

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LULULEMON ATHLETICA CANADA INC. and LULULEMON USA INC.
Petitioners

v.

NIKE, INC.
Patent Owner

Case IPR2023-00189
Patent 9,278,256

**DECLARATION OF MEGAN TONEY-BOLGER, PH.D., IN SUPPORT OF
NIKE, INC.'S PATENT OWNER'S RESPONSE**

<p>lululemon athletica inc. et al. v. Nike, Inc. IPR2023-00189 Patent No. 9,278,256 Ex. 2005</p>
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I, Megan Toney-Bolger, Ph.D., declare as follows:

I. INTRODUCTION

1. I have been retained by Nike (“Patent Owner”) as an independent expert in this *inter partes* review (“IPR”) proceeding before the Patent Trial and Appeal Board (“PTAB”), which I understand involves U.S. Patent No. 9,278,256 (“the ’256 Patent”). Exponent Engineering, P.C. (“Exponent P.C.”), is being compensated for my time at my usual consulting rate of \$350 per hour in 2023 for my work associated with this matter. No part of my compensation is dependent on the outcome of this proceeding, and I have no other interest in this proceeding.

2. I understand that this proceeding involves Claims 1–20 (the “Challenged Claims”) of the ’256 Patent. I further understand that Petitioner lululemon athletica canada inc. and lululemon usa inc. (“lululemon”) raises five grounds in the Petition for *Inter Partes* Review. I understand that the raised grounds relate to the following references:

U.S. Patent No. 8,162,804 (“Tagliabue”)	Ex. 1004
U.S. Patent Publication No. 2007/0239479 (“Arrasvuori”)	Ex. 1005
U.S. Patent No. 6,458,060 (“Watterson”)	Ex. 1006
International Publication No. WO 2002/067449 (“Ellis”)	Ex. 1007

3. I have been asked to provide my opinions in response to each ground of invalidity asserted in the Petition. My opinions are set forth below.

II. BACKGROUND AND EXPERIENCE

4. My educational background includes a Ph.D. in Applied Physiology from the Georgia Institute of Technology and a Bachelor of Science in Engineering degree in Biomedical Engineering from Duke University. The Duke University degree programs in engineering are accredited by the Accreditation Board of Engineering and Technology (ABET), which is the primary governing body for engineering accreditation in the United States, and Duke University's biomedical engineering program is one of the oldest accredited biomedical engineering programs in the United States.

5. I am currently a Senior Manager in Exponent Engineering's Biomechanics Practice. I am also a registered Professional Engineer in the State of Michigan (License No. 6201068198). Attaining a Professional Engineer (P.E.) license entails, among other things, passing a 6-hour Fundamentals of Engineering examination and an 8-hour Principles and Practices of Engineering examination within the engineering discipline of the examinee's choice. For my P.E. license, I took my Principles and Practices of Engineering examination in mechanical engineering.

6. In my graduate studies and in my work, I have done and continue to do extensive research in the field of biomechanics and physiology. My work is published in peer-reviewed journals and conference proceedings, and I have given invited talks at national and international conferences for my work in biomechanics and human motion numerous times over the last 13 years. My research has included, among other things, extensive study of human locomotion and evaluation of human motion and loading in response to various disturbances. I am intimately familiar with and regularly apply established methodology in my field of biomechanics and physiology.

7. I am a member of the American Society of Biomechanics (ASB) and the Society of Automotive Engineers, International (SAE). I have been a member of SAE since 2015 and a member of ASB since 2010. I am an established and accepted member of the scientific community in the fields of biomechanics, physiology, and accident investigation. My research activities and professional experience have provided me with extensive experience in analyzing the mechanics of human locomotion, the physiological effects and motor control strategies associated with human locomotion, as well as the methodologies and analytical strategies utilized to measure and study the mechanics and neuromotor control of human movement. My education, training, and experience specifically involve quantitative analyses of the

mechanical forces and motions generated by the human body during movement, such as walking and running.

8. I have been employed by Exponent Engineering, P.C. as a biomechanical consultant for nine years, and I have been studying biomechanics, including the mechanics of human movement for more than 15 years. My work experience has also involved evaluating how the human body responds to disruption, perturbations, and load application as well as the mechanical environments associated with causing injury. Throughout my professional experience, I have evaluated hundreds of scenarios involving kinematics and the result of various loading environments potentially resulting in injury. Events I have evaluated include motor vehicle accidents; falls resulting from slips and/or trips; use of industrial equipment like wood grinders, rock crushers, and forklifts; and use of recreational equipment like treadmills and elliptical machines, etc. My education, training, and experience specifically involves quantitative analyses of the effect of mechanical forces and motions on the human body. In my work, I have studied human motion, body loading, and motor control through the analysis and interpretation of data collected from human subject testing.

9. As part of my work measuring and evaluating human movement, I have utilized and continue to employ methodologies and technologies for capturing and evaluating data related to human movement and physiology commonly used in

the fields of biomechanics, neuromechanics, neurophysiology, physiology, kinesiology, and exercise science, etc. These techniques include using technologies such as motion capture cameras, inertial measurement units (IMUs), accelerometers, gyroscopes, magnetometers, force plates, treadmills, high-speed cameras, electromyography (EMG) electrodes, calorimetry equipment, and pressure-sensitive films and insoles, among others. Through my work with these technologies, I have developed considerable expertise in wearable device selection and implementation that results in optimized signals and user experience, and I have deep knowledge related to processing, visualizing, and evaluating data acquired through these types of technologies to assess details of human movement (kinematics), loading (kinetics), motor control, metabolics, etc. My research activities and professional experience have provided me with extensive experience in applying established and novel methodologies and techniques to analyze data generated by these types of technologies to evaluate human motion movement, neuromotor control, and physiology. My dissertation work, in particular, was focused on evaluating the motion and loading of the human body during walking to gain insight into the motor control techniques underlying locomotor adaptation. In my work, I have used a wide array of wearable devices and lab-based technologies to evaluate how humans move while interacting with consumer products, experiencing virtual reality, and while exercising. I have compared the fidelity, reliability, and validity of physiological

data collected from wearable devices while human participants performed various types of exercise activity and movements both in a controlled, lab-based environment and in naturalistic settings.

10. As part of my declaration, I have relied upon my training and experience in the fields of biomechanics, applied physiology, and biomedical engineering; my knowledge of the principles of physics, mechanics, and physiology; my personal research and experimentation; books, publications, and treatises in these general fields; as well as testing performed by myself, Exponent, and others. My opinions and conclusions are supported by established and accepted principles and practices in the fields of engineering and biomechanics.

11. My Curriculum Vitae is attached as Exhibit 1.

III. COMPENSATION AND PRIOR TESTIMONY

12. I have been qualified as an expert and admitted to testify about biomechanics, occupant motion, and human injury mechanics in both state and federal courts. My testimony has included the topics of the biomechanics of traumatic injury, human injury tolerance, human kinematics and dynamics, and analysis of injury mechanics, including the mechanics associated with causing specific types of injuries. Attached as Exhibit 2 is a list of cases in which I have provided testimony in the last four years. To the best of my knowledge, no court has ever excluded or prohibited me from providing trial testimony as an expert witness.

13. Although my employer, Exponent Engineering P.C., is being compensated for my time at a rate of \$350 per hour in 2023 for my work in this matter, the opinions herein are my own and I have no stake in the outcome of this matter. My compensation does not depend in any way on the outcome of the matter or my opinions.

IV. MATERIALS CONSIDERED

14. All my opinions are based on my knowledge and professional judgment, and the following documents that I considered:

- lululemon's Petition for *Inter Partes* Review of U.S. Patent No. 9,278,256;
- Exhibits 1001–1014 and 2001–2012;
- Institution Decision in IPR2023-00189 [Paper No. 11]; and
- All other materials discussed herein.

V. LEGAL STANDARDS

15. I am not an attorney. For the purposes of this Declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law is summarized below.

16. I understand that, in this *inter partes* review, Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence.

17. I understand that a claim may be unpatentable over prior art under either an anticipation theory or an obviousness theory. I understand, that to anticipate a claim, a single prior art reference must disclose each and every element of the claim. I further understand that the reference must not only disclose every element of the claim, but it must disclose those elements as arranged in the claim. I understand that even slight differences between a prior art reference and the claimed invention may make a showing of anticipation insufficient.

18. I understand that a patent claim is rendered obvious if it would have been obvious to a POSITA to combine the teachings of the prior art to yield the patent claim. I also understand that it is not required (although it is acceptable) that each element/limitation of a patent claim be found in a single reference for a claim to be found obvious. Rather, for a patent claim to be found obvious, all the elements/limitations of the patent claim must be found in teachings of one or more references that would have been combined by a POSITA with a reasonable expectation of success. I understand that a proper analysis of whether an invention is unpatentable for obviousness includes a review of the scope and content of the prior art, the differences between the patent claims at issue and the prior art, the level of ordinary skill in the field of the invention at the time of the invention, and other objective considerations.

19. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references. I understand that in consideration of the issue of obviousness it is important to identify whether a reason existed at the time of the invention that would have led a POSITA to combine elements of the references in a way that yielded the claimed invention.

20. I understand that a claim may be considered unpatentable for obviousness for various reasons. I have been informed that the following exemplary rationales may support a finding of obviousness:

- combining prior art elements according to known methods to yield predictable results;
- simply substituting one known element for another to obtain predictable results;
- use of a known technique to improve similar devices in the same way;
- applying a known technique to a known device ready for improvement to yield predictable results;
- choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;
- known work in a field that prompts variations in the work in the same or a different field that leads to predictable results; and

- some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify a prior art reference or combine multiple prior art references or teachings to arrive at the claimed invention.

VI. LEVEL OF ORDINARY SKILL IN THE ART

21. lululemon claims that a POSITA relevant to the '256 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, and/or network-based applications and/or equipment, or the equivalent experience or education. Petition, 23. I agree with lululemon's definition of a POSITA.

22. In view of my experience and qualifications noted above, I am well positioned to opine as to what a POSITA at the time of the invention would have understood and done.

23. My opinions contained herein are from the perspective of a POSITA. My opinions reflect how a POSITA would have interpreted the claims, the prior art, and any available evidence.

24. My opinions are based on generally-accepted methodologies in the scientific and biomechanical communities.

VII. THE '256 PATENT

A. Overview of the '256 Patent

25. U.S. Patent 9,278,256 (the “'256 Patent”) to Nike, Inc., is titled “Interactive Athletic Equipment System.” The '256 Patent teaches “[s]ystems and techniques for the collection and display of athletic information” in which said athletic information “relating to a single person or group of people is collected at a central location” and then “displayed at a desired remote location so that the person or people can review and critique their performance” as well as so that the person “can compare his or her athletic activities to others.” '256 Patent, Abstract. The '256 Patent discloses an athletic information monitoring device 201 that includes an electronic interface device 205 and an athletic parameter measurement device 207. *Id.*, 7:55–67. The user wears athletic parameter measurement device 207 “while he or she is performing an athletic activity” and this device “measures one or more athletic parameters relating to the athletic performance being performed by the user.” *Id.*, 7:67–8:4. Athletic parameter measurement device 207 may include one or more sensors 301 for measuring an athletic parameter, such as an accelerometer or a “heart rate monitor, a blood oxygen monitor, a satellite positioning device, ... an EKG monitor ..., or any other device that measures one or more physical parameters of the user.” *Id.*, 8:11–28, 11:23–34.

26. The athletic parameter measurement device 207 transmits signals to various electronic interfaces, which display information to the user. '256 Patent, 9:64–10:9, 10:25–36, 29:27–34. The '256 Patent discloses a configuration where “athletic equipment may query an athletic performance tracking site to obtain workout information. Once such information is obtained, the information can be displayed on the interface 1700 or on the portable device 203. Furthermore, . . . [c]onstant updates can be provided from the athletic performance tracking site to the athletic equipment and portable device 203.” *Id.*, 31:32–46. The '256 Patent also discloses that in one embodiment, the interface includes a “message portion 1730 [that] may display messages for the user or athlete... If the user or athlete is participating in a challenge, competition or the like, the message portion 1730 may provide an indication as to the user or athlete’s progress or comparison to the challenge or competition leader.” *Id.*, 33:29–40.

27. Figure 13A shows an exemplary user interface which allows a user to define and issue a challenge to other users. '256 Patent, 4:5–7. As shown below, a user may challenge one or more other athletes to a distance race 1303, most miles race 1305, fastest run 1307, or a distance goal 1309. *Id.*, 21:65–22:1.

1301

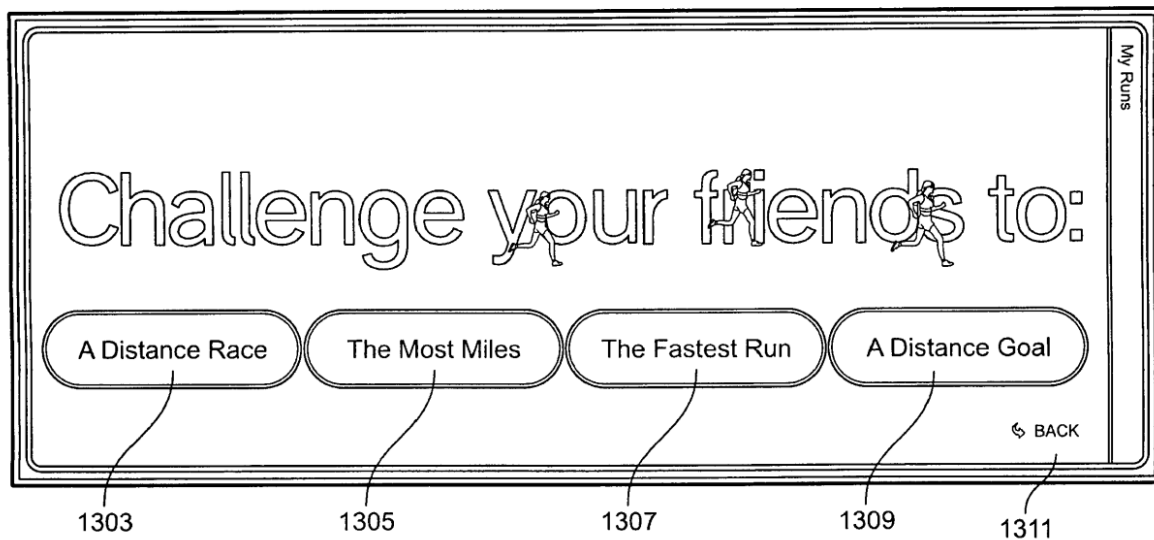
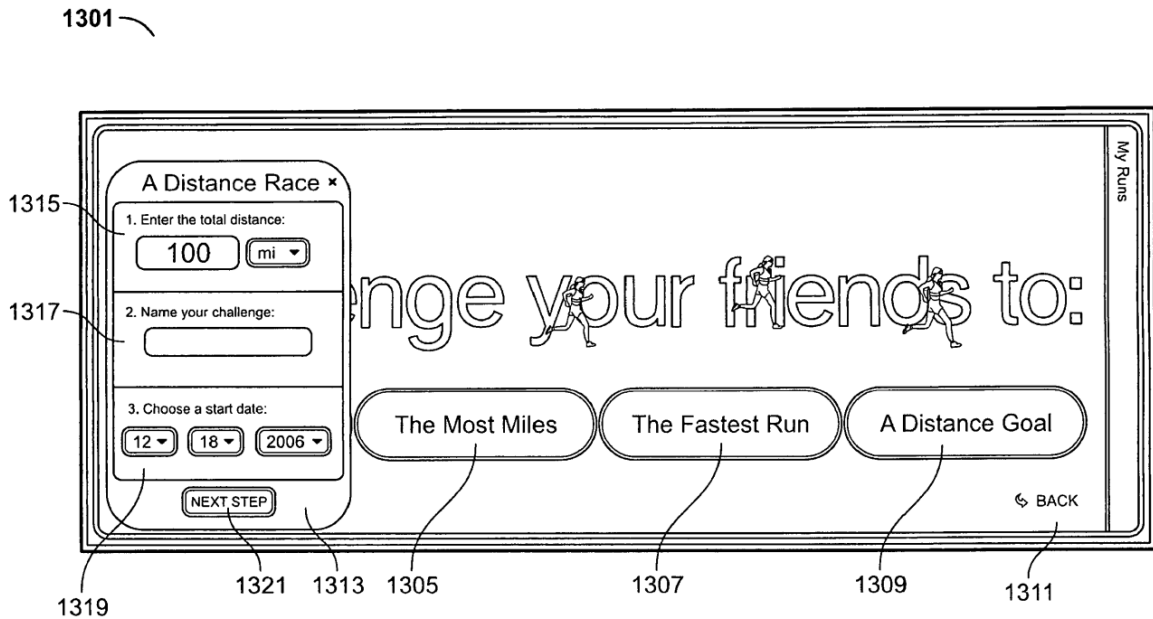
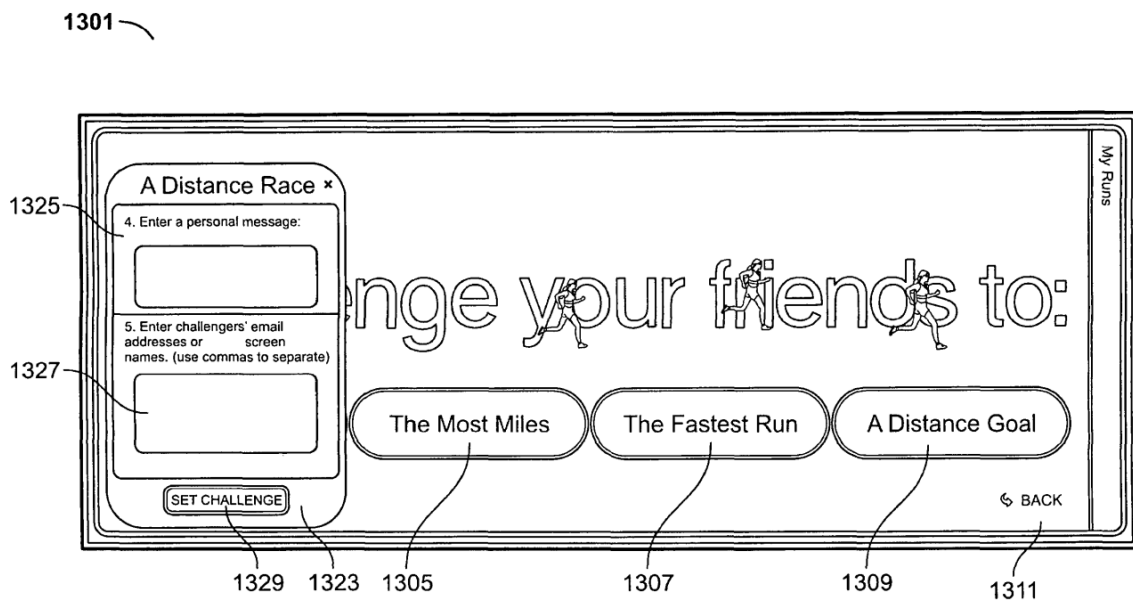


FIG. 13A

28. If the user activates, for example, the Distance Race button 1303, the system generates the sub-interface shown in Figure 13B, prompting the user to input a total distance for the race 1315 and a start date 1319.



29. The user then progresses to a sub-interface, as shown in Figure 13C below, in which the user enters an email address or screen name of the athlete that the user wishes to invite to participate in the challenge 1327.



30. If the invitee(s) agrees to join the challenge, the athletic data display configuration device 601 “monitors the collected athletic data for each of the participants, and aggregates the relevant data values.” ’256 Patent, 23:4–7. The configuration device 601 “may additionally provide updates regarding the status of a participant relative to other participants.” *Id.*, 23:26–38. For example, the configuration device 601 “may configure and provide a user interface showing each participant’s progress toward the goal of the challenge using, e.g., bar graphs for each participant.” *Id.*, 23:33–37.

31. Digital music player 203 or other storage device may communicate bi-directionally with “an athletic performance monitoring or tracking site,” which is “configured to track various types of athletic performance data such as ... challenges.” ’256 Patent, 30:64–31:44. “Constant updates can be provided from the athletic performance tracking site to the ... portable device 203.” *Id.*, 31:44–46. Digital music player 203 or other storage device may also “communicate directly with [a] user interface 1700 via wired or wireless connection.” *Id.*, 30:14–16. User interface 1700 “may be a console that displays the user or athlete’s athletic performance substantially in real-time.” *Id.*, 30:39–41, 30:48–50.

32. The ’256 Patent specification discusses other exemplary user interfaces, as shown in Figures 36 and 37 below, displaying challenges in which the user is participating. *Id.*, 4:59–61. User interface 2400 displays the relative progress

of two or more users or athletes participating in the challenge. '256 Patent, 37:11–

20.

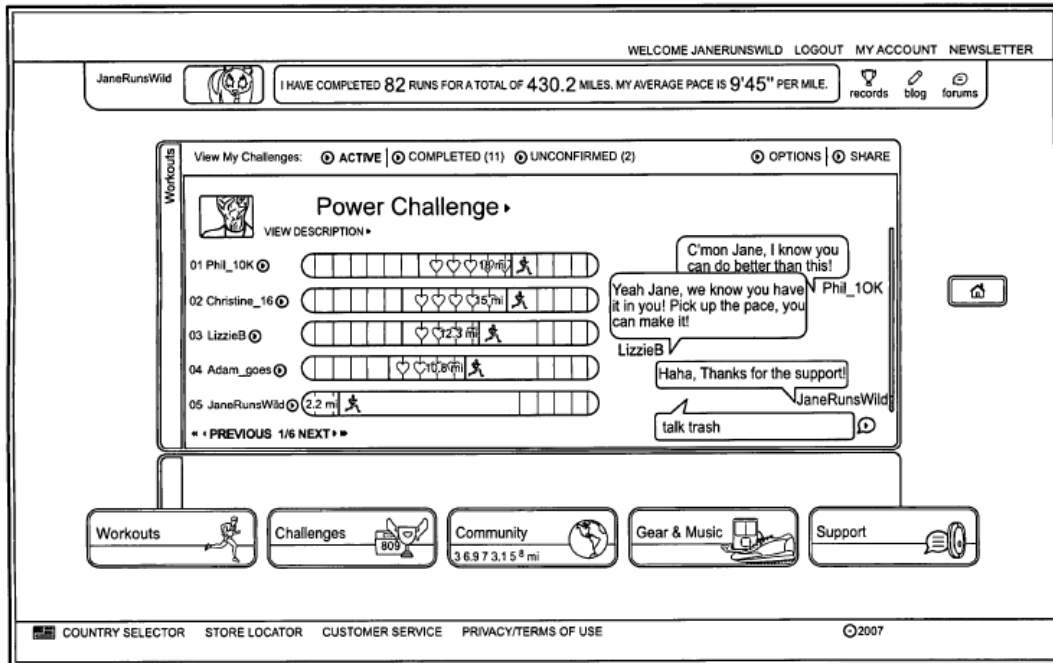


FIG. 36

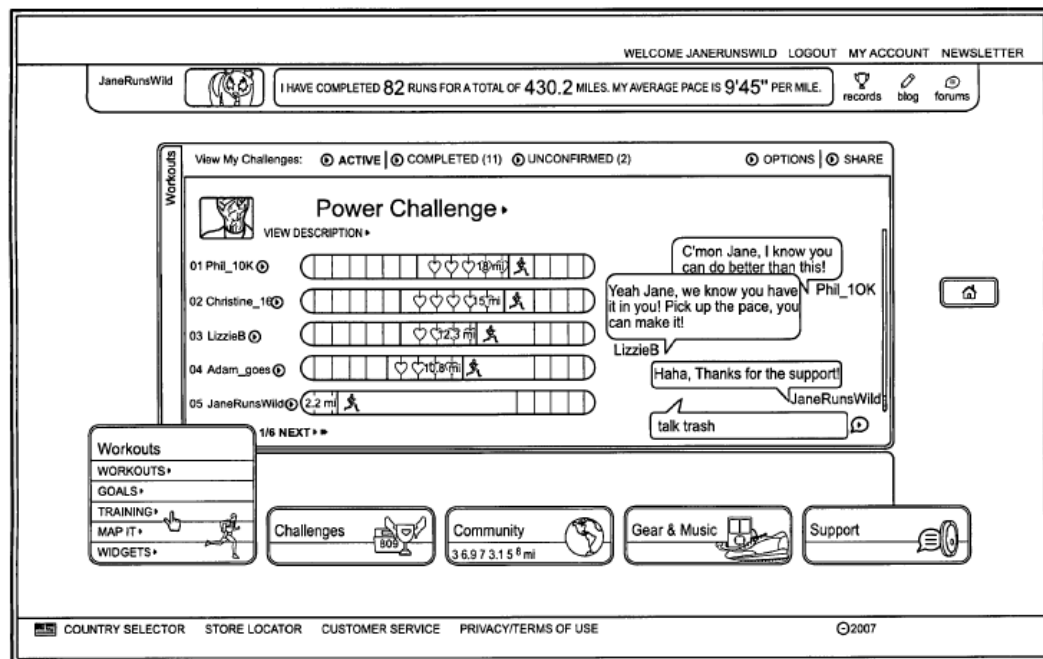


FIG. 37

33. Importantly, the system disclosed in the '256 Patent specification “continuously generate[s] and simultaneously communicate[s] in real-time to the first user at the first location and the second user at the second location, an interface indicating whether the challenge has been met.” ’256 Patent, 40:64–67.

VIII. Claim Construction

34. I understand that, in its Institution Decision, the Board ordered the parties to submit proposed constructions for the limitations 1[G]/11[E], i.e., “continuously generat[e] and simultaneously communicat[e] in real-time to the first user at the first location and the second user at the second location, an interface indicating whether the challenge has been met.” Institution Decision, 40. I further understand that the Board requested that if “a party proposes that this limitation should have its ordinary and customary meaning, the party shall submit and explicitly identify such meaning.” *Id.*, 41.

35. In my opinion, all terms and phrases in the '256 Patent, including limitations 1[G]/11[E], should be given their ordinary and customary meaning. With respect to limitations 1[G]/11[E], it is my opinion that the ordinary and customary meaning of “continuously generat[e] and simultaneously communicat[e] in real-time to the first user at the first location and the second user at the second location, an interface indicating whether the challenge has been met” is “generating and

communicating to the first user at the first location and the second user at the second location, at the same time and without interruption or perceived delay, an interface indicating whether the challenge has been met.” Consistent with that meaning, I provide the following answers to the four questions posed by the Board. *See id.*, 40–41.

A. What specifically is generated and communicated in real-time?

36. It is my opinion that limitations 1[G]/11[E] require that an interface indicating whether the challenge has been met be generated and communicated in real-time. This is consistent with and supported by the intrinsic record of the ’256 Patent, which discloses that:

For yet other implementations of the invention, the performance data collected from one or more users or athletes may be collected by an athletic device or machine and/or displayed on an athletic device or machine console so that the user or athlete may have a substantially real-time display of their performance against personal goals, benchmarks, or milestones. The user or athlete may also have a display of their performance in a competition or challenge.

’256 Patent, 3:30–37.

37. As I also describe above in Section VII.A, the ’256 Patent describes that the portable device 203 may bi-directionally communicate with an athletic performance tracking site to exchange or receive challenge data:

In one arrangement, data may be sent to and received from an athletic performance monitoring or tracking site. For example, a user may transfer data recorded in a digital music player 203, as discussed above, to the athletic performance tracking site for storage. The digital music player 203 may have a connection to a network hosting the athletic performance tracking site. Alternatively, access to the athletic performance tracking site may be facilitated by a piece of athletic equipment such as an elliptical device, treadmill and the like that is connected to a network. ***The athletic performance tracking site may be configured to track various types of athletic performance data such as best times, most recent workout information, goals, resolutions, challenges and/or combinations thereof.*** Data stored in the digital music player 203 may be used to update athletic performance tracking site and vice versa. In one or more arrangements, other devices may also be used to store athletic performance data and/or to communicate with athletic performance tracking site and a piece of athletic equipment. For example, such devices may include mobile phones, personal digital assistants (PDAs), watches, USB type devices having athletic functionality, activity monitoring devices as well as other athletic oriented devices.

The information stored on the digital music player 203 or other portable device may be displayed on interface 1700. For example, information corresponding to a most recent workout may be displayed on interface 1700 to provide a user with a basis of comparison with a current workout. In another example, a best workout time for a particular piece of athletic equipment may be displayed on the athletic equipment to

challenge a user to beat that time. A piece of athletic equipment may be configured to automatically select or extract information relating to that type of athletic equipment while ignoring or discarding other information. Alternatively, the portable device might only transmit information relating to a type of athletic equipment the user is using. In one or more configurations, athletic equipment may query an athletic performance tracking site to obtain workout information. Once such information is obtained, the information can be displayed on the interface 1700 or on the portable device 203. Furthermore, the portable device 203 and/or athletic equipment can be configured to transmit information to the athletic performance tracking site. For example, workout data may be immediately transferred from the athletic equipment to the athletic performance tracking site upon completion of a workout. ***Thus, bi-directional communication is provided between the portable device 203/athletic equipment and the athletic performance tracking site. Constant updates can be provided from the athletic performance tracking site to the athletic equipment and portable device 203.*** Communication between the athletic equipment and athletic performance tracking site may be via wired or wireless connections.

Id., 30:64–31:46 (emphases added). The portable device 203 or other storage device then communicates directly with a user interface in real-time, the user interface further described:

In an embodiment, and as described above with reference to FIGS. 1-16, the user or athlete may provide a digital music player 203 or other

storage device that may, among other features, monitor and store current athletic performance data. The digital music player 203 or other storage device may further store and provide historical athletic performance data. ***The digital music player 203 or other storage device may communicate directly with the user interface 1700 via wired or wireless connection.*** For example, the athletic performance device or machine including user interface 1700 may further include an interface 1740 that may be a wireless transceiver or wired connector to bi-directionally interface with the digital music player 203 or other storage device.

More specifically, a particular athletic performance device or machine may measure or sense performance data for a user or athlete interacting with the athletic performance device. For example, a stair stepping machine may communicate weight, climbing rate (e.g., vertical feet per minute), calories burned, heart rate, and the like to the digital music player 203 or other storage device coupled thereto as described above. Further, the digital music player 203 or other storage device may communicate historical athletic performance data or other stored athletic performance data to the athletic performance device or machine. In an embodiment, the current athletic performance data, the historical or stored athletic performance data (e.g., as stored by digital music player 203 or other storage device), or a combination thereof may be displayed by user interface 1700. In an embodiment, the user interface 1700 may be a console or the like coupled to the athletic performance device or machine that is viewable by and accessible to the user or athlete interacting with the athletic performance device or

machine. *More specifically, the user interface 1700 may be a console that displays the user or athlete's athletic performance substantially in real-time.* Further, the user interface 1700 console may display a comparison of substantially real-time athletic performance data to historical or otherwise stored athletic performance data.

Id., 30:8–44 (emphases added).

38. In my opinion, Figures 36–37 further support this position. '256 Patent, Figs. 36–37. For example, in Figures 36 and 37, a “user interface 2400 may display the progress of one or more users or athletes participating in the competition, challenge, race, or other event.” *Id.*, 37:11–13.

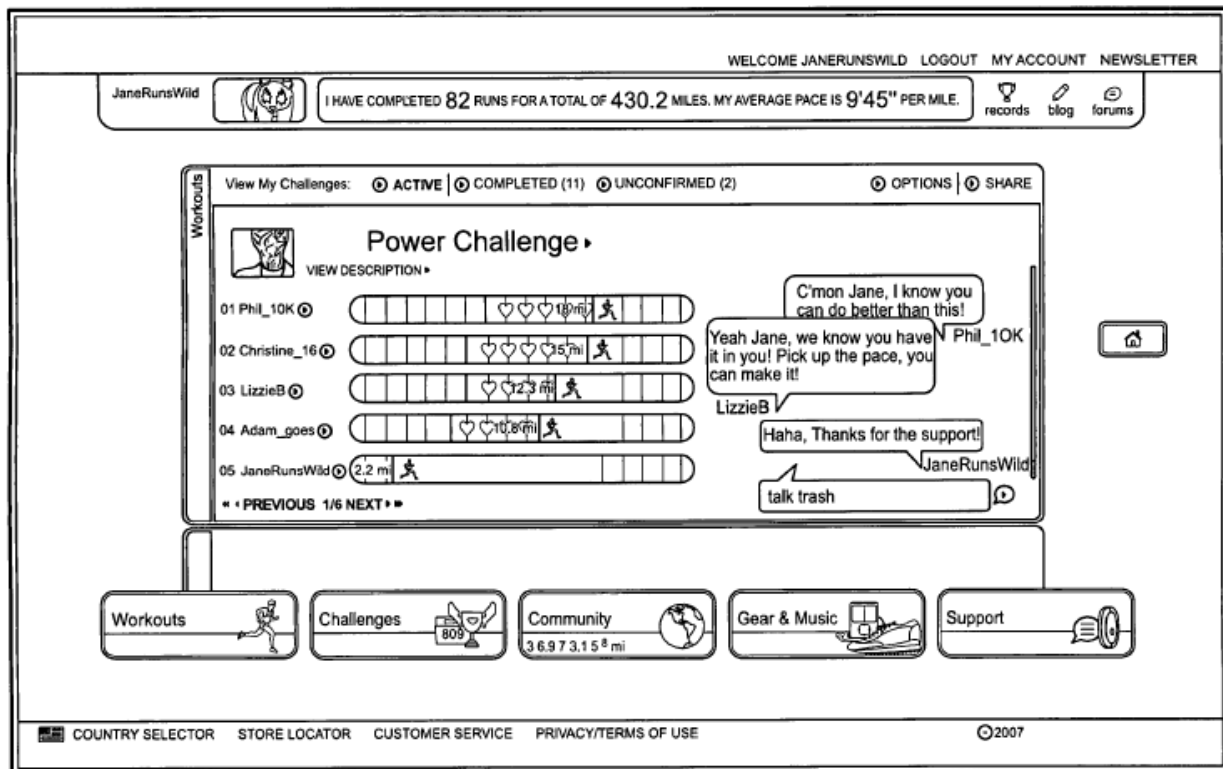


FIG. 36

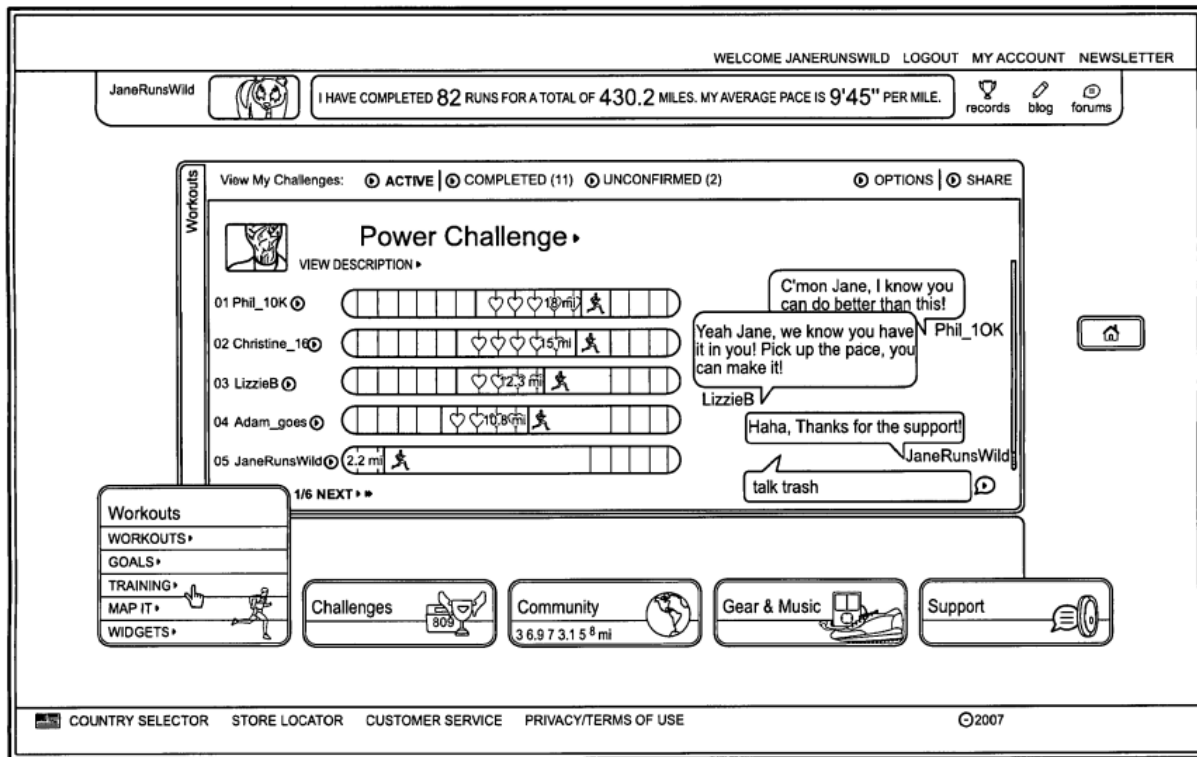


FIG. 37

39. Thus, it is my opinion that a POSITA at the relevant time would have understood an interface indicating whether the challenge has been met to be generated and communicated in real-time.

B. Does “indicating whether the challenge has been met” require anything more than a mere yes/no-type indication (e.g., whether the system also must indicate a real-time *comparative* progress, ranking, or positioning amongst users)?

40. In my opinion, this limitation does not require more than a mere yes/no-type indication. Although the claims do require the interface to be continuously generated and simultaneously communicated, this only requires an indication of whether the challenge has been met, which may be, for example, a binary indication.

In the context of the claims, this means that the interface could continuously generate and communicate a “no” for a user’s performance until the moment that the user completes the challenge at which time the interface displays a “yes.” Of course, the “yes/no” output is merely exemplary, and the interface could continuously generate and communicate other binary outputs, such as “no winner” until the moment that a winner is identified, at which time the interface would display the winner identification. The ’256 Patent states:

As also previously discussed, the athletic data display configuration device 601 will monitor the collected athletic data for each participant, and aggregate the relevant data values from the collected athletic data *to determine who wins the challenge*. Still further, *the athletic data display configuration device 601 can notify the participants of the winner of the challenge, and, with various examples of the invention, of the status of each participant during the challenge as described above*.

Id., 24:5–13 (emphasis added).

41. In my opinion, this limitation is also broad enough to include an indication of “real-time comparative progress.” For example, Figure 36 of the ’256 Patent illustrates an example of a challenge display interface indicating a real-time comparative progress. ’256 Patent, Fig. 36. The ’256 Patent specification provides other similar examples in which the system presents a real-time comparative progress:

FIG. 35 illustrates that a user or athlete may select one or more challenges in which to participate. In an embodiment, the challenges are sorted by total distance (i.e., including actual run distance and equivalent cardiovascular distance). ***FIGS. 36 and 37 illustrate that the user interface 2400 may display the progress of one or more users or athletes participating in the competition, challenge, race, or other event.*** The progress of each user or athlete may be illustrated as a combination of actual run distance and equivalent cardio miles. For example, the progress of each user or athlete may be illustrated by a bar chart for which the actual run distance and equivalent cardiovascular distance have different colors, color schemes, patterns, or the like to distinguish which portion of the total distance covered represents each. Alternatively, the competition, challenge, race, or other event may include individual requirements for actual run distance and equivalent cardiovascular distance for which a user or athlete's progress in each may be displayed separately. Further, the user or athlete's run performance may be compared to their other athletic performance, for example as measured by equivalent cardiovascular distance.

'256 Patent, 37:7–27.

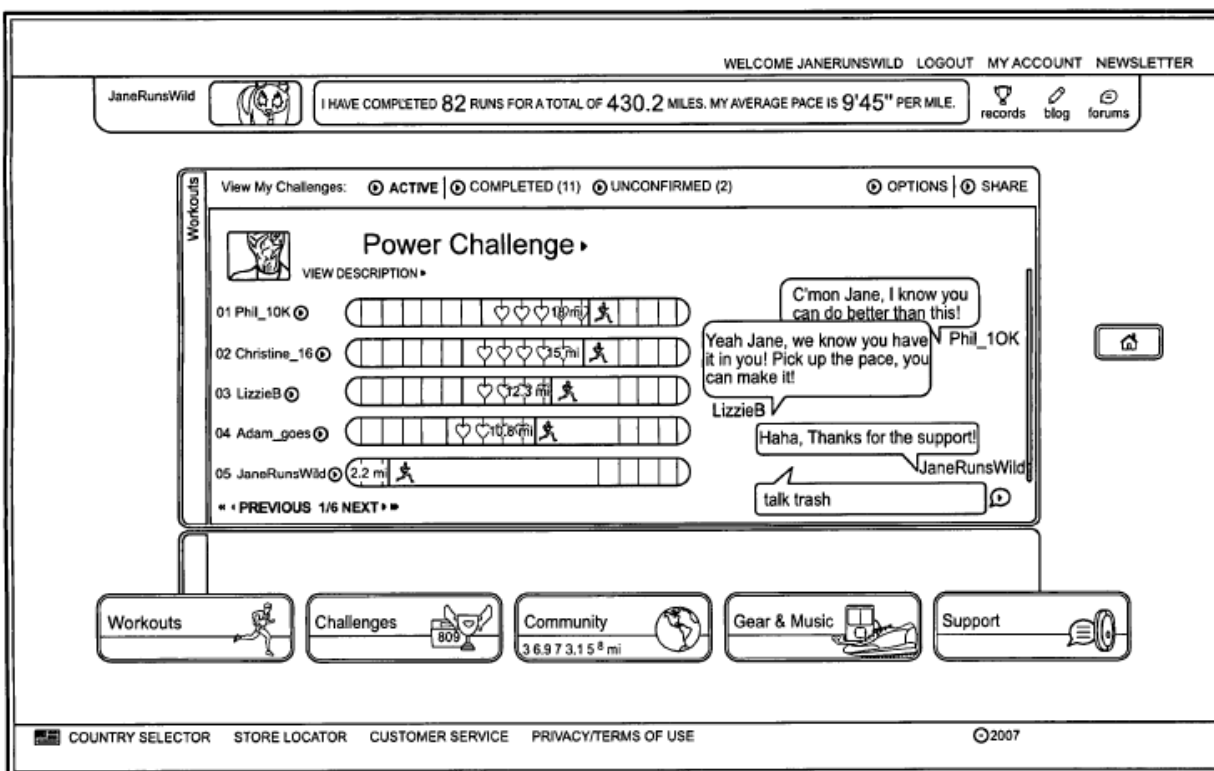


FIG. 36

42. The '256 Patent further discloses that user interface 1700 includes a “message portion 1730,” which can communicate progress related to a user’s performance compared to that of the competition leader. *See* '256 Patent, 33:37–40 (“If the user or athlete is participating in a challenge, competition, or the like, the message portion 1730 may provide an indication as to the user or athlete’s progress or comparison to the challenge or competition leader.”). Further the '256 Patent states:

In a group or challenge setting, multiple avatars may be displayed in an interface to illustrate the progress of each user in the group or challenge.

For example, if two users are competing for a 10-miles run goal, a user interface may display both avatars in relative position to one another based on how far each user has actually run. This may help motivate users to close the gap if they are behind and to further increase a lead if they are leading in the challenge. In another example, if two users are teammates trying to achieve a common goal, a first user may send a reward or words of encouragement to a second user if the first user sees, via the avatars, that the second user is falling behind in training. Users may view performance information by hovering over or otherwise interacting with an avatar. Users may also share or otherwise publish their avatar to other users or the general public to show their athletic progress.

'256 Patent, 39:48–63. This relative progress of challenge participants is continued until the challenge has been completed.

C. If a party contends that the scope of this limitation and claim as a whole includes first and second users performing athletic tasks *at different times*, what does “in real-time” in this limitation mean in that context?

43. It is my opinion that, while the claims do cover users participating in athletic tasks within a challenge at different times, the claims do not cover users participating in separate challenges, i.e., challenges occurring at different times. For example, in the situation where a first user completed a challenge that initiated last week, and second user completes a challenge that initiated today, the interface would

not be simultaneously communicated to first and second users within the context of a challenge, as required by the Challenged Claims. In this scenario, the challenges started at different times, and would therefore be considered separate, independent challenges.

44. This is consistent with the '256 Patent. The “challenge” feature of the '256 Patent involves a first user issuing a challenge to one or more other users. “[F]or example, a user may issue a challenge to one or more other athletes by requesting the user interface 1301 shown in FIG. 13A.” '256 Patent, 21:59–65, Fig. 13A. Depending on what the user selects, one of four sub-interfaces will be generated next. For example, if the user selects “A Distance Race,” the sub-interface of Figure 13B is displayed, prompting the user to input a total distance to be run and a start date. *Id.*, Fig. 13B.

45. The '256 Patent then describes that the user issuing the challenge sends an invite to one or more other users via email. '256 Patent, 22:54–62 (“The email will contain [a] personal message and, e.g., an interactive prompt to join the challenge.”). After the system identifies the challenge participants, it will “monitor[] the collected athletic data for each of the participants, and aggregate[] the relevant data values in the collected athletic data. For example, if the challenge is a race to determine who can be the first to run 100 miles, for each participant, the athletic data display configuration device 601 will sum the total distance value in each athletic

data set collected for that participant after the start date.” *Id.*, 23:4–12. This passage conveys that the system monitors user performance data after the challenge has begun for each user.

46. In my opinion, the scope of the claims do cover users performing athletic tasks within the same challenge at different times. This is consistent with and supported by the plain language of the claims and by the intrinsic record of the ’256 Patent. The specification of the ’256 Patent discloses various embodiments in which first and second users begin the challenge at the same time, but then could perform athletic tasks at different times during the challenge. See ’256 Patent, 23:39–25:26. For example, in the embodiment cited in the paragraph above, in which the first and second users compete to be the first to run 100 miles, it is likely that each user will take breaks in between runs and/or otherwise run at different times from one another.

47. Irrespective of whether the users are performing athletic tasks comprising the challenge at the same or different times, in my opinion, generation of an interface indicating whether the challenge has been met “in real-time” does not change. In my opinion, a POSITA at the relevant time would have understood generating the interface in real-time to mean that current updates regarding user performance, i.e., updates contemporaneous with a user’s performance in the challenge, are provided to the interface.

48. This principle can be analogized to the television broadcasting of a live sporting event. Regardless of whether a viewer is actively watching TV, has left the room, or has turned the TV off, the sporting event is being broadcasted, or communicated, in live fashion, to the TV. The viewer could turn the TV on at any point to view the live game. Similarly, in these claims, even when first or second users are not actively participating in a task within the challenge, the interface is still being generated and communicated whether they are accessing it at that moment or not.

D. What it means to “continuously generate” and to “simultaneously communicate” “an interface” to first and second users, particularly where such users are performing athletic tasks *at different times*?

49. Similar to how I discuss the meaning of “in real-time” above in Section VIII.C, the meaning of “continuously generate” and “simultaneously communicate” “an interface” remains the same regardless of whether the users are completing athletic tasks in the challenge at the same or different times. Under the ordinary and customary meaning of these limitations, it is my opinion that a POSITA would have understood continuous generation of the interface to first and second users to mean that the interface is generated without perceived interruption. This is further supported by the Oxford English Dictionary, which defines “continuous” as being “[u]ninterrupted in time, sequence, or essence; going on without interruption; connected, unbroken.” Ex. 2007, 1–2. This is further consistent with and supported

by the intrinsic record of the '256 Patent. For example, the '256 Patent explains that the portable device 203 receives “[c]onstant updates” from the athletic performance tracking site, which is responsible for tracking challenge data. '256 Patent, 30:64–31:48. Thus, the portable device 203 or other device, which communicates directly with a user interface to display “athletic performance substantially in real-time,” displays challenge data from all participants based on receipt of these “constant updates.” *Id.*, 30:8–31:48.

50. It is my opinion that, under the ordinary and customary meaning of this limitation, a POSITA would have understood simultaneous communication of the interface to first and second users to mean that that the interface is communicated to each user at essentially the same time. This is also consistent with and supported by the intrinsic record. *See* '256 Patent, 37:11–13, 39:48–53, Figs. 36–37. A POSITA would have further understood that “simultaneous communication” to the first and second users requires that the interface be communicated to the first user and the second user at the same time, even if the users are not performing athletic tasks at the same time, as long as both users are participating in the same challenge.

51. It is my opinion that a POSITA at the relevant time would have understood these limitations, when taken together, to involve data generation and display without interruption or perceived delay, to multiple users at the same time, during a challenge.

IX. OVERVIEW OF THE PRIOR ART REFERENCES

A. Tagliabue

52. U.S. Patent 8,162,804 to Tagliabue (i.e., “Tagliabue”), filed February 14, 2008, is entitled “Collection and Display of Athletic Information.” Ex. 1004, Cover. I understand that Tagliabue is also assigned to Nike, and that Tagliabue was known to the Examiner during prosecution. For example, the Tagliabue application (U.S. Patent App. No. 12/031,380) is referenced multiple times in the ’256 Patent and incorporated therein. ’256 Patent, 33:25–28, 36:58–62.

53. Tagliabue shares common disclosures with the ’256 Patent. To that point, Tagliabue similarly discloses an athletic information monitoring device 201 Ex. 1004, 7:17–20, Figure 1. The device includes an electronic interface device 205, a digital music player 203, and an athletic parameter measurement device 207. *Id.*, 7:20–24. Tagliabue teaches that athletic parameter measurement device 207 “is worn or otherwise carried by the user while he or she is performing an athletic activity, and measures one or more athletic parameters relating to the athletic performance being performed by the user.” *Id.*, 7:28–32. Athletic parameter measurement device 207 “transmits signals [that correspond to the measured athletic parameter] to the electronic interface device 205,” which “provides the received information to the digital music player 203.” *Id.*, 7:47–52, 7:32–38.

54. Tagliabue further similarly teaches that “[v]arious examples of the invention may allow a user to ‘challenge’ one or more other users ... to a competition regarding athletic activities” such as challenges described as “[d]istance race,” “[m]ost miles,” “[f]astest run,” “[d]istance goal.” Ex. 1004, 21:19–36. Tagliabue teaches that “[a]fter the athletic data display configuration device 601 has identified the participants in a challenge, it monitors the collected athletic data for each of the participants, and aggregates the relevant data values in the collected athletic data.” *Id.*, 22:31–34. For the example of a distance challenge, Tagliabue teaches that challenge winners are notified “[w]hen a participant has a sum of his or her total distance values that matches or exceeds the specified challenge distance (and is the first invitee to do so), then the athletic data display configuration device 601 will identify that participant as the winner of the challenge.” *Id.*, 22:31–45. Tagliabue discloses that challenge updates are provided “by sending an electronic mail message” or “by displaying a special-purpose interface when each participant connects to the athletic data display configuration device 601.” *Id.*, 22:53–65.

55. My review of Tagliabue, however, confirms that Tagliabue and the ’256 Patent differ in several respects. More specifically, Tagliabue lacks several of the disclosures that appear in the ’256 Patent. Importantly, Taligabue lacks any support for the limitation “continuously generate and simultaneously communicate in real-time to the first user at the first location and the second user at the second

location, an interface indicating whether the challenge has been met,” as recited in claims 1 and 11. A redline comparing the figures and detailed description of the ’256 Patent against Tagliabue shows the differences between these two documents, and highlights the disclosures in the ’256 Patent that are not present in Tagliabue. *See* Ex. 2008. I discuss the particular differences in disclosure between Tagliabue and the ’256 Patent in greater detail in Section X.A below.

B. Arrasvuori

56. U.S. Patent Application 2007/0239479 to Arrasvuori (i.e., “Arrasvuori”), filed March 29, 2006, is entitled “System and Method for Gaming.” Ex. 1005, Cover. Arrasvuori discloses a system “wherein one or more users are, in the context of a video game, presented with one or more real-world fitness tasks to be performed.” *Id.*, Abstract. As shown in Figure 4, Arrasvuori teaches a computer 4000 that receives a signal from monitoring equipment that “might ... be integrated into/or in communication with wireless nodes and/or other computers of users,

and/or be attached to bodies of users.” *Id.*, ¶¶39, 91. For example, monitoring equipment might include GPS, altimeter, heart rate meter or pedometer. *Id.*, ¶40.

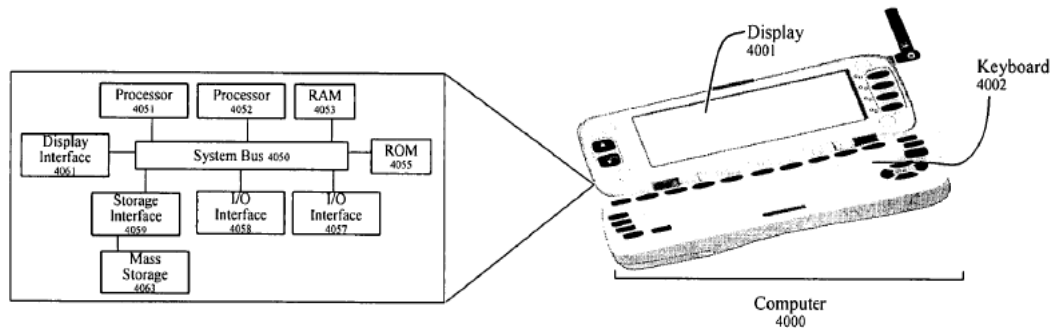


Fig. 4

57. Arrasvuori teaches use of this system to “depict progress of a user performing a real-world fitness task relative to other users performing the real-world fitness task” that correspond to stages of a computer game requiring that a player reach a landmark, climb a mountain, cross a river, or defeat an enemy to progress to the next stage of the game. Ex. 1005, Abstract, ¶¶26–30, 48. Feedback regarding progress may be presented by way of “leaderboards available for direct viewing by users.” Ex. 1005, ¶ 50. Arrasvuori also states that “real-time feedback might be provided.” Ex. 1005, ¶49.

58. The system might also perform compensatory operations such as taking “into account user fitness levels and/or environments in which real-world fitness tasks are performed.” Ex. 1005, Abstract.

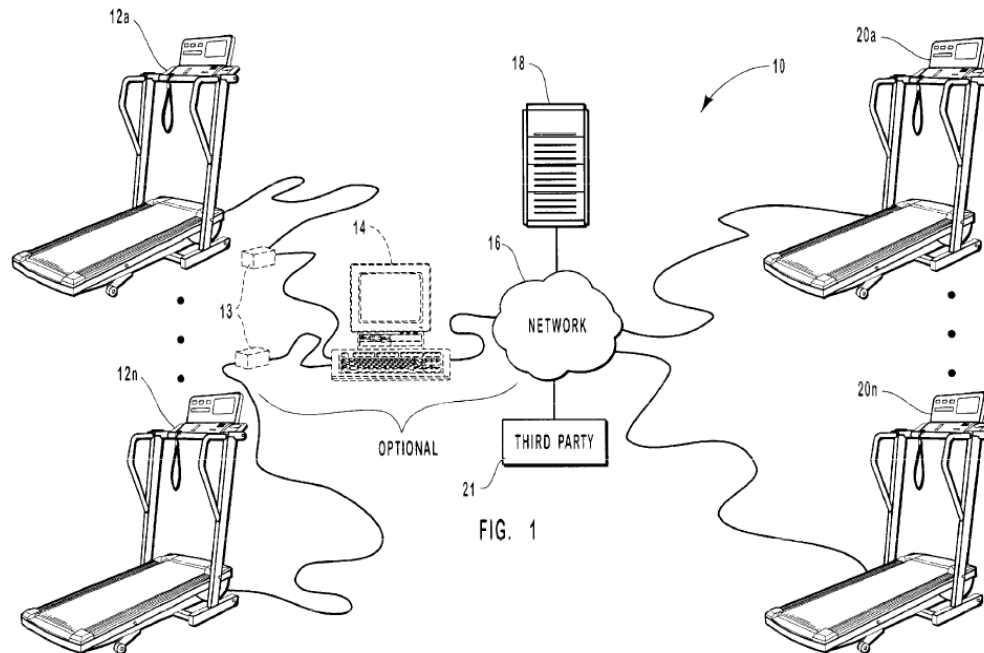
59. A user can participate in a video game by “indicat[ing] a desire to do so via her wireless node and/or other computer.” Ex. 1005, ¶17. The wireless node and/or other computer allows the user to create or join teams. *Id.*, ¶19. A user then selects one or more games to play, although game selection may change the user’s membership in a particular team. *Id.*, ¶¶20, 21. With regard to embodiments involving team play, Arrasvuori describes that “real-world tasks might include tasks to be performed by only one user, tasks to be performed by more than one user (e.g., tasks to be performed by all members of a team, a specified number of users of a team, and/or specified users of a team), and or tasks performable by either one user or by multiple users.” *Id.*, ¶¶31–32.

60. Arrasvuori describes that a user may compete with or against other users who are playing “at the same time and/or at different times.” *Id.*, ¶¶34, 65–66. In these embodiments, users may be tasked with achieving a specific metric, and the users might be informed via their wireless node and/or other computer that the real-world task has been completed when all users have achieved the metric. *Id.*, ¶35. Arrasvuori discloses making “one or more determinations regarding the physiological state of a user performing a real-world fitness task,” such as “whether a fitness task was performed in an acceptable manner” or a determination of “an environment in which a user performs [the] real-world fitness task.” *Id.*, ¶¶41–47. Users may receive feedback of these determinations in the form of scores, graphical

representations, or leaderboards that “show the performance of users with respect to other users, and/or the performance of teams with respect to other teams.” *Id.*, ¶¶48–50, 53.

C. Watterson

61. U.S. Patent 6,458,060 to Watterson (i.e., “Watterson”), filed August 18, 2000, is entitled “Systems and Methods for Interaction with Exercise Device.” Ex. 1006, Cover. Watterson discloses “[a]n exercise device configured to enable a user to interact with a trainer in real-time communication.” *Id.*, Abstract. As shown in Figure 3, system 10 consists of “one or more exercise mechanisms” such as treadmill 12a–12n, that “is in communication with one or more trainers at treadmill 20a–20n via a translator device 13 and a personal computer 14.” *Id.*, 5:16–23. Watterson teaches that “system 10 enables exercise programming with control signals to be transmitted from a trainer at treadmill 20, or alternatively from communication system 18, to a user at treadmill 12.” *Id.*, 7:5–8. In addition to exercise parameters from treadmill 12, communication system 18 may transmit signals related to user performance including “heart rate, blood pressure, and the like.” *Id.*, 18:62–19:4.



62. Watterson teaches that the disclosed device allows for “competitive exercise programming” that “motivates the users to exercise on a more regular basis while also setting goals for the individual to reach. Competition module 314, therefore, provides various benefits to those seeking to exercise on a regular basis.” Ex. 1006, 40:23–27. Watterson also discloses the ability for a trainer to tailor the exercise program available to different users based on “various criteria, such as participant’s heart rates” by changing the operating parameters of the exercise devices. *Id.*, 48:66–49:11.

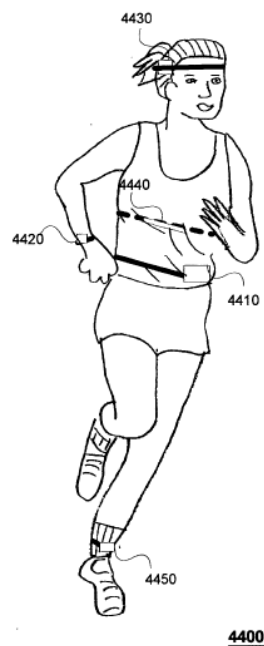
D. Ellis

63. International patent publication WO 02/067449 to Ellis (i.e., “Ellis”), published August 29, 2002, is entitled “Modular personal network systems and methods.” Ex. 1007, Cover. Ellis discloses a system which may include “multiple

individual network components (INCs), each with one or more primary functions, to be used in a wireless personal network, and that INCs may be added and removed modularly to add or remove functions of the [modular personal network] MPN.” Ex. 1007, 4:17–20; *see also id.*, 1:8–11, 1:23–26. The INCs may be worn, carried, mounted on personal equipment, or otherwise used in proximity to the person associated with the MPN. *Id.*, 4:21–23.

64. Figure 44 (reproduced below) of Ellis shows INCs worn on a waistband (4410), wristband (4420), headband (4430), chest strap (4440), and ankle band (4450). *Id.*, 64:11–19. Ellis discloses that INC 4420 worn on a wristband and INC 4450 worn on an ankle band may include an accelerometer, which is used to perform functions such as measuring cadence and providing form feedback. *Id.*

FIG 44



X. GROUND 1 – LULULEMON HAS NOT SHOWN THAT TAGLIABUE ANTICIPATES CLAIMS 1–20

65. As I discuss below, it is my opinion that lululemon fails to show that Tagliabue anticipates any Challenged Claim of the '256 Patent.

A. Tagliabue does not disclose continuous generation and simultaneous communication in real-time of an interface to the first and second users, as required by limitations 1[G]/11[E]

66. In my opinion, Tagliabue does not disclose “continuously generate and simultaneously communicate in real-time to the first user at the first location and the second user at the second location, an interface indicating whether the challenge has been met,” as recited by claims 1 and 11. '256 Patent, 40:64–67, 42:5–8.

67. lululemon’s entire analysis for this limitation consists of four sentences:

Tagliabue discloses notifying users whether a challenge has been met via a “special-purpose interface” (Ex. 1004, 22:45–50.) During the challenge, “the athletic data display configuration device 601 may additionally provide updates regarding the status of a participant relative to other participants.” (*Id.*, 22:54–56.) It “may configure and provide a user interface showing each participant’s progress toward the goal of the challenge using, e.g., bar graphs for each participant of the type previously described with regard to monitoring individual goals.” (*Id.*, 22:61–65.) As explained above, the competing users can be located remotely from each other. (*Supra* § VI.A.4.)

Petition, 33.

68. lululemon’s argument makes no mention of “continuous generation” of an interface, or “real-time” communication of an interface. As I describe above, the ‘256 Patent specifically discloses continuous generation and real-time communication of an interface indicating whether or not a challenge has been met in the portions of the ‘256 Patent that are not present in Tagliabue (see Ex. 1009). The portions of Tagliabue cited by lululemon (and surrounding portions), by contrast, describe intermittent communication of challenge completion:

After the athletic data display configuration device 601 has identified the participants in a challenge, it monitors the collected athletic data for each of the participants, and aggregates the relevant data values in the collected athletic data... When a participant has a sum of his or her total distance values that matches or exceeds the specified challenge distance (and is the first invitee to do so), then the athletic data display configuration device 601 will notify each participant of the winner. The athletic data display configuration device 601 may notify the participants using any desired technique, such as by sending an electronic mail message, by displaying a special-purpose interface *when each participant connects to the athletic data display configuration device 601*, etc.

Ex. 1004, 22:31–50 (emphasis added).

With various examples of the invention, the athletic data display configuration device 601 may additionally provide updates regarding the status of a participant relative to the other participants. These updates also can be provided using any desired technique, such as by

sending an electronic mail message, by displaying a special-purpose interface *when each participant connects to the athletic data display configuration device 601*, etc.

Id., 22:53–60 (emphasis added). In my opinion, these and other disclosures from Tagliabue do not support continuous generation and real-time communication of the interface at issue.

69. As I briefly discuss above in Section IX.A, Tagliabue lacks disclosure that is unique to the '256 Patent specification and that provides the only written support for limitations 1[G]/11[E] (“continuously generate and simultaneously communicate in real-time to the first user at the first location and the second user at the second location, an interface indicating whether the challenge has been met”). Specifically, as shown in a redline between the '256 Patent specification and Tagliabue (Ex. 2008), the '256 Patent expands on Tagliabue’s disclosure by adding (1) column 3, lines 30–37, and (2) column 29, line 26 until column 40, line 29 and associated figures (Figures 17–42). *Compare* Ex. 1004 *with* '256 Patent; Ex. 2008. As a result, in my opinion, Tagliabue lacks any description of “real-time” display of performance. *Compare* Ex. 1004 *with* '256 Patent, 3:30–37, 30:39–44. Tagliabue also lacks any teachings related to “constantly” or “continuously” generating or updating a user interface. *Compare* Ex. 1004 *with* '256 Patent, 31:41–46. Tagliabue further lacks the disclosure in the '256 Patent that “a user interface may display both avatars in relative position to one another based on how far each user has *actually*

run. This may help motivate users to close the gap if they are behind and to further increase a lead if they are leading in the challenge.” *Compare* Ex. 1004 with ’256 Patent, 39:50–55 (emphasis added).

70. Continuous generation and simultaneous communication of an interface depicting athletic information derived from worn sensors in real time is not a trivial feat. It requires at least sensing relevant data, collecting raw data, processing raw data to determine the value of the metric of interest (which can include data cleaning, filtering, rectifying, etc.), and communicating the result without perceived delay (in real-time) and without perceived interruption (continuously). Visual perception speed of a normal human observer has been documented to be between 30 and 50 bits per second (Ex. 2009, 125), which corresponds to a perception rate of approximately 20 to 30 ms. Accordingly, the sequential completion of all these processing and display steps must be completed within this limited time frame.

71. Thus, in my opinion, Tagliabue does not teach the “continuous” or “real-time” generation and simultaneous communication of an interface as recited by these limitations. Instead, Tagliabue discloses a more conventional, less technologically advanced process by which a user transfers recorded athletic data from a “special-purpose computing device,” e.g., digital music player or other portable device, to a local computer by syncing the device (in a wired or wireless fashion) to the local computer. Ex. 1004, 5:4–12, 9:19–24, 11:40–58. The local

computer then transfers the data to a remote server which saves the data. *Id.*, 5:12–16; 12:35–43. Afterwards, a user can use a local computing device to intermittently query, retrieve, and view the stored data from the server. *Id.*, 5:16–23; 13:25–39. Tagliabue discloses a slower, less automated process, in which a first user’s challenge performance data would not be available to a second user continuously, nor in real-time.

72. Based on the foregoing, in my opinion, lululemon has not shown that Tagliabue anticipates any Challenged Claim in Ground 1.

B. Tagliabue does not disclose that “the challenge is defined in terms of a common unit” as required by dependent claims 7 and 15

73. Claims 7 and 15 recite that “the challenge is defined in terms of a common unit used for multiple types of athletic activities.” ’256 Patent, 41:12–14, 42:16–18. It is my opinion that a POSITA would have understood the ordinary and customary meaning of “common unit” to be a representation of athletic performance data including types of data not normally expressed in a particular unit in that particular unit. *See id.*, 32:5–43. For example, a user’s weight lifting activity, which is not normally expressed in a unit of distance, can be converted to a distance equivalent unit by applying a conversion factor. *See id.* (“For example, the user interface 1700 may include a database, look-up table, or the like that stores predetermined conversion factors between, for example, total weight lifted and miles

run.”). This allows users performing different activities to compete against one another in a meaningful way.

74. Tagliabue does not include the column of the ’256 Patent specification that describes converting athletic data to a “common unit.” *See* Ex. 2008. Based on my review of Tagliabue, it includes no mention of this term. lululemon cites a passage in Tagliabue discussing users competing to be the first to run 100 miles, and argues that this limitation is met because “[m]iles are a common unit used for multiple types of activities,” pointing to the disclosure of the ’256 Patent itself as support. Petition, 35 (citing ’256 Patent, 33:11). However, it is my opinion that a “common unit” does not pertain to multiple types of activities that are normally expressed in a unit of distance (e.g., jogging, walking, running), rather, it pertains to types of activities that are normally expressed in units other than distance, which are then converted to a distance equivalent (cardiovascular mile). *See* ’256 Patent, 32:5–36:28.

75. The ’256 Patent makes a clear distinction between “actual run distance” and “equivalent cardiovascular miles,” where activities traditionally measured in distance are indeed measured in that distance (e.g. miles run, miles walked), but athletic activities not traditionally measured with the same distance units are converted to an equivalent distance (e.g. cardiovascular mile) based on some

measured physiological signal to enable comparison between dissimilar activities and competition involving a diverse set of physical tasks:

In particular, the user or athlete may participate in the competition, challenge, race, or other event by completing runs, other athletic performance activities, or a combination thereof. ***Accordingly, their progress within the competition, challenge, race, or other event is determined by a sum of any actual runs and any other athletic performance as measured by equivalent cardiovascular distance.*** Further, the competition, challenge, race, or other event may specify a run portion and an athletic performance activity portion. For example, a fifty mile challenge may include twenty-five miles of actual running distance and twenty-five miles of equivalent cardiovascular distance.

FIG. 35 illustrates that a user or athlete may select one or more challenges in which to participate. In an embodiment, the challenges are sorted by total distance (i.e., including actual run distance and equivalent cardiovascular distance). FIGS. 36 and 37 illustrate that the user interface 2400 may display the progress of one or more users or athletes participating in the competition, challenge, race, or other event. ***The progress of each user or athlete may be illustrated as a combination of actual run distance and equivalent cardio miles.*** For example, the progress of each user or athlete may be illustrated by a bar chart for which the actual run distance and equivalent cardiovascular distance have different colors, color schemes, patterns, or the like to distinguish which portion of the total distance covered represents each.

Alternatively, the competition, challenge, race, or other event may include individual requirements for actual run distance and equivalent cardiovascular distance for which a user or athlete's progress in each may be displayed separately. Further, the user or athlete's run performance may be compared to their other athletic performance, for example as measured by equivalent cardiovascular distance. Challenges may further specify specific types of athletic activity that are required to reach the challenge goal. For example, a challenge may indicate that 25 cardio miles must be performed on an elliptical, 50 cardio miles in weightlifting and 30 cardio miles in rowing.

'256 Patent, 36:62–37:32. Further, Figure 35 illustrates this summation of activity across multiple, different activities measured in both traditional and cardiovascular miles (as illustrated by the heart icon), demonstrating how dissimilar activities can be aggregated with a common metric to allow for comparison and competition.

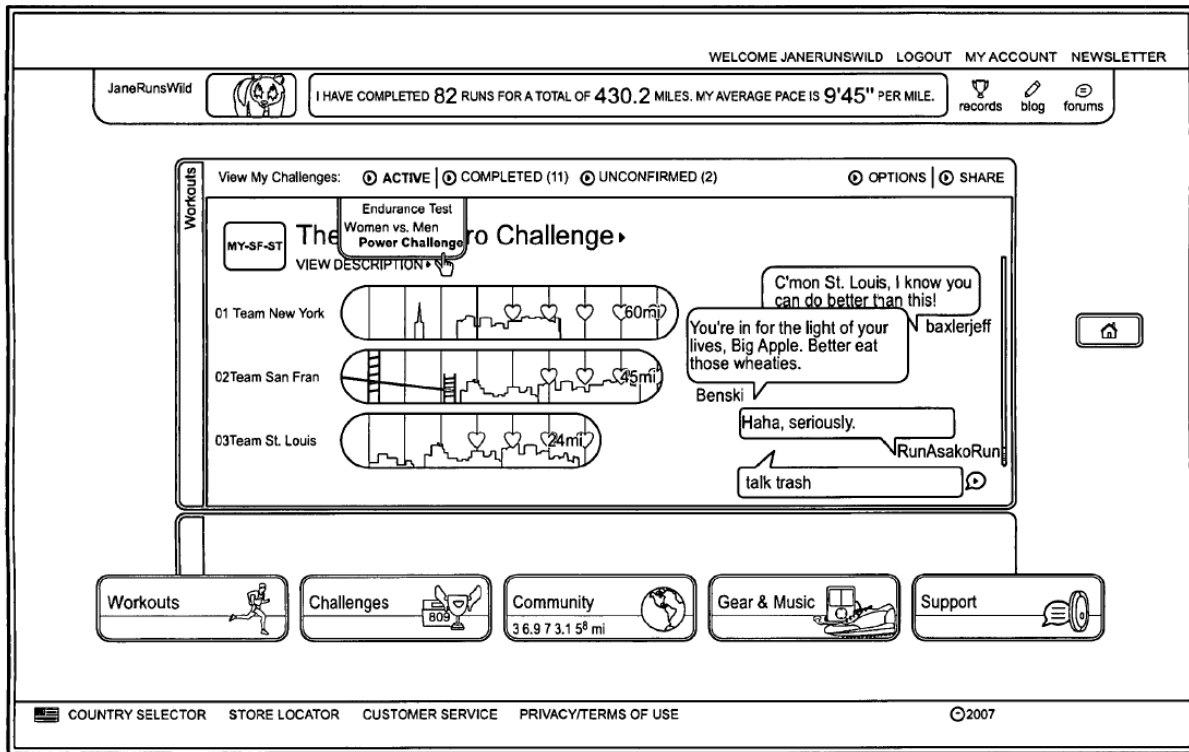


FIG. 35

76. Based on the foregoing, in my opinion, lululemon has not shown that Tagliabue discloses the additional limitation of claims 7 or 15.

XI. GROUNDS 2 AND 3 – LULULEMON HAS NOT SHOWN THAT ARRASVUORI ANTICIPATES OR RENDERS OBVIOUS CLAIMS 1–4, 7, 8, AND 11–16

77. As I discuss below, it is my opinion that lululemon fails to show that Arrasvuori anticipates or renders obvious any Challenged Claim of the '256 Patent.

A. Arrasvuori does not disclose or suggest “continuously generating” “an interface,” as required by limitations 1[G]/11[E]

78. In my opinion, Arrasvuori does not disclose or suggest “continuously generating ... to the first user ... and the second user ... an interface,” as recited in

limitations 1[G]/11[E]. I note that nowhere in lululemon’s argument for these limitations does it address the claim term “continuously.” *See* Petition, 55.

79. As I discuss above in Section VIII.D, it is my opinion that a POSITA would have understood continuous generation of the interface to first and second users to mean that the interface displaying an indication of whether the challenge has been met is generated without perceived interruption. lululemon points to Arrasvuori’s disclosure of making “leaderboards available for receipt by user wireless nodes,” where “graphical indicators corresponding to users that are performing ... are positioned relative to one another.” Petition, 56 (citing Ex. 1005, ¶¶50, 52). Even if Arrasvuori generates an interface showing a leaderboard, that does not mean that the interface is generated continuously, or without perceived interruption. I also note that Arrasvuori mentions “real-time” feedback in one instance. *See* Ex. 1005, ¶49 (“It is further noted that, in various embodiments, real-time feedback might be provided.”). But even generating an interface *in real-time* is not the same as “continuously generating” an interface.

80. As an example, a server may collect the users’ athletic performance information and may display that information throughout the user’s performance of an activity, but may only update the interface, i.e., the leaderboards depicting the users’ relative progress, at certain intervals, such as every mile. Arrasvuori says nothing about whether an interface providing real-time feedback is continuously

generated. Additionally, Arrasvuori does not disclose that its leaderboards are continuously updated such that a user would not perceive interruption in the interface. In fact, Arrasvuori teaches that “a user might be informed (e.g., by a GUI and/or other interface of her wireless node and/or other computer) *once she had reached a certain performance threshold* in the real world (e.g., once she had traveled a certain distance).” Ex. 1005, ¶67 (emphasis added). Thus, in my opinion, Arrasvuori teaches monitoring equipment that may optionally generate real-time feedback, but does not disclose continuous generation of said data. Arrasvuori does not disclose that its leaderboards are continuously updated such that a user would not perceive any interruption in the interface.

81. Based on the foregoing, in my opinion, lululemon has not shown that Arrasvuori anticipates or renders obvious any Challenged Claim in Grounds 2 and 3.

B. Arrasvuori does not disclose or suggest “wherein the challenge is received from the second user,” as recited by claims 2, 3 (which depends from 2), and 14

82. In my opinion, Arrasvuori does not disclose or suggest “wherein the challenge is received from the second user,” as recited by claims 2 and 14. Claims 1 and 11, from which claims 2 and 14 depend, recite that “the challenge includes a competition between the first user and a second user.” lululemon argues that “Arrasvuori’s server receives the challenge from multiple users.” Petition, 58. But

lululemon does not address a “first user” or a “second user.” And Arrasvuori’s disclosure generally does not concern a head-to-head competition between first and second users. Arrasvuori does not define a “second user” in competition and suggests that tasks can be performed by more than one user that is part of a team:

It is noted that, according to various embodiments of the present invention, real-world fitness tasks might include tasks to be performed by only one user, tasks to be performed by more than one user (e.g., tasks to be performed by all users of a team, a specified number of users of a team, and/or specified users of a team), and/or tasks performable by either one user or by multiple users.

Ex. 1005, ¶31.

83. Arrasvuori does not describe a head-to-head challenge wherein a second user specifies the challenge in which first and second users compete. Indeed, in my opinion, Arrasvuori never discloses or suggests any user inviting another user to participate in a particular challenge, i.e., competition. Arrasvuori allows a user “to learn of available users, create one or more teams, to select one or more users for one or more new and/or existing teams, to invite one or more users to join one or more new and/or existing teams, to request to join one or more new and/or existing teams, and/or to accept invitation to join one or more new and/or existing teams.” Ex. 1005, ¶18. Arrasvuori states that each user “might be able to select from one or more indicated games ... that she wished to play,” or “to vote for one or more of the

games as being ones that she wished to play.” *Id.*, ¶¶20–21. Depending on the user’s selection or vote, they might be transferred to a different team where other users desire to play the same game. *Id.*, ¶22. Accordingly, Arrasvuori does not teach receiving a challenge, including a competition between first and second user, received from the second user. Moreover, Arrasvuori does not discuss these initialization stages in the context of challenges at all, but rather in the context of team play.

84. Based on the foregoing, in my opinion, lululemon has not shown that Arrasvuori anticipates or renders obvious claims 2, 3, or 14.

C. lululemon fails to show that Arrasvuori discloses or suggests “the sensor worn on the appendage of the first user comprises an accelerometer,” as required by claim 13

85. In my opinion, Arrasvuori does not disclose or suggest an accelerometer worn on an appendage of the user. First, based upon my review of Arrasvuori, it has no mention of an accelerometer.

86. lululemon relies on Arrasvuori’s description of monitoring equipment including a pedometer. Petition, 64 (citing Ex. 1005, ¶40). lululemon then points to another reference, U.S. Patent No. 6,898,550 (Blackadar), which I understand is not a secondary reference in the ground, as support that “[o]ne type of pedometer includes an accelerometer.” *Id.* In my opinion, a POSITA at the relevant time would not have understood that Arrasvuori’s pedometer to be of the same type as that of

Blackadar. Traditional pedometers were known to mechanically count steps which can be used to determine overall distance, based upon measurements or assumptions of an individual's stride length. Early pedometers used a variety of mechanical methods to acquire step counts. While accelerometer-based pedometers existed as of 2007, their reliability, accuracy, and applications were still being developed and were not largely commercially available (*See generally* Exs. 2010, 2011). Integration of an accelerometer within a pedometer was popularized in the 2010s (Ex. 2012, Abstract). Thus, a POSITA would not have understood Arrasvuori's pedometer to be the same type as that of Blackadar. Further, the disclosure of Blackadar that lululemon relies on discusses an accelerometer positioned within a user's shoe, not worn on a user's wrist or integrated into a computerized watch. Petition, 64 (citing Ex. 1009, 2:1–15). In my opinion, lululemon does not address how or why a POSITA at the relevant time would have combined Blackadar's accelerometer with Arrasvuori's wireless node.

87. Based on the foregoing, in my opinion, lululemon has not shown that Arrasvuori anticipates or renders obvious claim 13.

XII. GROUND 4 – LULULEMON FAILS TO DEMONSTRATE THAT ARRASVUORI AND ELLIS RENDER OBVIOUS CLAIM 13

88. As I discuss above in connection with Grounds 2 and 3, it is my opinion that lululemon fails to show that Arrasvuori anticipates or renders obvious claim 11. Because claim 13 depends from claim 11 and thus incorporates all the limitations of

claim 11, and because lululemon relies on Ellis only for its description of an accelerometer worn on a wristband (Petition, 65–67), it is also my opinion that lululemon fails to show that Ellis cures the deficiencies of Arrasvuori discussed above, or that Arrasvuori in view of Ellis renders obvious claim 13.

XIII. GROUND 5 – LULULEMON FAILS TO DEMONSTRATE THAT WATTERSON AND ARRASVUORI RENDER OBVIOUS CLAIMS 1, 7, 8, 11–13, 15, AND 16

89. As I discuss below, it is my opinion that lululemon fails to show that Watterson in view of Arrasvuori anticipates or renders obvious any Challenged Claim of the '256 Patent.

A. Watterson does not disclose or suggest determining the amount of athletic activity performed by a first user based on data from a sensor worn on the user's appendage, as required by limitations 1[A]/11[B], and comparing the amount of athletic activity performed by the first user to that of a second user, as required by limitations 1[F]/11[D]

90. The requirements of limitations 1[F]/11[D] are properly understood only in the context of the other limitations of claims 1 and 11. Limitation 1[A] recites that the “athletic performance module [is] configured to receive athletic activity data from a wirelessly-connected sensor worn on an appendage of a first user.” Limitation 1[D] recites that the challenge module is configured to “determine, from the received athletic activity data, a first amount of athletic activity performed by the first user.” Notably, “the received athletic activity data” in limitation 1[D] refers to the athletic activity data received from the wirelessly-connected sensor in limitation

1[A]. Furthermore, limitation 1[F] recites that the challenge module is configured to “determine whether the challenge has been met by the first user based on a comparison of the first amount of athletic activity performed by the first user and a second amount of athletic activity performed by the second user.” Here, “the first amount of athletic activity performed by the first user” refers to the athletic activity of the first user determined using the athletic activity data received from the wirelessly-connected sensor, as previously recited in limitations 1[A]/1[D].

91. Just as in the respective limitations in claim 1, limitation 11[B] recites “determining an amount of athletic activity performed by the first user based on sensor data received from a sensor worn on an appendage of the first user,” and limitation 11[D] further recites “determining whether the challenge has been met by the first user based on a comparison of the amount of athletic activity performed using the first user to the amount of athletic activity performed by the second user.” lululemon has failed to show that Watterson teaches or suggests limitations 1[F]/11[D], as properly understood in view of the entirety of the claims.

92. Attempting to show that Watterson teaches or suggests these limitations, lululemon strings together two unrelated disclosures from Watterson. In my opinion, however, lululemon’s argument is internally inconsistent and contrary to Watterson’s disclosures. First, lululemon contends that Watterson’s “pulse watch” corresponds to the claimed wirelessly-connected sensor. Petition, 70. Watterson

discloses the pulse watch as an example of a “health monitoring device” that gathers information about the user, such as “heart rate, blood pressure, and the like.” Ex. 1006, 18:66–19:6. Thus, according to lululemon’s argument, the user’s heart rate is the claimed “received athletic activity data,” and is used to determine the first amount of athletic activity.

93. Regarding limitation 1[F], lululemon relies on Watterson’s statements that “[c]ompetition module 314, within communication module 254, [] compares user athletic performance, including ‘distance traveled by the user,’ in the race around the world” and “deliver[s] comparison data to communication module 254 [which] . . . deliver[s] a graphical representation of the user’s exercise, distan[ce] times, speed, and other information compared against other competitors to the user” Petition, 79 (citing Ex. 1006, 40:48–61). Similarly, in the personalized race option, Watterson states that the users race against each other “while viewing graphical representations of the distan[ce], time, and speed of the other competitors.” Ex. 1006, 41:43–48. Thus, in both the race around the world and the personalized race options in Watterson, the amount of athletic activity that is compared to determine whether the challenge has been met is the distance travelled by the users.

94. Therefore, in Watterson, the distance travelled by the user is not an amount of athletic activity determined based upon the athletic activity data *from the wirelessly-connected sensor*, which lululemon contends corresponds to Watterson’s

pulse watch. Watterson does not disclose that the challenge in either the race around the world or the personalized race options involves comparisons of the heart rate of the participants or any determination of the amount of activity based upon the heart rate (the only measurement of Watterson's pulse watch to which lululemon points). Watterson does not disclose that the pulse watch receives each user's actual velocity data. Instead, it is my opinion that a POSITA at the relevant time would have understood that the treadmill determines the distance travelled by the user based on the speed output, as determined by the treadmill itself, and the duration of the workout session. Treadmill 12 includes a belt speed sensor 230 and incline sensor 232 that gather the operating parameters of the treadmill. Ex. 1006, 25:10–17.

95. lululemon argues with respect to limitation 1[D] that its proposed combination changes “how Watterson's software determined user speed during a personalized race so that a user's apparent velocity equaled the multiple of the user's actual speed and heart rate divided by the constant.” *See* Petition, 71, 74–75. However, this is nowhere disclosed or suggested in Watterson, and lululemon does not explain why a POSITA would have been motivated to make this modification.

96. Watterson teaches that the race around the world and personalized race options involve a comparison of the *actual* distance travelled by the users, which can be determined based on a simple calculation using the belt speed multiplied by the duration of the workout. As I explain in the next Section, a POSITA would not have

looked to modify Watterson to incorporate the user's heart rate to calculate an *apparent* velocity.

97. Additionally, lululemon has not shown how a POSITA would make the proposed modification. In particular, neither lululemon nor its expert explain how a POSITA would have determined the constant that lululemon proposes dividing the multiple of the user's actual speed and heart rate by. *See* Petition, 75; Ex. 1003, ¶¶115–16 (lululemon expert only defining “a constant, h_c , which has the same units as h ”).

98. Thus, it is my opinion that lululemon has not shown that Watterson teaches or suggests the recited “determin[ing] whether the challenge has been met by the first user based on a comparison of the first amount of athletic activity performed by the first user and a second amount of athletic activity performed by the second user,” where the amount of athletic activity is determined from athletic activity data received from the wirelessly-connected sensor worn on an appendage of the user.

99. Based on the foregoing, in my opinion, lululemon has not shown that Watterson in view of Arrasvuori discloses or suggests all the limitations of any Challenged Claim in Ground 5.

B. A POSITA would not have been motivated to combine Watterson and Arrasvuori to normalize competing users' velocities by their heart rates

100. lululemon argues that the limitation “determine, from the received athletic activity data, a first amount of athletic activity performed by the first user,” as recited in limitation 1[D], is obvious over the combination of Watterson and Arrasvuori. Petition, 74. lululemon argues that “Watterson admits that some participants in a spin class, for example, cannot perform the same exercises as others” and therefore “Watterson’s athletic competitions are unlikely to motivate users who lack others with whom to compete.” Petition, 76–77; Ex. 1003, ¶¶110–117. lululemon concludes that “Arrasvuori solves this problem by normalizing each user’s performance by their fitness level.” Petition, 77. lululemon further argues that “[a] POSITA would have looked to Arrasvuori for this solution because it is closely related in subject matter to Watterson.” Petition, 77–78. I disagree, lululemon has not shown that a POSITA would have been motivated to combine Watterson and Arrasvuori to arrive at the claimed invention.

101. First, lululemon has misinterpreted the teachings of Watterson. lululemon ignores the fact that Watterson already discloses a solution to the admitted problem of participants who are unable to perform exercises in the same way as other users. Watterson teaches:

“As mentioned, the presently described system, methods, and devices may be used in a master-slave system. In such a system, changes to the operating parameters of the master are translated to the operating parameters of the slave, thereby controlling the operation of the device or exercise device. ... The master may selectively choose groups of participants based on various criteria, such as participant’s heart rates, and change those participants exercise program, while maintaining other participants at the original or different exercise level.”

Ex. 1006, 48:66–49:11.

102. Contrary to the argument advanced by lululemon, a POSITA contemplating the disclosure of Watterson would not have been motivated to turn to Arrasvuori to find a solution to the problem of users with disparate fitness levels because, as described above, Watterson already discloses such a solution – namely, the ability to tailor the exercise program based on “criteria, such as participant’s heart rates, and change those participants exercise program, while maintaining other participants at the original or different exercise level.” Watterson conceives a solution by which the master adjusts operating parameters of the exercise device to make it easier for a less fit user to cover the same distance as a more fit user. For example, the master may reduce the resistance of an exercise bicycle for a less fit user, allowing that first user to cover a similar cycling distance as a more fit user while exerting similar effort (e.g., resulting in similar heart rate). By making this adjustment to the operating parameters, Watterson does not require a post-hoc

calculation of a user's "apparent velocity" as suggested by Dr. Lynch because the actual distance covered will directly reflect the users' effort while also accounting for their disparate fitness levels. lululemon has provided no explanation as to why this solution provided by Watterson is somehow lacking or otherwise necessitates some modification or consideration of the disclosure of Arrasvuori.

103. Watterson also discloses a scaling control that allows users to scale the level of exertion to fit their individual abilities, independent of a master control signal:

"A user may activate scaling control 86 and vary the intensity of an exercise program. The scaling control 86, therefore, enables a user to select a value representative of the proportional change to be made to the control signal received by the communicating mechanism of treadmill 12 from communication system 18. For example, if an exercise program requires a maximum speed of 6 miles per hour (mph) with a maximum incline of 15 degrees for a period of 30 minutes, an individual may activate scaling control 86 to require only 66% intensity of the exercise program; stated otherwise, reduce the intensity by one third. Therefore, the exercise program is varied to a maximum speed of 4 mph, with a maximum incline of 10 degrees, for a period of 20 minutes."

Ex. 1006, 11:17–30.

104. A POSITA at the relevant time would have understood that Watterson's scaling control enables users with different fitness levels to compete by performing

the same exercise program, but at suitable intensity levels for each user. As described above, such an adjustment to the operating parameters would result in users of different fitness levels covering distances reflective of their individual capabilities, thus allowing direct comparisons of different users' performances without requiring any post-hoc adjustments.

105. Furthermore, Watterson discloses the option to race against the computer, which has different skill levels such as a beginner runner, intermediate runner, or advanced runner. Ex. 1006, 41:26–41; Figs. 17A, 17C. Thus, even if another individual with the same fitness level as the user is not available, the user could still compete against the computer set to an appropriate skill level to match the user's skill. Hence, a POSITA would have no reason to modify Watterson to solve the problem of motivating users who lack others with whom to compete.

106. Based on the foregoing, in my opinion, lululemon has not shown that Watterson in view of Arrasvuori renders obvious any Challenged Claim in Ground 5.

C. Watterson does not disclose “the challenge is defined in terms of a common unit used for multiple types of athletic activities,” as required by claims 7 and 15

107. In my opinion, Watterson does not disclose that “the challenge is defined in terms of a common unit used for multiple types of athletic activities, as recited by claims 7 and 15. As I explain above in Section X.B, it is my opinion that

a POSITA would have understood the ordinary and customary meaning of “common unit” to be a representation of athletic performance data including types of data not normally expressed in a particular unit in that particular unit. *See* ’256 Patent 32:5–43.

108. lululemon argues that it “would have been obvious to define Watterson’s personalized race in miles” because “communication module 254 can measure distance in ‘miles.’” Petition, 81. The relevant portion of the ’256 Patent which discusses a “common unit,” however, does not pertain to multiple types of activities that are normally expressed in a unit of distance, or miles (e.g., jogging, walking, running). *See* ’256 Patent, 32:5–36:28. Instead, it pertains to types of activities that are normally expressed in units other than distance, which are then converted to a distance equivalent. *Id.*

109. Based on the foregoing, in my opinion, lululemon has not shown that Watterson in view of Arrasvuori renders obvious claims 7 or 15.

D. lululemon fails to show that the amount of athletic activity compared for first and second users derives from data received from a sensor worn on an appendage of a first user, and therefore, there would have been no motivation to implement a “location-determining sensor” or “accelerometer” into Watterson’s pulse watch to meet claims 12 and 13

110. As I discuss above with respect to claims 1 and 11, lululemon fails to show that a first user’s athletic activity data serving as the basis of comparison to a second user’s athletic activity data, as recited in limitations 1[F] and 11[D], is

measured by a sensor worn on an appendage of the first user. *See supra*, §XIII.A. Instead, lululemon points to disclosures in Watterson where the comparison data is a distance travelled, which is measured and calculated by a treadmill, not a wearable sensor. *See id.* It is my opinion that because Watterson's pulse watch is not responsible for monitoring or collecting the comparison data, there would be no motivation to combine any teaching in Arrasvuori of a "location-determining sensor," e.g., GPS, or "accelerometer," with the pulse watch of Watterson. It is also my opinion that as a matter of common sense, incorporating a location-determining unit into a pulse watch of a user exercising on a treadmill would provide no benefit, as the user would not be changing locations. Finally, Arrasvuori does not disclose an accelerometer. *See supra*, §XI.C.

111. Based on the foregoing, in my opinion, lululemon has not shown that Watterson in view of Arrasvuori renders obvious claims 12 or 13.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: August 7, 2023

A handwritten signature in black ink, appearing to read "Megan Toney-Bolger". The signature is fluid and cursive, with the first name "Megan" and last name "Bolger" being more distinct than the middle name "Toney".

Megan Toney-Bolger, Ph.D.

EXHIBIT 1



Exponent®
Engineering & Scientific Consulting

Megan Toney-Bolger, Ph.D., P.E.

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Professional Profile

Dr. Toney-Bolger's areas of expertise include kinematics, dynamics, neuromechanics, motor control of human motion, and human injury mechanics. Her work experience includes the analysis of a variety of injuries involving motor vehicles, recreational activities and equipment, pedestrians, occupational accidents, and slip-and-fall accidents as well as conducting sled tests and full-scale vehicle-to-vehicle crash tests.

Dr. Toney-Bolger's research has focused on occupant motion and loading in response to variety of crash modalities as well as the biomechanics of human walking and running, amputee locomotion, neural control of locomotion, gait rehabilitation technology, and motor learning responses in gait before and after injury or impairment.

Dr. Toney-Bolger also has technical knowledge and training in the areas of gait analysis techniques and use of the 3D Static Strength Prediction Program. She is a certified forklift operator and certified XL tribometrist. She has also completed training in traffic crash reconstruction through the Northwestern University Center for Public Safety.

Prior to joining Exponent, Dr. Toney-Bolger was a Graduate Research Assistant in the Comparative Neuromechanics Laboratory at Georgia Institute of Technology where she completed a National Institutes of Health Fellowship for Prosthetics and Orthotics Research Training. Her research evaluated the effect of amputation on a patient's control strategies, their ability to walk, and their adaptation to altered walking environments. Dr. Toney-Bolger has experience collecting and analyzing kinematic, kinetic, and electromyography (EMG) data using high-speed motion capture systems (VICON) and advanced computational software (Matlab and LabVIEW). Dr. Toney-Bolger also served as a Graduate Teaching Assistant at Georgia Tech for a graduate-level course in clinical gait analysis. In addition, Dr. Toney-Bolger conducted research in the Orthopaedic Biomechanics Laboratory at Duke University where she studied responses to air blast at both the cellular and organismal level.

Academic Credentials & Professional Honors

Ph.D., Applied Physiology, Georgia Institute of Technology (Georgia Tech), 2014

B.S.E., Biomedical Engineering, Duke University, 2009

NIH Fellow for Prosthetics and Orthotics Research Training, 2009-2012

Finalist for P.E.O. Scholar Award from Georgia Institute of Technology

Licenses and Certifications

Professional Engineer, Michigan, #6201068198

Professional Affiliations

American Society of Biomechanics

Society of Automotive Engineers

Publications

Sharpe S, Grijalva S, Allin L, Courtney A, Toney-Bolger M, et al. Evaluation of Occupant Kinematics and Kinetics during Moderate Severity Simulated Frontal Impacts with and without Frontal Airbag Deployment. SAE Technical paper, 2023-01-0559.

Toney-Bolger ME, Chang YH. The motor and the brake of the trailing leg in human walking: transtibial amputation limits ankle-knee torque covariation. *Experimental Brain Research* 2023; 241(1): 161-174.

Toney-Bolger M, Isaacs JL, Rapp van Roden E, Croteau J, et al. Seat Belt Latch Plate Design and Pretensioner Deployment Strategies Have Limited Effect on In- and Out-of-Position Occupants in High-Severity Rear-End Collisions. SAE Technical Paper 2022-01-0849.

Croteau J, Toney-Bolger M, Isaacs JL, Shurtz B, et al. Seatback Strength and Its Effect on In-Position and Out-of-Position ATD Loading in High-Speed Rear Impact Sled Tests. SAE Technical Paper, 2022-01-0856.

Isaacs JL, Campbell IC, Watson H, Toney-Bolger M. Head and Neck Loading Trends in IIHS Side Impact Testing. Proceedings of the FISITA World Congress, Prague, 13-17 September 2021. Outstanding Paper Award

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Bruno A, Toney-Bolger M, George J, Koller J, et al. Evaluation of Occupant Kinematics in Low- to Moderate-Speed Frontal and Rear-End Motor Vehicle Collisions. SAE Technical Paper, 2019-01-1226.

Selgrade B, Toney ME, Chang YH. Two biomechanical strategies for locomotor adaptation to split-belt treadmill walking in subjects with and without transtibial amputation. *Journal of Biomechanics* 2017; 53(28):136-143.

Hashish R, Toney-Bolger ME, Sharpe SS, Lester BD, et al. Texting during stair negotiation and implications for fall risk. *Gait & Posture* 2017; 58:409-414.

Selgrade B, Thajchayapong M, Lee GE, Toney ME, et al. Changes in mechanical work during neural adaptation to asymmetric locomotion. *Journal of Experimental Biology* 2017; 220:2993-3000.

Toney M, Chang YH. The motor and the brake of the trailing leg in human walking: leg force control through ankle modulation and knee covariance. *Experimental Brain Research* 2016; 234(10):3011-3023.

Toney M, Chang YH. Humans robustly adhere to dynamic walking principles by harnessing motor abundance to stabilize forces. *Experimental Brain Research* 2013; 231(4):433-443.

Invited Presentations

Isaacs JL, Toney Bolger ME, Campbell IC. Cervical Spine Loading During Asymmetrical Non-Injurious Physical Activities. Podium Presentation, XXVII Congress of the International Society of Biomechanics (ISB) /43rd Annual Meeting of the American Society of Biomechanics (ASB), Calgary, Canada, August 2019.

Thajchayapong M, Cho G, Toney M, Chang YH. Changes in total mechanical work explain why metabolic cost tracks locomotor adaptation during split-belt treadmill walking. Poster No. T272, 7th World Congress of Biomechanics, Boston, MA, July 6-11, 2014.

Toney M, Chang YH. Consistent power production during walking is maintained by structuring joint torque variance to modulate trailing leg forces. Poster No. T267, 7th World Congress of Biomechanics, Boston, MA, July 6-11, 2014.

Toney M, Chang YH. Amputees use less joint torque covariation than able-bodied subjects to generate leg force during walking. Podium Presentation, XXIV Congress of the International Society of Biomechanics, Natal, Rio Grande Do Norte, Brazil, August 4-9, 2013.

Toney M, Chang YH. Identifying implicit neuromechanical control targets in human gait. Poster No. 274.05/JJ3, 42nd Society for Neuroscience Annual Meeting, New Orleans, LA, October 13-17, 2012.

Toney M, Chang YH. Limb force variance is structured to stabilize the step-to-step transitions of dynamic walking. Abstract No. 285, 36th American Society of Biomechanics Annual Meeting. Gainesville, FL, August 15-18, 2012.

Norman T, Toney M, Chang YH. The Gait Deviation Index for analysis of amputee walking at different speeds. 38th American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium, Atlanta, GA, March 21-24, 2012.

Herrin K, Toney M, Chang YH. Use of neuromechanical redundancy for locomotor compensation in able-bodied and transtibial amputee subjects. Abstract No. 400, 34th American Society of Biomechanics Annual Meeting. Providence, RI, August 18-21, 2010.

Additional Education & Training

Northwestern University Center for Public Safety - Traffic Crash Reconstruction

English XL Tribometry

3D Static Strength Prediction Program

EXHIBIT 2

Toney-Bolger Testimony List

Case Name	Venue	Date	Type
Maier v Michindoh Conference Center	State of Michigan, Circuit Court for the County of Hillsdale	October 31, 2019	Deposition
Borden v Wal-Mart	United States District Court for the Northern District of Alabama Middle Division	July 6, 2021	Deposition
Kalski v Ashley Capital	State of Michigan, Circuit Court for the County of Wayne	September 28, 2021	Deposition
Dennis "DJ" Nichols v I-80/81 Storage Inc. v Fairway Building Products, LLC	District Court of York County, Nebraska	March 14, 2022	Deposition
Nancy Kamposh v David Kilano	Circuit Court for the County of Oakland, Michigan	March 21, 2022	Deposition
Amy Neher v Geoffrey Wheeler and Erie Insurance Exchange	State of Indiana, Allen County Superior Court	April 1, 2022	Deposition
Aimee Lingo and Bobby Lingo v General Motors, L.L.C.	United States District Court, District of Colorado	April 14, 2022	Deposition
Nancy Kamposh v David Kilano	Circuit Court for the County of Oakland, Michigan	June 15, 2022	Trial
Amy Neher v Geoffrey Wheeler and Erie Insurance Exchange	State of Indiana, Allen County Superior Court	June 22, 2022	Trial
Misael Salas v Stephen Josephson and Groot Recycling & Waste Services, Inc.	Circuit Court of Cook County, Illinois	August 18, 2022	Deposition
Samantha Howard v Walt Disney Parks and Resorts U.S., Inc.	Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida	October 20, 2022	Deposition
Clayton Luke Brown v Jerry Porter and Progressive Northern Insurance Company	Iowa District Court in and for Pottawattamie County	April 12, 2023	De Bene Esse Deposition
Brian Czarnecki and Wisconsin Laborers Health Fund and Secura Insurance Company v Austin Krist Koehn, Artisan and Truckers Casualty Company, Tina L. Day, and Partners Mutual Insurance Company	Circuit Court of Marquette County, Wisconsin	June 8, 2023	Deposition
Brian Czarnecki and Wisconsin Laborers Health Fund and Secura Insurance Company v Austin Krist Koehn, Artisan and Truckers Casualty Company, Tina L. Day, and Partners Mutual Insurance Company	Circuit Court of Marquette County, Wisconsin	July 19, 2023	Trial