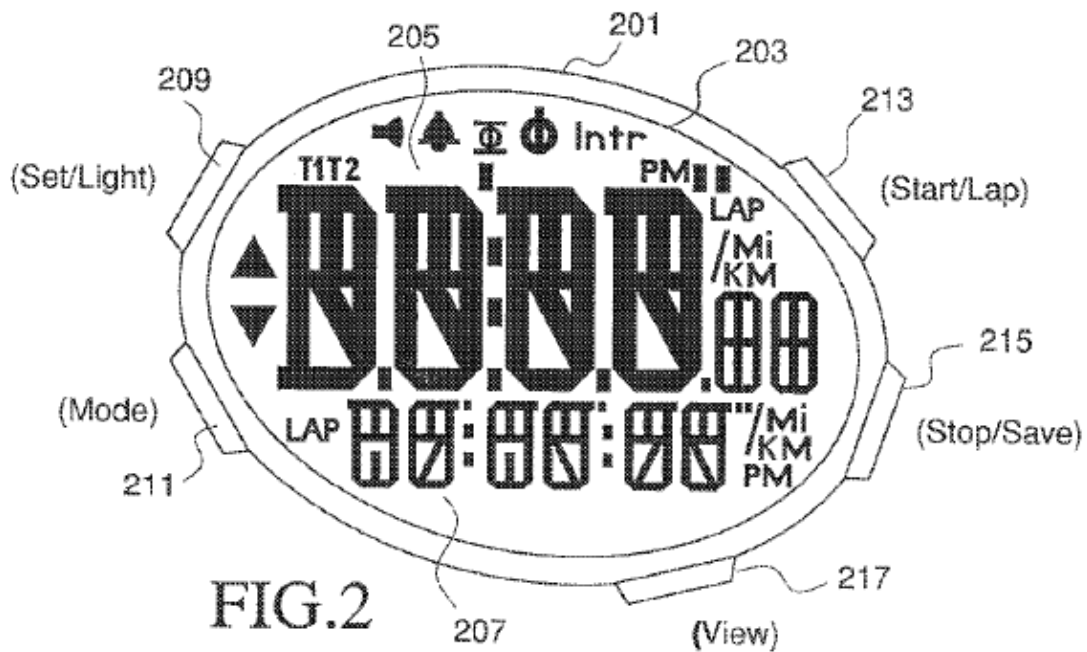


Figure 2 above “illustrates a user interface provided by a watch according to an embodiment of the invention.” *Id.* at 3:66–67.

As shown in Figure 2, watch 201 includes display 203 “which displays data values calculated by, or provided to” watch 201. *Id.* at 5:54–57. “[D]isplay 203 includes a variety of icon displays for indicating operation processes of” watch 201. *Id.* at 5:59–60.

Figure 3A of the '413 patent is reproduced below:

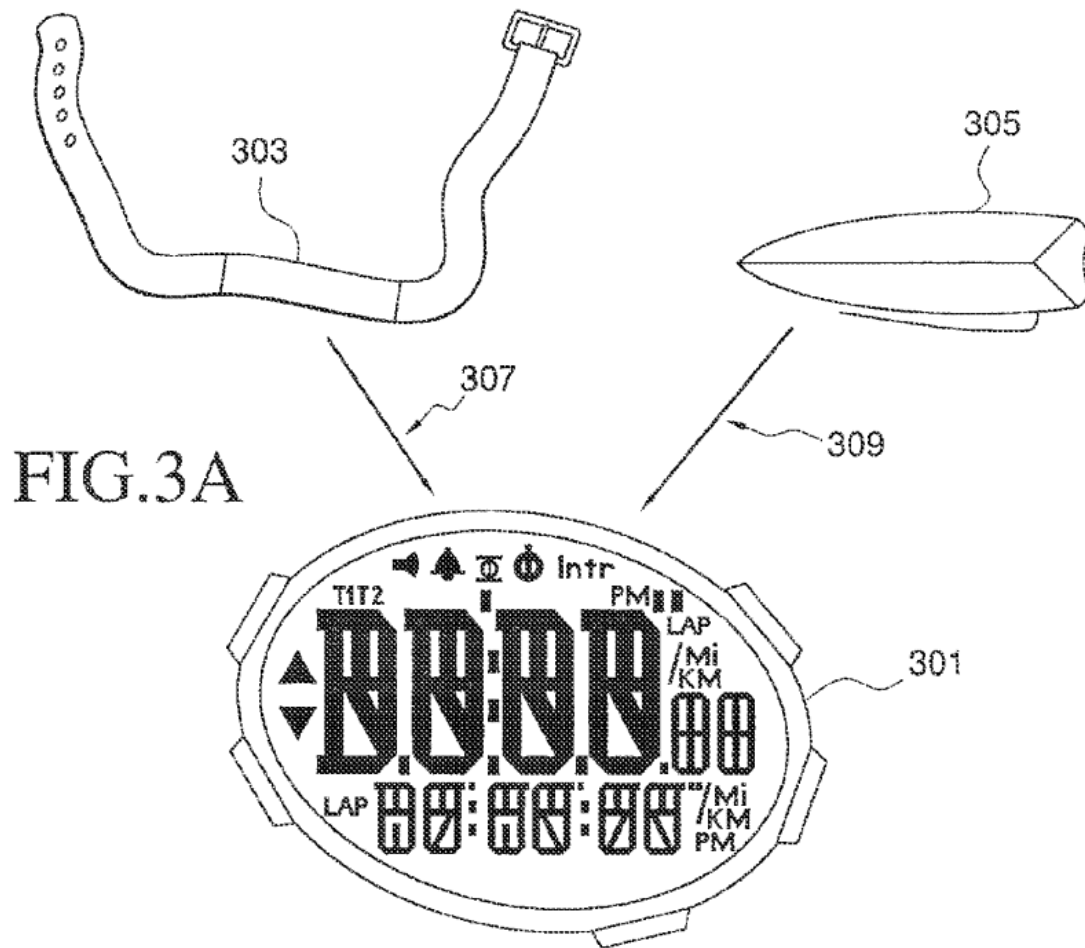


Figure 3A above illustrates interactions of a watch with multiple sensors. *Id.* at 4:1–3.

As shown in Figure 3A, watch 301 receives measured sensor data from two separate remote electronic sensors 303 and 305. *Id.* at 6:33–37. “[S]ensor 303 is a heart rate monitor, which monitors the rate at which a wearer’s heart beats.” *Id.* at 6:37–39. “[S]ensor 305 is a speed/distance monitor that measures a total distance traveled by the wearer.” *Id.* at 6:39–41. Heart rate data from sensor 303 may be used to calculate different “heart rate zones” of a user reflecting different performance characteristics or “gains”

for the user. *Id.* at 14:49–61. The '413 patent further explains the following:

For example, an athlete may burn fat most efficiently by maintaining his or her heart rate within the zone that is 40% to 60% of the athlete's maximum heart rate. On the other hand, an athlete may improve his or her maximum possible oxygen consumption by maintaining his or her heart rate within the zone that is 60% to 80% of the athlete's maximum heart rate.

Id. at 14:61–67.

Figure 8 of the '413 patent is reproduced below:

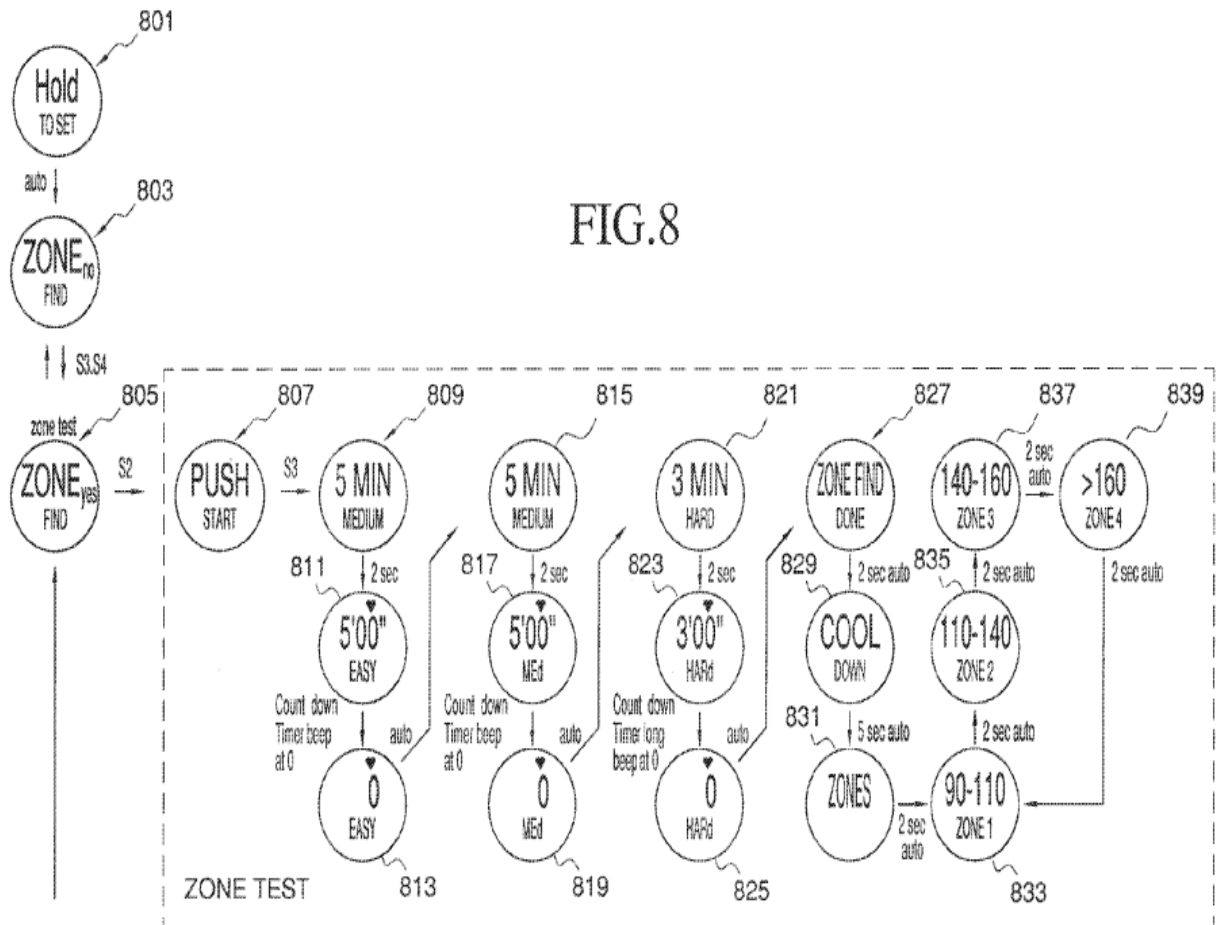


Figure 8 above “illustrates interface views that may be employed by various embodiments of the invention to automatically calculate heart rate zones.” *Id.* at 4:15–17.

As shown in Figure 8, the watch incorporates various “views” (e.g., 801–839), that can display information to a user that includes, *inter alia*, suggested exercise times such as “3 MIN” or “5 MIN,” (e.g., views 821, 815), suggested exercise intensity such as “EASY,” “MEDIUM” or “HARD,” (e.g., views 811, 809, 821), or heart rates zones reflecting different ranges of heart rates, (e.g., views 833, 835, 837, 839 (zones 1–4)).

D. The Challenged Claims

Petitioner challenges claims 1–5, 7, 9, 12–14, and 17–19 of the ’413 patent. Of those, claims 1, 12, and 17 are independent. Claim 1 is representative and is reproduced below:

1. [1PRE] An apparatus comprising:
 - [1A] a processor; and
 - [1B] a memory storing instructions that, when executed by the processor, cause the apparatus at least to:
 - [1C] prompt a user to exercise at a plurality of successive exertion levels, wherein an exertion level is based on a level of physical fitness of a user;
 - [1D] determine a plurality of heart rate zones based on first heart rate measurements received from a sensor while the user exercises at the plurality of successive exertion levels;
 - [1E] generate a prompt instructing a user to exercise while maintaining heart rate within a particular one of the plurality of heart rate zones;
 - [1F] process second heart rate measurements received from the sensor subsequent to generating the prompt; and

[1G] determine whether the second heart rate measurements are within the particular heart rate zone.

Ex. 1001, 18:5–23.^{2,3}

E. Proposed Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1, 5, 7, 12, 17	102 ⁴	Amano ⁵
1, 5, 7, 12, 17	102	Matsumoto ⁶
1, 12, 17	103	Lubell, ⁷ Ceci ⁸
2, 3, 4, 13, 18	103	Lubell, Ceci, Gorman ⁹

² We reproduce claim 1 with similar feature identification numbering used in both the Petition and the Preliminary Response (i.e., “[1PRE]” through “[1F]”).

³ Independent claim 12 is drawn to “[a] method” and independent claim 17 is drawn to “[a] non-transitory computer readable medium storing executable instructions.” Claims 12 and 17 include features corresponding to those set forth in the apparatus of claim 1. *See* Ex. 1001, 18:60–19:9; 19:26–20:10.

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103 effective on March 16, 2013. Neither party argues, at least at this stage of the proceeding, that the outcome of this case would differ based on applying the pre-AIA or post-AIA versions of these laws.

⁵ US Patent No. 6,241,684 B1 issued June 5, 2001 (Ex. 1002, “Amano”).

⁶ US Patent No. 4,911,427 issued Mar. 27, 1990 (Ex. 1003, “Matsumoto”).

⁷ US Patent No. 4,566,461 issued Jan. 28, 1986 (Ex. 1004, “Lubell”).

⁸ Ruggero Ceci & Peter Hassmén, *Self-monitored exercise at three different RPE intensities in treadmill vs field running*, 23 *Medicine & Science in Sports & Exercise* 732–738 (1991) (Ex. 1005, “Ceci”).

⁹ US Patent No. 5,400,794 issued Mar. 28, 1995 (Ex. 1007, “Gorman”).

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
9, 14, 19	103	Lubell, Ceci, Flach ¹⁰
2, 3, 4, 13, 18	103	Amano, Gorman
9, 14, 19	103	Amano, Flach
2, 3, 4, 13, 18	103	Matsumoto, Gorman
9, 14, 19	103	Matsumoto, Flach

Pet. 19.

F. Testimonial Evidence

In support of its proposed grounds of unpatentability, Petitioner relies on the Declaration of Dr. Kevin Lynch, Ph.D. (Ex. 1009).

In challenging the proposed grounds, Patent Owner relies on the Declaration of Dr. Bryan Bergeron, M.D. (Ex. 2001).

II. ANALYSIS

A. 35 U.S.C. § 325(d)

Patent Owner requests that we exercise our discretion under 35 U.S.C. § 325(d) to deny institution. Citing to *Advanced Bionics, LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential) and *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph), Patent Owner contends that (1) all of Petitioner’s proposed grounds “involve the same art, or substantially the same art, that was previously presented to the Office (*see* Prelim. Resp.

¹⁰ US Patent Application Publication No. 2001/0023315 A1 published Sept. 20, 2001 (Ex. 1008, “Flach”).

15–29), and (2) Petitioner has not demonstrated that the Office erred in a manner material to the patentability of the challenged claims (*see id.* at 30–31). More specifically, with respect to contention (1), Patent Owner argues that two of the references, Lubell and Flach, were previously relied upon by the Examiner in proposing claim rejections, and that the remaining four references are “substantially the same” as subject matter previously considered by the Examiner. Prelim. Resp. 17.

For its part, Petitioner contends the following:

Section 325(d) is not at issue. Although Lubell was considered by the Examiner, Petitioner applies it differently here. The Examiner’s analysis during prosecution did not consider the combination with Ceci. As shown below, Petitioner’s argument goes beyond what was addressed during prosecution. Additionally, Flach was cited by the Examiner to show that some dependent claims were obvious. But those claims were not amended in order to gain allowance of the ’413 patent, so the same analysis still applies. None of the other prior art references appear in the prosecution history.

Pet. 19–20.

At the outset, we note that the record before us supports Petitioner’s contention that, when it comes to Flach, the Examiner’s analysis presented during prosecution seemingly “still applies,” or at least that such analysis was never withdrawn by the Examiner. In that respect, the record shows that in a Final Office Action, the Examiner applied Flach’s teachings in rejecting some dependent claims presented as a part of Application No. 13/531,072 (“the ’072 application”), which ultimately issued as the ’413 patent (*see* Ex. 1001, code (21)). *See* Ex. 1013, 7.¹¹ The Applicant responded to that Office

¹¹ The reference page numbering reflects the numbers added by Petitioner in the bottom right corner of the document.

Action and proposed amendments to the independent claims presented as claims 1, 12, and 17. *See* Ex. 1014, 3–6.¹² The Examiner subsequently allowed the claims based on those amendments to the independent claims, without withdrawing the prior assessment as to the teaching value of Flach. *See* Ex. 1015, 8–9.¹³ Patent Owner does not present any argument, and the record does not reflect, that the Examiner’s evaluation of Flach’s teachings as applied to some claims of the ’072 application should be regarded as having been discounted or overcome.

With respect to Lubell, it is clear that the reference was applied by the Examiner in formulating proposed claim rejections of the ’072 application. *See, e.g.,* Ex. 1013, 4–5. As Petitioner, notes, however, the record does not indicate that the Examiner considered Lubell’s teachings in combination with those of Ceci. *See* Pet. 19. An overall assessment of Petitioner’s grounds involving Lubell and Ceci tends to show that Petitioner is applying Ceci’s teachings to account for the amendments to the claims added during prosecution of the ’072 application that resulted in the allowance of that application. *Compare* Ex. 1014, 3–6, *with* Pet. 39–47. That circumstance does not lend itself favorably to a conclusion that exercise of discretion to deny institution is warranted, but rather that some assessment of the merits of proposed grounds based on Lubell taken with Ceci is appropriate. Furthermore, we note that Lubell is a reference that forms part of only three of the nine proposed grounds of unpatentability. That the bulk of the

¹² The reference page numbering reflects the numbers added by Petitioner in the bottom right corner of the document.

¹³ The reference page numbering reflects the numbers added by Petitioner in the bottom right corner of the document.

grounds proposed by Petitioner do not rely on Lubell's teachings also weighs against the exercise of discretion on the basis of Lubell's presence as a part of the Petition.

With respect to Patent Owner's assertions that certain references, including Ceci, applied by the Petitioner as a part of its proposed grounds are cumulative of subject matter previously considered by the Examiner, we do not find them availing. In that regard, Patent Owner attempts to equate some selected teachings of prior art that previously were presented during prosecution of the '072 application (e.g., Lubell, Henry,¹⁴ and Fabrizio¹⁵) with new prior art relied on in the Petition, and proceeds to argue that the new prior art teachings are inadequate to account for certain features of the challenged claims. *See* Prelim. Resp. 18–29. In effect, Patent Owner's arguments, although presented under the guise of a request for discretionary denial, essentially amount to direct challenges to the merits of Petitioner's proposed grounds. That is not a scenario that warrants dispositive exercise of discretion, which would foreclose actual evaluation of the merits of the proposed grounds. Rather, in our view, the situation suggests that the appropriate course of conduct is to consider whether Petitioner's proposed grounds are persuasive, or not, in conveying a reasonable likelihood that the challenged claims are unpatentable. Moreover, as discussed below, we conclude that, with respect to at least some of the proposed grounds, including grounds based on prior art that was not presented during prosecution of the '072 application (e.g., Amano), Petitioner actually has shown a reasonable likelihood of success that the challenged claims are

¹⁴ US Patent No. 5,769,755 issued June 23, 1998 (Ex. 2002, "Henry").

¹⁵ US Patent No. 6,163,718 issued Dec. 19, 2000 (Ex. 2003, "Fabrizio").

unpatentable. These are not the kind of circumstances that favor discretionary denial of institution.

Lastly, in conjunction with Patent Owner's contention that Petitioner has not shown that the Office erred, we conclude that given the circumstances presented here, Patent Owner has not demonstrated that Petitioner's proposed grounds are based on the same or substantially the same art or arguments previously presented to the Office. As a result, we need not further consider whether or not Petitioner has shown error on the part of the Office.

Accordingly, although we have considered Patent Owner's request for our exercise of discretion to deny institution under 35 U.S.C. § 325(d), on the record before us, we conclude that denial of institution on that basis is not warranted. We proceed to consider the merits of Petitioner's proposed grounds of unpatentability below.

B. Principles of Law

A patent claim is unpatentable as anticipated under 35 U.S.C. § 102 "if each and every limitation is found either expressly or inherently in a single prior art reference." *WhitServe, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 21 (Fed. Cir. 2012) (quoting *Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998)). To establish anticipation under 35 U.S.C. § 102, each and every element in a claim, arranged as is recited in the claim, must be found in a single prior art reference. *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001).

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a

whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).¹⁶

At this preliminary stage, we determine whether the information presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been unpatentable over the proposed prior art. We analyze the asserted grounds with the above-noted principles in mind.

C. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner presents the following assessment as to the level of skill in the art:

¹⁶ At this stage, neither party presents any objective indicia of non-obviousness.

A Person of Ordinary Skill in the art (“POSITA”) for the technology of the ’413 patent would have had (1) a bachelor’s degree in engineering, computer science, industrial design, biomechanics, or a related field, and (2) at least two years of experience researching, developing, designing, and/or testing fitness or physiological sensors, wearable devices, physiological or biomechanical devices, remotely-controlled systems or interfaces, network-based applications and/or equipment, or the equivalent experience or education.

Pet. 18 (citing Ex. 1009 ¶ 41).

Patent Owner indicates that “[f]or purposes of this Preliminary Response only, Nike applies lululemon’s proposed level of skill in the art.” Prelim. Resp. 14.

For purposes of this Decision, we adopt Petitioner’s proposal of the level of ordinary skill in the art as reasonable and consistent with the prior art. *See also Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art may reflect an appropriate level of skill in the art).

D. Claim Construction

We construe claims “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2020); *see Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Petitioner does not propose claim construction for any term. *See* Pet. 17. Patent Owner also indicates that no claim construction is necessary at this time. Prelim. Resp. 15.

We conclude that, for purposes of deciding whether to institute an *inter partes* review, it is unnecessary to make explicit the meaning of any claim term. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. v. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs, Inc. v. Am. Sci & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

E. Proposed Grounds of Unpatentability Based on Amano

Petitioner contends that each of claims 1, 5, 7, 12, and 17 is anticipated by Amano. Petitioner also contends that claims 2, 3, 4, 13, and 18 would have been obvious over Amano and Gorman, and claims 9, 14, and 19 would have been obvious over Amano and Flach.

1. Overview of Amano

Amano is titled “Exercise Workout Support Device.” Ex. 1002, code (54). Amano describes its invention as follows:

[T]he present invention is suitable for use in a maximum oxygen uptake quantity estimating device which enables the user to determine his own maximum oxygen uptake quantity easily; an exercise workout support device which shows the upper and lower limit values for a pulse rate corresponding to an appropriate exercise intensity; a portable pulse wave measuring device, which is provided to a portable device and measures pulse rate or other pulse wave information; or in the technique of sending information between a portable pulse wave measuring device and a data processing device, which processes the measurement data from the aforementioned portable pulse wave measuring device.

Id. at 1:9–20.

Amano characterizes its invention as having certain objectives, including as a first objective “the provision of an exercise workout support device which can show the upper and lower limit values for the pulse rate corresponding to suitable exercise intensity” and as a second objective of providing “a maximum oxygen uptake quantity estimating device.” *Id.* at 2:63–3:6. Amano also explains that “in order to accurately estimate the maximum oxygen uptake quantity . . . it is necessary to establish a straight line relationship between the test subject[’s] exercise intensity and heartbeat rate.” *Id.* at 6:59–63. Amano further states that “it is necessary to measure exercise intensity at at least three or more stages, and determine the heart beat rate at each stage.” *Id.* at 6:64–66. Further, “[o]nce a straight line relationship has been established, maximum oxygen uptake quantity (VO_{2max}/wt) is estimated from exercise intensity and heartbeat rate.” *Id.* at 13:15–18.

Amano's Figure 5 is reproduced below:

FIG. 5

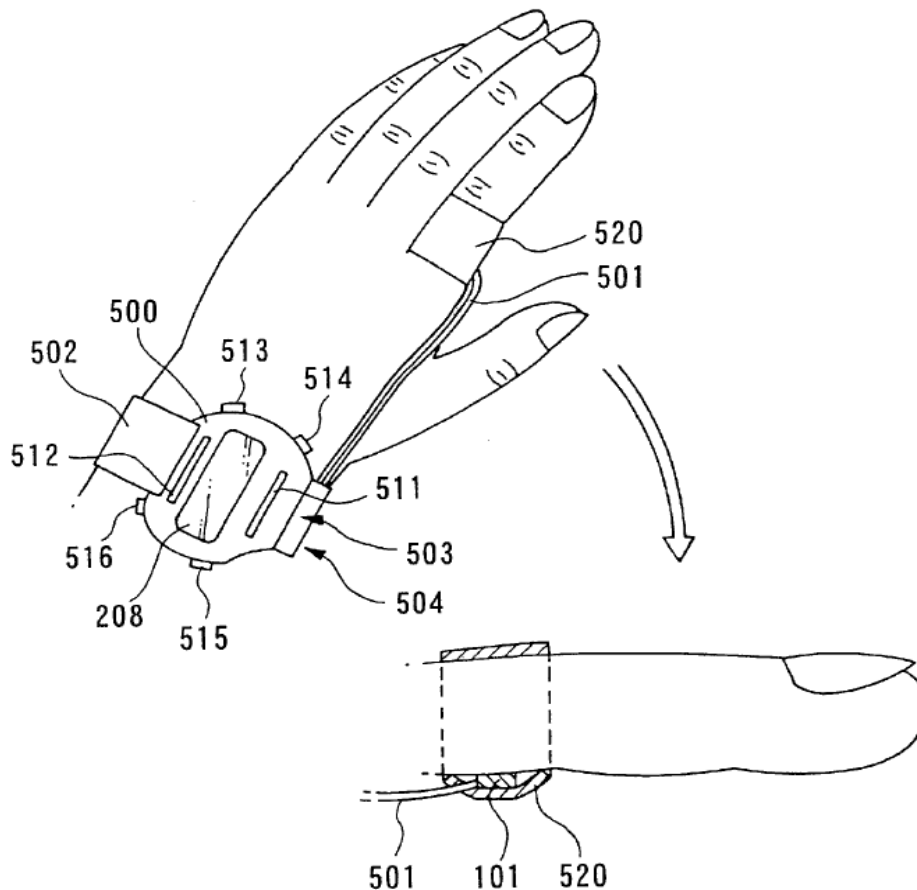


Figure 5 above “shows the external structure of the maximum oxygen uptake quantity estimating device” according to an embodiment of the invention. *Id.* at 4:8–9.

As shown in Figure 5, a wrist watch includes, *inter alia*, main body 500, cable 501 for connecting to pulse wave detector 101, and display 208. *Id.* at 8:57–65. Display 208 displays current time and date as well as “various information such as the estimated oxygen uptake quantity (VO_{2max}/wt), modes, etc.” *Id.* at 9:10–14.

Additionally, Amano provides for an “exercise intensity increase notifying means” as a feature of its device, including that “an order to increase the exercise intensity during running is directed at the test subject [i.e., a user] at fixed intervals (120 sec, for example) after the test subject has started running.” *Id.* at 13:30–34. In that respect, Amano contemplates that after the subject starts running the subject is “notified to increase exercise intensity by 10% each time” a new interval is reached. *Id.* at 13:52–55. Amano also describes the use of a “beep alarm” to indicate the pace that a user should run. *Id.* at 13:44–50.

Further still, Amano discloses the use of “body monitor detector”, which “is a sensor for detecting body motion when the test subject.” *Id.* at 7:18–19. Signals from the body motion detector undergo a processing operation, and a subject’s “pitch during running, i.e., the number of steps per unit time, is obtained from the results of this processing.” *Id.* at 7:24–26. To that end, Amano characterizes its device as being “employed in a pitch maker.” *Id.* at 20:32–33. Also, as a part of the above-noted processing, an “upper limit UL” and a “lower limit LL” for pulse rate is determined. *Id.* at 24:57–62.

Amano's Figure 27 is reproduced below:

FIG. 27

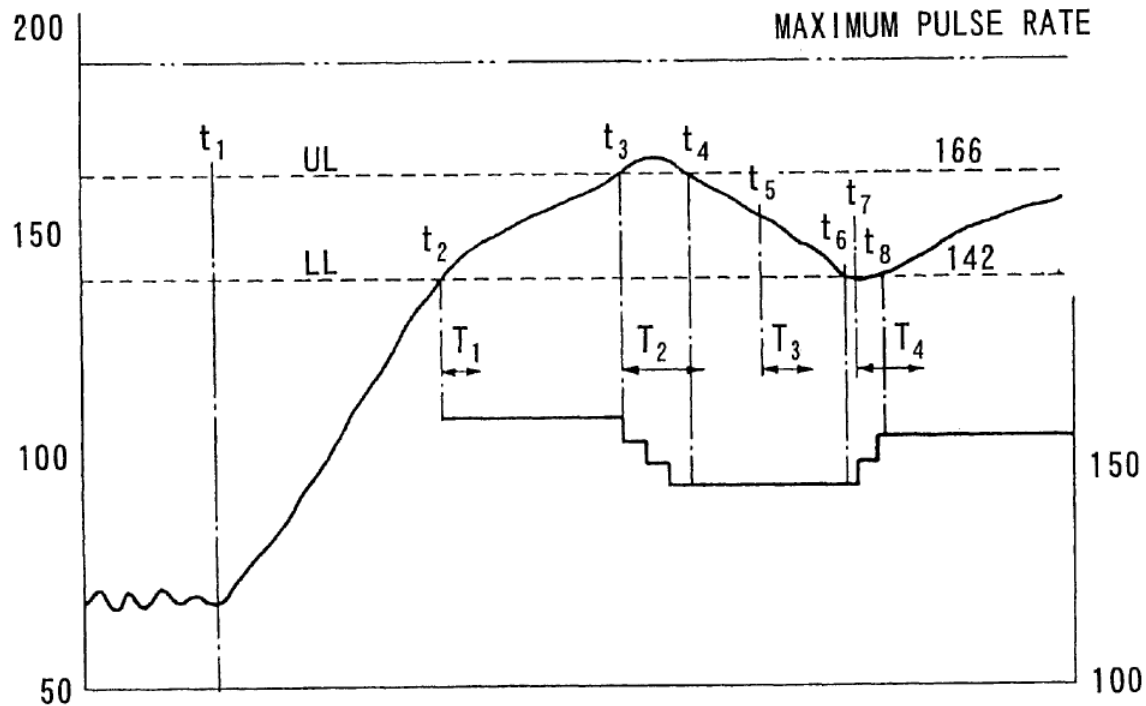


Figure 27 above shows a “timing chart for explaining the operation of the pitch maker.” *Id.* at 5:7–8.

Amano describes that its “pitch maker” compares a user’s “pulse rate” to “the user’s pitch at the current point in time,” e.g., “160 steps/min for the example shown in Figure 27.” *Id.* at 25:18–34. Based on that comparison, a “sound generator” generates sounds based on a user’s pulse rate, e.g., above lower limit LL or above upper limit UL. *Id.* at 25:18–26:34.

2. Overview of Gorman

Gorman is titled “Biomedical Response Monitor and Technique Using Error Correction.” Ex. 1007, code [54]. Gorman’s Abstract is reproduced below:

A monitor for measuring and displaying a biomedical response such as heartbeat rate, including a transmitting unit and a receiving unit. The monitor detects the response (heartbeat) and produces a digital pulse train representing this response. The digital pulse train is then encoded to produce an encoded digital signal having a first identification part identifying the transmitting unit and a second data part representing the person's response. This encoded digital signal is wirelessly sent to the receiving unit which reads the received signal to determine if it is from the transmitting unit. If it is from that transmitting unit, the data part is read. If there are too many errors in the data part, a new frequency of wireless transmission is used in the monitor. If the errors are within a reasonable bound, the data bits representing the biomedical response are sent to a memory and/or a display. If the received signal were not from the correct transmitting unit, the received signal is rejected. Interference from other monitors or electrical equipment is minimized, and the data displayed is very accurate.

Id. at code [57].

3. Overview of Flach

Flach is titled “Cellular Architecture and Data Transfer Methods for Real Time Patient Monitoring Within Medical Facilities.” Ex. 1008, code (54). Flach sets forth the following:

The present invention relates to digital wireless communications systems of the type which employ portable, battery-powered communications devices, such as remote telemeters worn by ambulatory hospital patients for monitoring purposes. More particularly, the present invention relates to a network architecture, and an associated TDMA (time division multiple access) communications protocol, for facilitating the efficient and reliable exchange of information between portable wireless devices and centralized monitoring stations.

Id. ¶ 3.

4. *Petitioner's Arguments*

Petitioner presents in detail where it believes all the features of claims 1–5, 7, 9, 12–14, and 17–19 are accounted for by Amano, Gorman, and Flach. Pet. 20–28, 54–55.

a) *Claim 1*

i. *Elements [1PRE], [1A], and [1B]*

Petitioner explains how Amano discloses an apparatus that is an exercise workout device and includes a processor (CPU) and a memory (ROM 202) for storing instructions to be executed by the processor. Pet. 20–21 (citing Ex. 1002, 7:56–58, 7:62, 8:21, 19:27, Fig. 2).

ii. *[1C] prompt a user to exercise at a plurality of successive exertion levels, wherein an exertion level is based on a level of physical fitness of a user;*

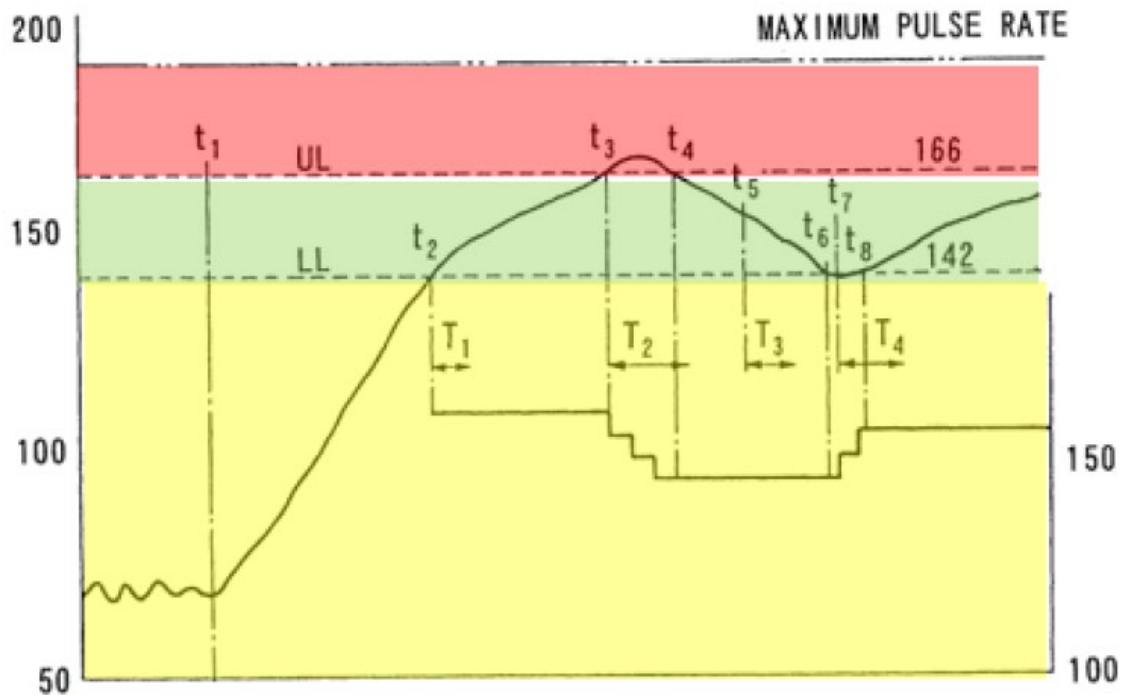
Petitioner contends that Amano prompts a user to exercise at a plurality of successive exertion levels as Amano's processor notifies a test subject to increase exercise intensity in stages. Pet. 22 (citing Ex. 1002, 12:31–33). Petitioner also contends that Amano discloses an embodiment in which a user is prompted to increase their intensity by 10% every 120 seconds, and that the “intensity, as measured and subsequently increased, is based on a user's stride length and weight, aspects of a user's physical fitness.” *Id.* at 22 (citing Ex. 1002, 13:53–55, 12:15–20). Petitioner, thus, submits that Amano accounts for an exertion level that is “based on a level of physical fitness of a user.” *Id.* In alternatively accounting for that aspect of claim 1, Petitioner draws attention to Amano's disclosure that a test

subject may vary exercise intensity “according to his own preferences.” *Id.* (citing Ex. 1002, 13:66–67).

- iii. *[1D] determine a plurality of heart rate zones based on first heart rate measurements received from a sensor while the user exercises at the plurality of successive exertion levels;*

Petitioner contends that Amano discloses use of heart rate measurement to determine upper and lower limits and thus creating heart rate “zones” based on those measurements. Pet. 23. Petitioner provides the following annotated version of Amano’s Figure 27 said to illustrate “three heart rates zones in a workout.”

FIG. 27



Annotated Figure 27 above is said to illustrate three heart rate zones, shown in red, green, and yellow. Pet. 24.

- iv. *[1E] generate a prompt instructing a user to exercise while maintaining heart rate within a particular one of the plurality of heart rate zones;*

Petitioner contends that Amano “prompts exercise in a particular zone” and that its device “outputs a pitch to indicate if a user’s heart rate is below, in, or above the desired range.” Pet. 24 (citing Ex. 1002, 21:48–55, 25:17–26:29). “By showing the limits of the intended zone and beeping at a user to keep them in that zone, the Amano device prompts exercise within a particular one of the heart rate zones.” *Id.* Petitioner also contends that Amano includes an LED display that includes different displayed colors (i.e., blue, yellow, and red) corresponding to different heart rate zones. *Id.* at 25 (citing Ex. 1002, 38:40–41, 39:14–17).

- v. *[1F] process second heart rate measurements received from the sensor subsequent to generating the prompt; and*

Petitioner contends that Amano’s device “regularly measures pulse” and displays pulse rate based on those measurements. Pet. 25–26 (citing Ex. 1002, 20:55–57; 21:48–55, Fig. 17). Petitioner, thus, contends that Amano accounts for this claim limitation.

- vi. *[1G] determine whether the second heart rate measurements are within the particular heart rate zone.*

Petitioner contends that Amano’s device determines if the upper and lower limits of pulse rate have been exceeded, and thus accounts for this claim limitation. Pet. 26–27 (citing Ex. 1002, 20:61–64, 39:39–42).

b) Claims 2–5, 7, 9, 12–14, and 17–19

Petitioner sets forth how it believes each of claims 5, 7, 12, and 17 are anticipated by Amano. Pet. 27–28. Petitioner also explains how claims 2, 3, 4, 13, and 18 would have been obvious based on the combined teachings of Amano and Gorman, and how claims 9, 14, and 19 would have been obvious based on the combined teachings of Amano and Flach. *Id.* at 54–55.

5. Patent Owner’s Arguments

Patent Owner disputes that claims 1, 5, 7, 12, and 17 are anticipated by Amano, and, by seeming inference, that (1) claims 2, 3, 4, 13, 18 would have been obvious over Amano and Gorman, and (2) that claims 9, 14, and 19 would have been obvious over Amano and Flach. Prelim. Resp. 33–40. Patent Owner focuses its dispute on features [1C], [1D], and [1E] (and also the corresponding features of claims 12 and 17). We consider Patent Owner’s arguments in that regard below.

6. Discussion

a) Element [1C]

Element [1C] recites “prompt a user to exercise at a plurality of successive exertion levels, wherein an exertion level is based on a level of physical fitness of a user.” Ex. 1001, 18:9–11. Patent Owner’s initial challenge is directed to element [1C], and specifically the requirement of prompting of a user to exercise at exertion levels that are “based on a level of physical fitness of a user.” Prelim. Resp. 34–36. According to Patent Owner, “Petitioner fails to show that Amano discloses limitation [1C] because Amano prompts a user to exercise at exertion levels that are selected

by the machine, and are pre-set to automatically increase in 10% increments.” *Id.* at 34 (citing Ex. 1002, 13:51–54).

As Petitioner notes, however, in Amano, the initial “intensity” of exercise that ultimately increases by 10% every 120 seconds is based on measurements of a user’s stride length and weight. *See* Pet. 22 (citing Ex. 1002, 12:15–20). In our view, stride length and weight are reasonably viewed as characteristics of a user’s physical fitness. That the initial “intensity” determination is based on physical fitness characteristics of a particular user means that the subsequent 10% increases taught by Amano will vary based on the user. In other words, although the 10% increase in intensity may be “pre-set” as noted by Patent Owner, that 10% increase is, nevertheless, based on a level of physical fitness of a particular user as required by claim 1 (and claims 12 and 17).

We are cognizant that Patent Owner attempts to distinguish the “intensity” determination based on a stride length and weight described by Amano at column 12 from the 10% “intensity” increase at 120 second intervals discussed at column 13. *See* Prelim. Resp. 34–35. In Patent Owner’s view, Amano “uses the word ‘intensity’ in two different contexts,” and urges that the calculation of a “workout intensity” discussed at Amano’s column 12 is somehow different than the 10% increase of intensity discussed at column 13.

Patent Owner’s view, however, is not well explained and is not in accord with Amano’s disclosure. Amano, itself, does not appear to use the term “workout intensity” or distinguish between different types of “intensity.” Instead, Amano uniformly uses the term “exercise intensity” throughout its disclosure, including in both columns 12 and 13. Moreover, it

stands to reason that in order to determine what a 10% increase in exercise intensity will be for a given user, the initial exercise intensity value must be determined. And, Amano discloses how that exercise intensity value is calculated factoring in a user's "stride" and "body weight." Ex. 1002, 12:15–20. At this time, we simply cannot reconcile Patent Owner's view of Amano's teachings with Amano's own description of its teachings.

On the record before us, we conclude that Petitioner adequately accounts for element [1C] (and the corresponding elements of independent claims 12 and 17) in Amano's disclosure.

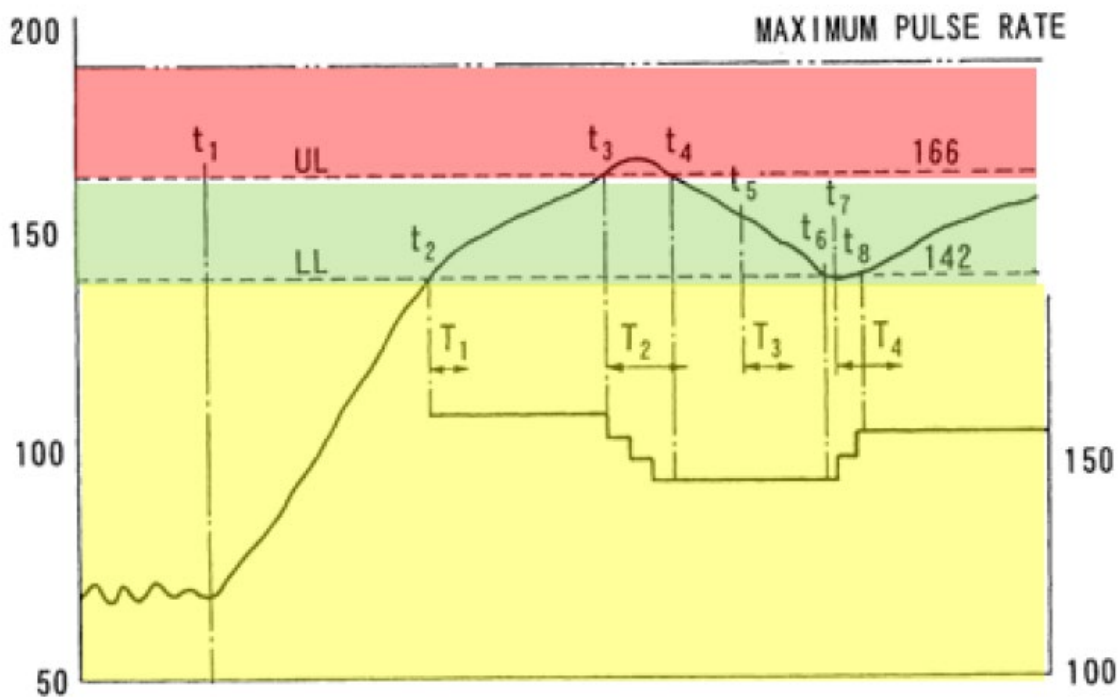
b) Element [1D]

Element [1D] recites "determine a plurality of heart rate zones based on first heart rate measurements received from a sensor while the user exercises at the plurality of successive exertion levels." Ex. 1001, 18:13–16. Patent Owner disputes that Amano discloses the determination of "heart rates zones" based on heart rate measurements of a user. Prelim. Resp. 36–38. According to Patent Owner, "Petitioner fails to show that Amano discloses limitation [1D] because at most Amano discloses a single heart rate range (not a 'plurality'), and that range is based on estimates of VO_{2max} , not 'heart rate measurements' of 'the user.'" *Id.* at 36.

At the outset, we note that Amano unequivocally discloses that the estimates of VO_{2max} that factor into its description of a user's exercise intensity are based on measurements of a user's heart rate. *See, e.g.*, Ex. 1002, 6:59–66, 7:39–42, 11:66–12:3, 19:40–43. To the extent that Patent Owner is arguing that Amano does not incorporate heart rate measurements as part of its invention, we reject that argument.

We also do not find adequate, at this time, Patent Owner’s argument that Amano discloses only a “single heart rate range” rather than a plurality of “heart rate zones.” Patent Owner challenges Petitioner’s reliance on Amano’s Figure 27, but, in our view, that challenge improperly discounts Amano’s own teachings. We again reproduce Petitioner’s annotated version of Amano’s Figure 27:

FIG. 27



Annotated Figure 27 above is said to illustrate three heart rate zones, shown in red, green, and yellow. Pet. 24.

We understand Amano’s Figure 27 to present an example of a user’s exercise routine, i.e. an act of running, in which beginning at time “ t_1 ” the user is prompted to exercise with a heart rate range between a lower limit LL and an upper limit UL. See, e.g., Ex. 1002, 25:8–26:34. We note that Patent

Owner's own declarant, Dr. Bergeron, acknowledges that the left axis of Amano's Figure 27 corresponds to heart rate. *See* Ex. 2001 ¶ 116.

Although Amano does not use the term “zones,” the three areas identified by Petitioner using yellow, green, and red colorization, are reasonably, in our view, recognized as corresponding to three ranges or zones of a user's heart rate during a running workout, i.e.: (1) heart rate values that are less than lower limit LL; (2) heart rate values between lower limit LL and upper limit UL; and (3) heart rate values that are greater than upper limit UL. At this time, we are satisfied that Petitioner accounts for the requirement of limitation [1D] including the determination of “a plurality of heart rate zones” while a user exercises.

c) Element [1E]

Element [1E] recites “generate a prompt instructing a user to exercise while maintaining heart rate within a particular one of the plurality of heart rate zones.” Ex. 1001, 18:17–19. Patent Owner argues the following:

Petitioner fails to show that Amano discloses limitation [1E], because at most Amano prompts a user to exercise within a single range . . . not a “particular **one of the plurality** of heart rate zones.” Amano only prompts a user to exercise within a single range bounded by an upper and lower heart rate limit, and in fact warns the user with sounds to indicate if the user's heart rate strays below or above the limits.

Prelim. Resp. 39 (citing Ex. 1002, 25:17–26:29; Ex. 2001 ¶¶ 119–121).

On the record before us, we find Patent Owner's argument unavailing. As discussed above, we are satisfied that Amano discloses at least three heart rate ranges or zones as a part of its Figure 27, i.e., below lower limit LL, between lower limit LL and upper limit UL, and above upper limit UL. Although we agree with Patent Owner that Amano prompts a user only to

exercise in the range (or zone) that extends between lower limit LL and upper limit UL, we note that such is sufficient to account for element [1E]. Specifically, that element only requires a user to be prompted to exercise within *one* of the plurality of heart rate zones. Amano discloses just that, in prompting a user to exercise within the zone bounded by LL and UL. It is immaterial that Amano may not prompt a user to exercise outside of that zone. Rather, it is sufficient, for purposes of element [1E]’s requirement, that Amano prompts a user to exercise within at least one particular zone.

Accordingly, we have considered Patent Owner’s arguments (Prelim. Resp. 38–40), but conclude that, for purposes of institution, Petitioner adequately accounts for the requirements of element 1[E] (and the corresponding requirements of independent claims 12 and 17).

d) Remaining Elements of Claim 1 (and corresponding elements of claims 12 and 17)

Patent Owner does challenge Petitioner’s application of Amano’s teachings to any other element of claim 1 (or corresponding elements of claims 12 and 17). At this time, we are persuaded that Petitioner adequately accounts for those additional elements as a part of its ground based on Amano. *See* Pet. 20–21, 25–27, 28.

e) Claims 2–5, 7, 9, 13, 14, 18, and 19

Patent Owner does not present any separate arguments in connection with claims 2–5, 7, 9, 13, 14, 18, and 19. At this time, we are persuaded that Petitioner has shown a reasonable likelihood of success: (1) that claims 5 and 7 are anticipated by Amano (Pet. 27–28); (2) that claims 2, 3, 4, 13, and 18 would have been obvious in view of Amano and Gorman (*id.*

at 54–55); and (3) that claims 9, 14, and 19 would have been obvious in view of Amano and Flach (*id.* at 55).

F. Proposed Grounds of Unpatentability Based on Matsumoto

Petitioner contends that: (1) claims 1, 5, 7, 12, and 17 are anticipated by Matsumoto (Pet. 29–38); (2) claims 2, 3, 4, 13, and 18 would have been obvious in view of Matsumoto and Gorman (*id.* at 56); and (3) claims 9, 14, and 19 would have been obvious in view of Matsumoto and Flach (*id.* at 56–57). Patent Owner opposes Petitioner’s contentions. Prelim. Resp. 40–49. As discussed above, we determine that Petitioner demonstrates a reasonable likelihood of success in establishing the unpatentability of claims 1–5, 7, 9, 12–14, and 17–19 based on Amano (and Gorman and Flach) such that we institute this proceeding (*see* § II.E). Because we must therefore institute *inter partes* review on all claims and all challenges in the Petition (*see* 37 C.F.R. § 42.108(a)), for purposes of institution, we need not and do not herein address in detail Petitioner’s assertions of unpatentability of claims 1–5, 7, 9, 12–14, and 17–19 based on Matsumoto (and Gorman and Flach). We do, however, provide below some assessment of the grounds based on Matsumoto to assist the parties in the upcoming trial.

1. Overview of Matsumoto

Matsumoto is titled “Exercise and Training Machine With Microcomputer-Assisted Training Guide.” Ex. 1003, code [54]. Matsumoto discloses an “exercise management machine in which the amount of exercise is control[led] according to the pulse of the user.” *Id.* at 1:6–8. Matsumoto

further characterizes its invention as “providing an exercise program that is suited to the individual user’s physical fitness.” *Id.* at 4:33–35.

In Matsumoto, a “user’s sex, age, and weight” are input into an exercise machine and then used to calculate the user’s exercise program via an “exercise standard” table. *See id.* at 5:17–22, 3:15–55. The machine then chooses a user’s workout based on a “target pulse” for the intended intensity of the workout, e.g., “warming up” or “full fledged training.” *Id.* at 5:25–61. During the workout, the exercise machine will convey messages such as “Continue exercising at xx p/m for 1 minute,” “Slow down,” or “Speed up.” *Id.*

Matsumoto describes multiple embodiments of its invention, and expresses that in one embodiment a light emitting diode (LED) “can emit green, red or yellow light, to inform the user whether he is above, below or within the target pulse zone (e.g., target pulse ± 5).” *Id.* at 7:36–51.

2. Discussion

Patent Owner challenges Petitioner’s proposed grounds based on elements [1C], [1D], and [1E] (and the corresponding elements of claims 12 and 17). With respect to element [1C], at this time, we do not find availing Patent Owner’s argument that Matsumoto’s use of a user’s sex, age, and weight and consultation of a table to establish an initial exercise program for the user does not convey selection of an exertion level that is “based on a level of physical fitness of a user.” *See Prelim. Resp.* 41–43. Instead, we agree with Petitioner that Matsumoto itself describes its invention as “suited to the individual user’s physical fitness.” *Pet.* 31–32 (quoting Ex. 1003, 4:33–35). We also agree with Petitioner that an exercise program that is

determined based on a user's sex, age, and weight, is reasonably understood as being "an exertion level" that is "based on a level of physical fitness of a user." *Id.*

With respect to elements [1D] and [1E], however, we see potential merit in some of Patent Owner's arguments as to those elements. In particular, with respect to claims 1, 5, 7, 12, and 17, Petitioner's proposed ground is one premised on anticipation. Yet, as Patent Owner notes, Petitioner proceeds to combine aspects of different embodiments of Matsumoto to substantiate the ground. *See* Prelim. Resp. 44–45. To establish anticipation, however, each and every element in a claim, "arranged as is in the claim," must be found in a single prior art reference. *Karsten Mfg. Corp.*, 242 F.3d at 1383. That Petitioner must pull content from distinct embodiments set forth in Matsumoto raises the question of whether Petitioner's reliance on Matsumoto discloses elements that are arranged as in the claims so as to be a proper basis for anticipation.

We also see potential merit in Patent Owner's arguments that Petitioner has not adequately accounted for the requirement of determining a "plurality" of heart rate zones. *See* Prelim. Resp. 43–49. Petitioner points to disclosure in Matsumoto in one embodiment (Ex. 1003, 7:36–55) describing a single target pulse zone with a target pulse have a range of " ± 5 ." Pet. 32–33. Petitioner extrapolates from that disclosure of a single target zone in one embodiment, that target pulses described in a different embodiment (e.g., Ex. 1003, 5:29–33, Table 2) will also necessarily be "zones" that include a range of, for instance, " ± 5 ." Pet. 32–33. Matsumoto, however, seemingly does not make the leap that Petitioner does as a part of its disclosure of the target pulses disclosed in connection with Table 2 in column 5.

Although Patent Owner has identified potential deficiencies in Petitioner's grounds based on Matsumoto, for the reasons noted above, however, we, nevertheless, institute *inter partes* review based in-part on the proposed grounds involving Matsumoto.

G. Proposed Grounds of Unpatentability Based on Lubell

Petitioner contends that: (1) claims 1, 12, and 17 would have been obvious in view of Lubell and Ceci (Pet. 39–47); (2) claims 2, 3, 4, 13, and 18 would have been obvious in view of Lubell, Ceci, and Gorman (*id.* at 47–51); and (3) claims 9, 14, and 19 would have been obvious in view of Lubell, Ceci, and Flach (*id.* at 51–54). Patent Owner opposes Petitioner's contentions. Prelim. Resp. 49–58. As discussed above, we determine that Petitioner demonstrates a reasonable likelihood of success in establishing the unpatentability of claims 1–5, 7, 9, 12–14, and 17–19 based on Amano (and Gorman and Flach) such that we institute this proceeding (*see* § II.E). Because we must therefore institute *inter partes* review on all claims and all challenges in the Petition (*see* 37 C.F.R. § 42.108(a)), for purposes of institution, we need not and do not herein address in detail Petitioner's assertions of unpatentability of claims 1–5, 7, 9, 12–14, and 17–19 based on Lubell (and Ceci, Gorman, and Flach). We do, however, provide below some assessment of the grounds based on Lubell to assist the parties in the upcoming trial.

As discussed above (*see* § II.A), during prosecution of the '072 application that became the '413 patent, the Examiner applied Lubell in rejecting the claims of the '072 application. The '072 application was amended to require a plurality of successive exertion levels, where “an

exertion level is based on a level of physical fitness of a user.” *See* Ex. 1014, 3–6. As a result, the Examiner allowed all the pending claims of the ’072 application reasoning that the subject claims required that “the exertion level is chosen and maintained exclusively by the user and not in any way acted upon by the device,” and, therefore, was distinct from the prior art, including Lubell. *See* Ex. 1015, 9.

Lubell characterizes its invention as “relat[ing] to health and fitness monitors, such as heart rate monitors and the like.” Ex. 1004, 1:4–5. Petitioner acknowledges Lubell involves an exercise test of a user as a part of fitness monitoring that “is the same for every user, regardless of their fitness level,” and, thus, is not a test based on a level of fitness of a user as required by the challenged claims. Pet. 39. Petitioner relies on Ceci to account for that added limitation. *See id.* at 41–44. Ceci is an article that presents a study of a number of participants engaged in various exercises of varying exertion and intended to gauge the level of “self-monitoring” and “self-regulation” of the participants in connection with the intensity of their exercising. *See, e.g.*, Ex. 1005, 1.¹⁷ Petitioner generally urges that because “in Ceci, researchers asked test subjects to exercise at ‘light exertion,’ then ‘somewhat hard,’ then ‘hard’” it somehow would have been obvious to implement into Lubell a “test protocol” that “could be a self-regulated exercise chosen by a user.” Pet. 42–43. Petitioner generally states that a skilled artisan would have applied Ceci’s “test protocol” to Lubell’s device. *Id.* at 43. Petitioner also generally contends that “[a] POSITA could use

¹⁷ The reference page numbering reflects the numbers added by Petitioner in the bottom right corner of the document.

[Ceci's] measured heart rates to directly determine heart rate zones.” *Id.* at 45.

On this record, we see potential merit in Patent Owner's contentions. Petitioner has not provided adequate reasoning as to why a person of ordinary skill in the art would have combined the teachings of Lubell and Ceci. *See, e.g.*, Prelim. Resp. 49–55. We also see potential merit in Patent Owner's contention that Ceci does not account for the “heart rates zones” that are required by the challenged claims. *See id.* at 55–57. Here too, despite potential shortcomings identified by Patent Owner, we institute *inter partes* review based in-part on the proposed grounds involving Lubell.

III. CONCLUSION

Petitioner has shown a reasonable likelihood that it would prevail with respect to at least one of the challenged claims.

At this stage of the proceeding, the Board has not made a final determination on the construction of any claim term or the patentability of any challenged claim

IV. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of claims 1–5, 7, 9, 12–14, and 17–19 of the '413 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '413 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2023-00438
Patent 8,620,413 B2

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