

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division**

BIONESS INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civil Action No. _____
	)	
ARETECH, LLC,	)	
	)	
Defendant.	)	DEMAND FOR JURY TRIAL
	)	
	)	
	)	

NOTICE OF SUBMISSION OF EXHIBITS TO COMPLAINT

PLEASE TAKE NOTICE that Plaintiff Bioness Inc. hereby submits Exhibits K through X to Plaintiff's Complaint.

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Attorneys for Plaintiff Bioness Inc.

Dated: June 15, 2022

EXHIBIT U

Exhibit U
U.S. Patent No. 10,668,316 (the “’316 Patent”)
Bioness Inc. v. Aretech, LLC (E.D. Va.)

The information in this Exhibit U is exemplary and only intended to demonstrate Aretech, LLC’s (“Aretech”) infringement of at least claims 1 and 7 of the ’316 Patent. Bioness Inc. (“Bioness”) provides this infringement chart before obtaining discovery from Aretech. Bioness expects that Aretech and/or third parties will produce additional information on Aretech’s products beyond that which is publicly available.

The Accused Product performing the claimed method, identified below, is the ZeroG V3 Gait and Balance System, an Aretech body-weight support system.

Upon information and belief, the Accused Product is made available by Aretech and used at various hospitals and rehabilitation clinics across the United States, including the Inova Mount Vernon Hospital in Alexandria, Virginia.^{1,2,3} The Accused Product was also made available and used by Aretech at various trade shows and conferences across the United States, including at the 2017 American Physical Therapy Association Combined Sections Meeting (APTA-CSM 2017). To the extent that Bioness cites to previous versions of Aretech’s ZeroG Gait and Balance System, upon information and belief, the ZeroG V3 Gait and Balance System operates in a similar way to the previous versions of Aretech’s ZeroG Gait and Balance System.

¹ See <https://www.inova.org/locations/inova-rehabilitation-center/rehab-technology>.

² See <https://www.aretechllc.com/locations/united-states/>.

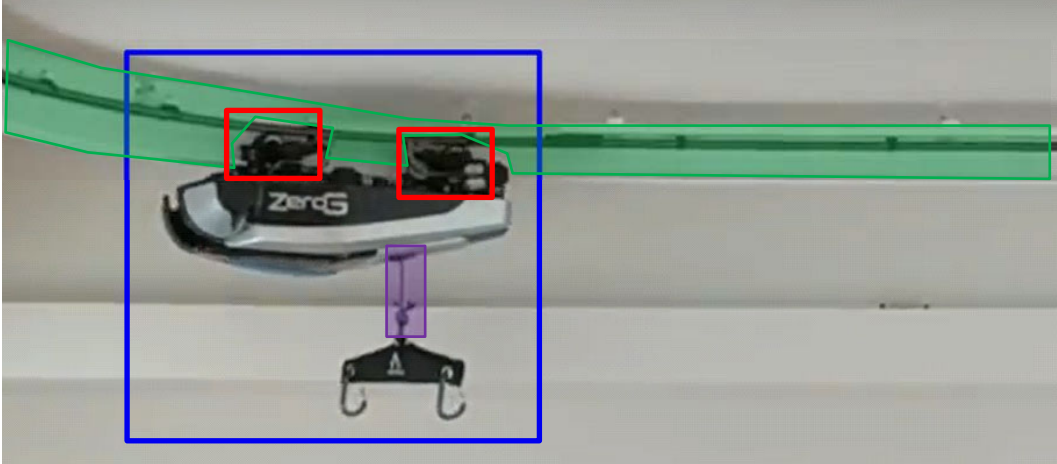
³ See also Compl., ¶¶ 64-65.

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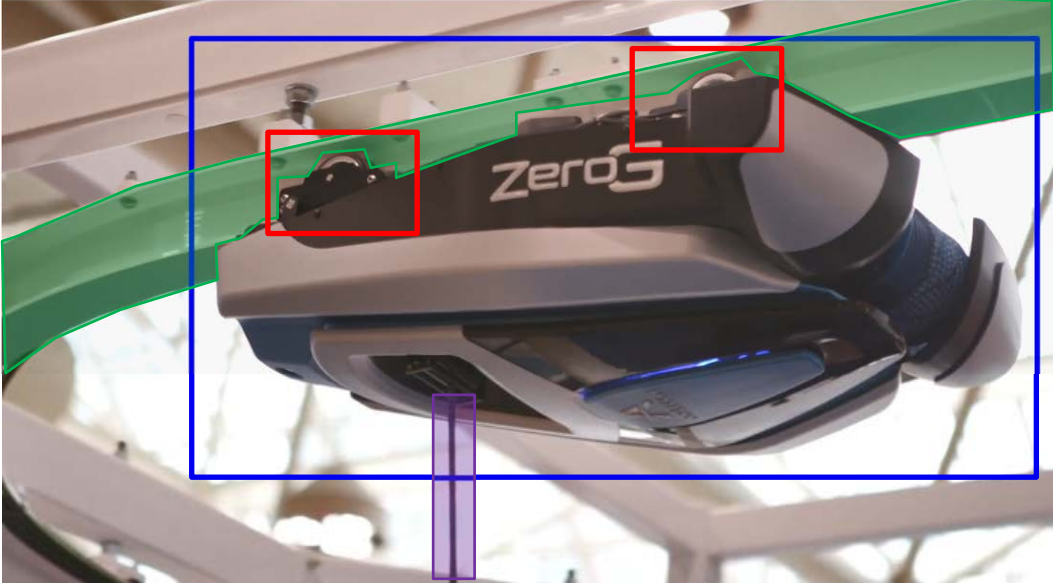
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
Claim 1 1[pre] A method of using a body weight support system to provide body weight support during gait training, the body weight support system including a drive assembly configured to movably suspend the body weight support system from a support track and a tether configured to be coupled to an attachment device worn by a user to couple the user to the body weight support system, the method comprising:	
	To the extent that the preamble is a limitation, it is met. Aretech uses, sells, offers for sale, or otherwise provides a body weight support system (shown in blue) embodying a method of providing body weight support using a drive assembly (shown in red) that movably suspends the system from a support track (shown in green) and a tether (shown in purple) coupled to an attachment device (shown in yellow) worn by the user. For example:  Aretech LLC, <i>Aretech ZeroG Robotic Trolley on 243 Foot Track</i>, YouTube (Mar. 16, 2017), https://www.youtube.com/watch?v=vRqMXZJQk-g at 0:20.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Marco Fuentes, <i>UHN – Aretech profile</i>, Vimeo (Feb. 25, 2020), https://vimeo.com/393756162 at 0:10.

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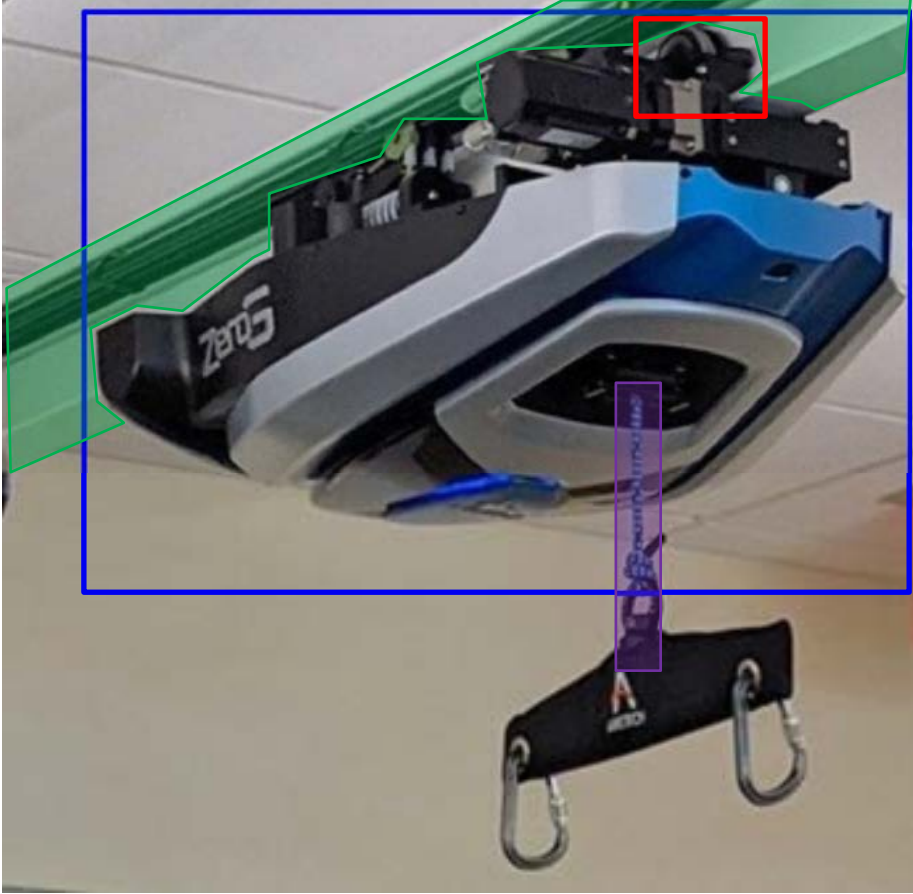
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System, Aretech 11 (2019).</i>

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech, LLC, Facebook (June 1, 2021), https://www.facebook.com/AretechLLC/posts/1634573270068551.

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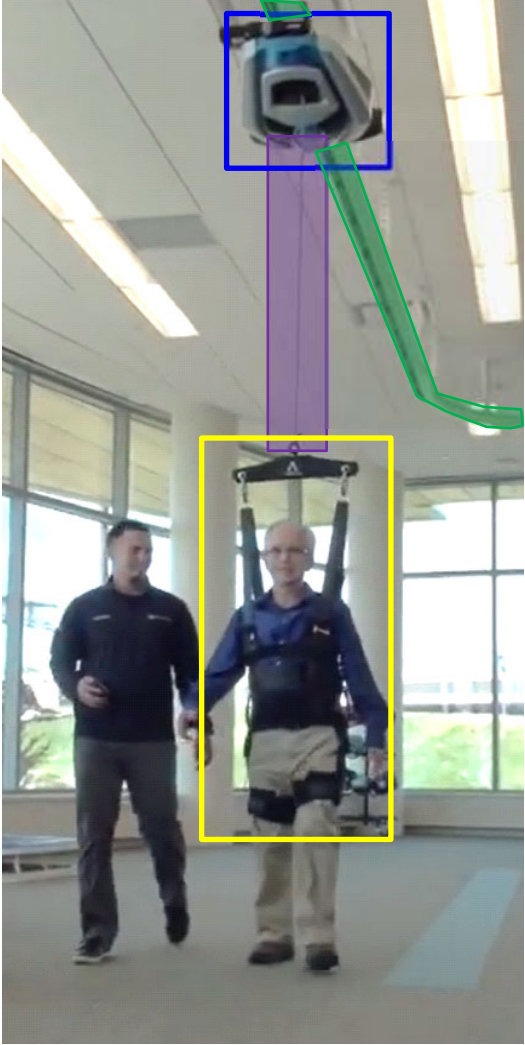
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech, LLC, Facebook (Dec. 11, 2020), https://www.facebook.com/AretechLLC/posts/1516400308552515.

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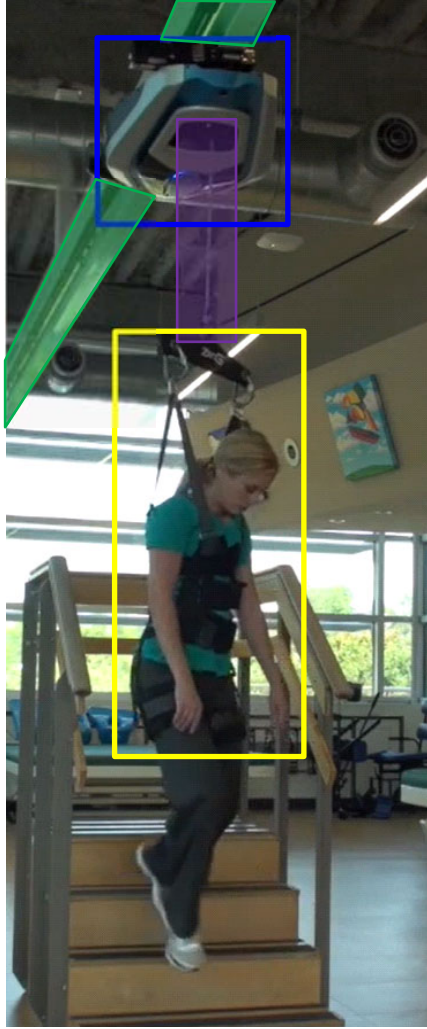
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Using ZeroG with a Balance Disorder</i>, YouTube (Apr. 25, 2017), https://www.youtube.com/watch?v=vRqMXZJQk-g at 1:09.

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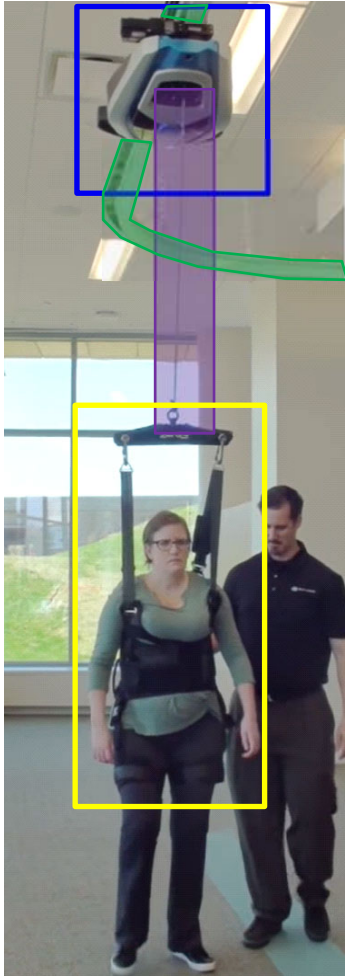
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 2:23.

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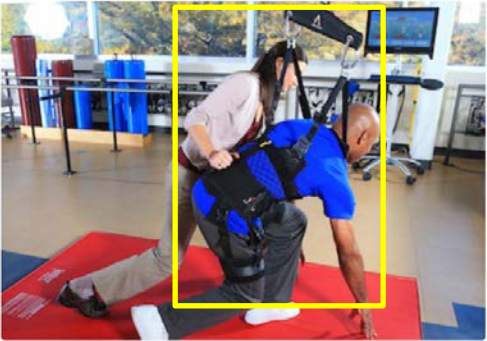
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 2:23.

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Bioness Inc. v. Aretech, LLC (E.D. Va.)

Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Aretech Harnesses For use with Aretech products exclusively. Sizes toddler to 2XL to fit a variety of shapes comfortably.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.
1[a] defining a reference length of the tether when the attachment device is in an initial position;	The Accused Product discloses defining a reference length of the tether when the attachment device is in an initial position. For example, the Accused Product discloses defining the allowable length (shown in red) of the tether (shown in purple) coupled to the attachment device (shown in yellow), as shown in the following exemplary disclosures:

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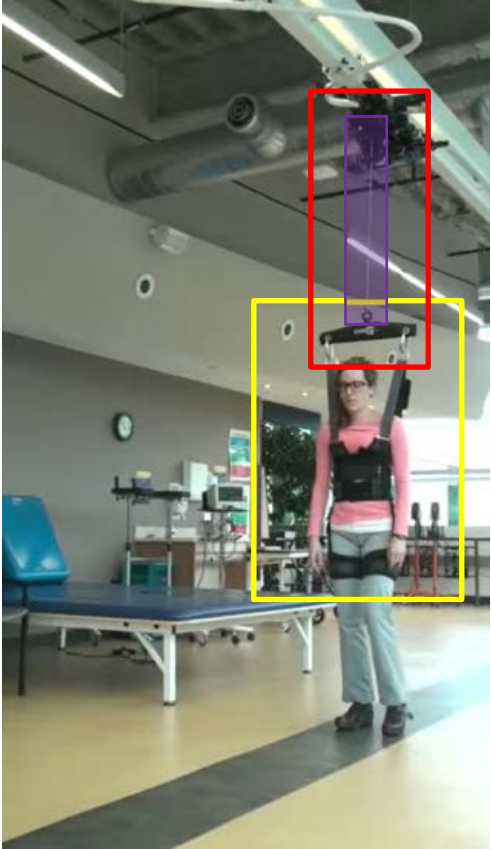
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast. ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.  A photograph showing a person wearing a safety harness and a pink long-sleeved shirt, standing on a treadmill. The person is wearing a black safety harness with a white circular play button overlay in the center. The treadmill is in a clinical or laboratory setting with other equipment visible in the background.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>ZeroG Gait and Balance System Fall Protection Demo</i>, YouTube (June 19, 2015), https://www.youtube.com/watch?v=nDKAHp5w1M4 at 0:04.

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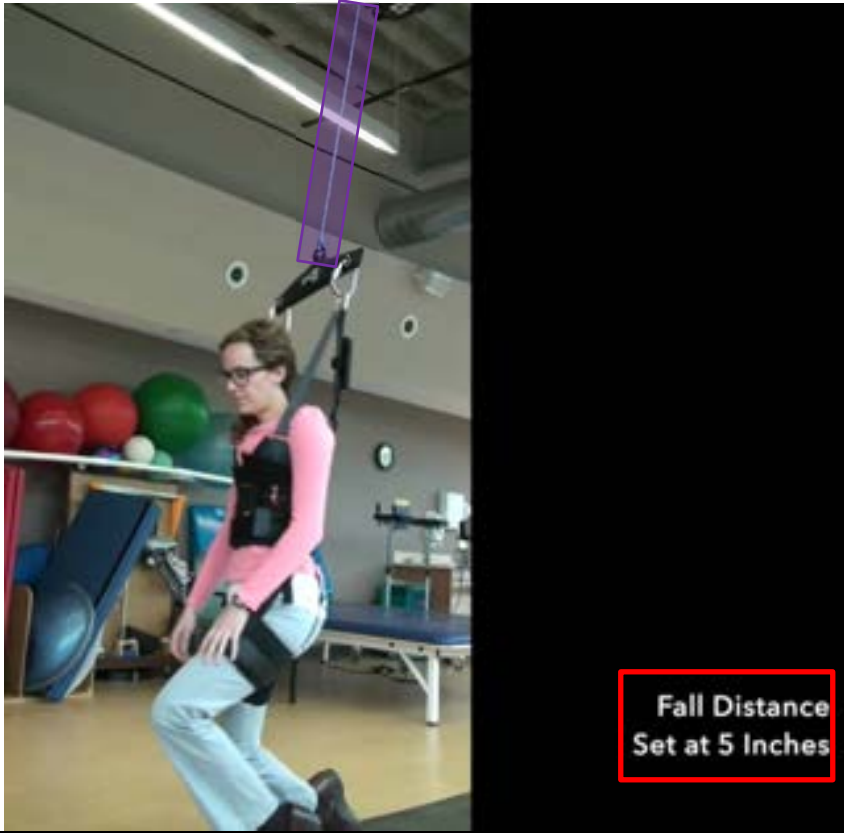
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System, Aretech 3 (2019).</i> <i>See also claim element 1[pre].</i>
1[b] defining a threshold length of the tether;	The Accused Product discloses defining a threshold length of the tether. For example, the Accused Product discloses defining a threshold length (shown in red) of the tether (shown in purple), as shown in the following exemplary disclosures: Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast. 

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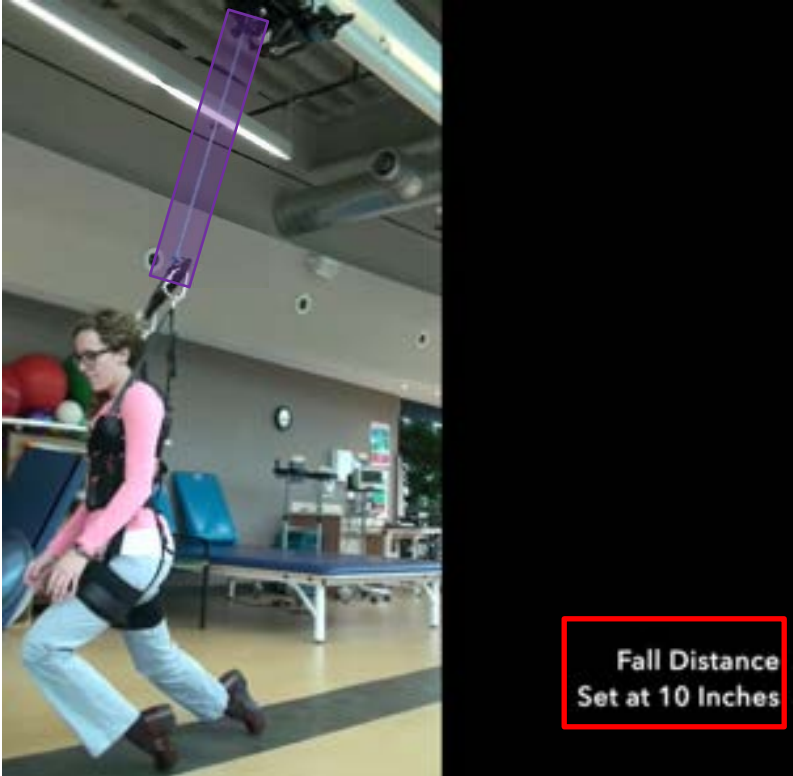
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.  Fall Distance Set at 5 Inches

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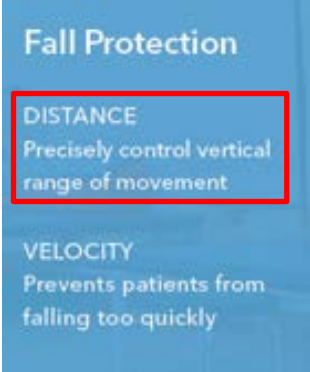
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>ZeroG Gait and Balance System Fall Protection Demo</i>, YouTube (June 19, 2015), https://www.youtube.com/watch?v=nDKAHp5w1M4 at 0:08-0:14.

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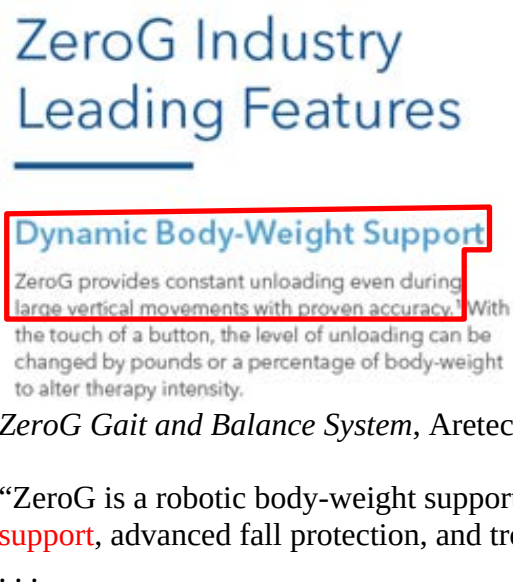
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System, Aretech 3 (2019).</i> When dynamic BWS is enabled, the therapist can set the maximum fall distance for the patient. When the patient exceeds this distance, ZeroG will switch from dynamic to static BWS, which prevents them from falling any farther. In addition, if trolley tracking is enabled when a fall is detected, it will automatically switch off, preventing any further trolley movement along the track. ... ZeroG also has significant safety features. The therapist sets a “fall distance” the patient is allowed to descend before ZeroG switches over to static BWS, effectively catching the patient. In addition, the therapist wears a watch-like wireless safety switch. Upon pressing the switch, ZeroG will switch over to static BWS and the trolley will stop and hold its position along the track. These features ensure the highest level of patient safety during therapy sessions.

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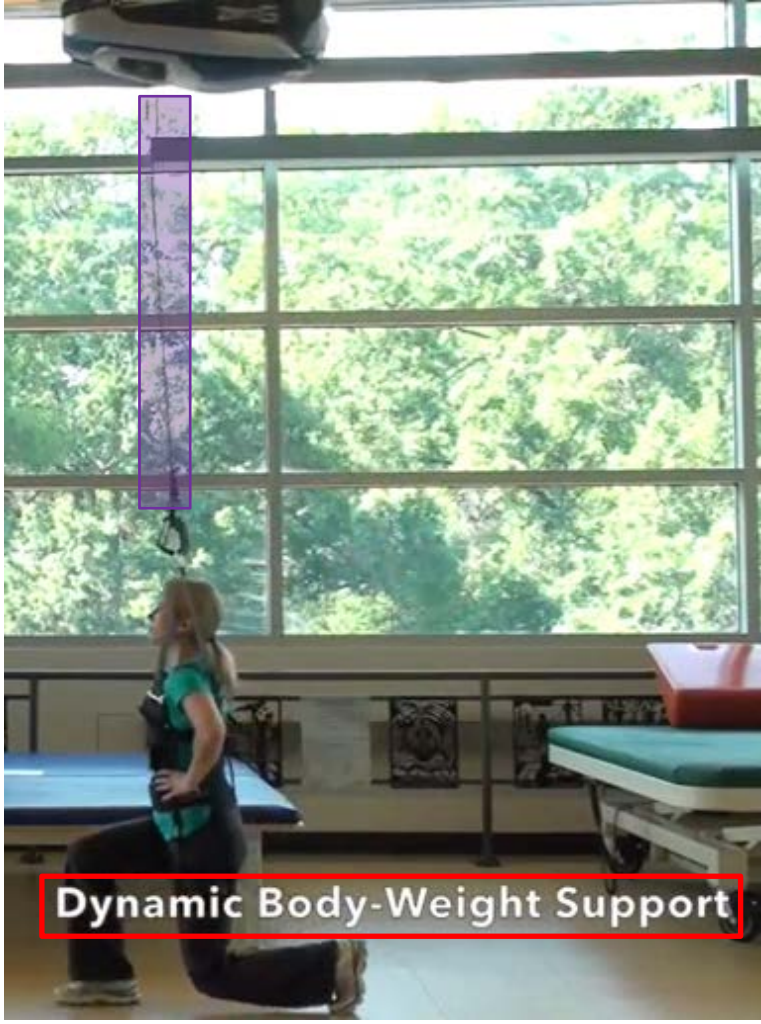
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 293-96 (2011). See also claim elements 1[pre] and 1[a].
1[c] providing a first amount of body weight support during the gait training as the user moves relative to a surface and the length of the tether is less than the threshold length of the tether;	The Accused Product discloses providing a first amount of body weight support during the gait training as the user moves relative to a surface and the length of the tether is less than the threshold length of the tether. For example, the Accused Product includes dynamic body weight support (shown in red) where the system provides a constant amount of body weight support when the length of the tether (shown in purple) is less than the threshold length, as shown in the following exemplary disclosures:  ZeroG Gait and Balance System, Aretech 3 (2019). “ZeroG is a robotic body-weight support system. It provides dynamic body-weight support, advanced fall protection, and trolley tracking.” ...

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Dynamic Body-Weight Support Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 0:32-0:36; 1:24.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Tech Specs Dynamic Body-Weight Support: 10-200 lbs Static Body-Weight Support: Up to 450 lbs Trolley Tracking: Up to 5 mph Ceiling Track: Up to 100 feet standard (additional length optional) Track Configuration: Straight, curved sections, or oval customized for each facility Wireless User-Interface: Android based 5" device Touchscreen User-Interface: 24" high-resolution display on mobile cart Warranty: 2 years on all hardware Aretech Harness Warranty: 1 year ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance/#product-tech-specs.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	ZeroG Gait and Balance System Ms. Banh was aided in her recovery by an array of state-of-the-art equipment, including the ZeroG Gait and Balance System – the only one installed in a post-acute, skilled care facility in the state of Pennsylvania. ZeroG is a robotic body-weight support system which moves along a ceiling track monitoring the patient's movements. The system provides fall protection and dynamic body-weight support which offloads the patient's weight in a "zero-gravity" environment. <i>Brookside's State-of-the-art facility helps patients get back on their feet</i>, Aretech 2 (Mar. 2020), https://www.aretechllc.com/wp-content/uploads/2017/03/Brookside_Case-Study.pdf. Q. How much body-weight support can ZeroG provide a patient? ZeroG has two unloading modes. In static body-weight support, the position of the patient is fixed so they are restricted from moving downwards. ZeroG can provide up to 450 lbs of static support. In dynamic body-weight support, the patient can move freely up and down while the level of support stays constant. ZeroG can provide between 10-200 lbs of dynamic support. <i>ZeroG FAQ's</i>, Aretech (2021), http://aretechllc.net/products/zerog-gait-and-balance/zerog-faqs.

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>ZeroG Dynamic Body-Weight Support Demo</i>, YouTube (Mar. 16, 2017), https://www.youtube.com/watch?v=R8GVhBbQGcA at 0:12. The other BWS mode is dynamic. In dynamic BWS the amount of vertical unloading rather than the position of the patient's COM is kept constant. In this setting, as the patient moves up and down, they experience a constant amount of vertical support, which can be set as a percentage of the patient's body weight. Dynamic BWS has been shown to produce more natural ground-reaction forces and gait characteristics [11–18] and allows patients to move freely through a wide range of movement profiles (e.g., those needed during gait, sit-to-stand, and getting off the floor). Such activities are not possible with static BWS systems, yet are critical to a patient's ability to practice activities of daily living (ADLs).

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	... During normal operation, plates 1 and 2 will move back and forth at a frequency set by the vertical movement of the subject's COM. The full range of plate movement is approximately 4 in., which equates to 8 in. of rope movement. For larger changes in vertical movement, the plates may move all the way to the right or left, making contact with the end plates. To keep the plates centered, an ultrasonic sensor monitors the position of the two plates (Figure 2). If plate 1 advances too close to the left end plate, the winch will turn on and let <u>rope</u> out. If plate 2 advances too close to the right end plate, the winch will turn on and pull <u>rope</u> in. This "centering algorithm" allows ZeroG to maintain constant BWS over large ranges of movement, which often occur during tasks such as sit-to-stand maneuvers and getting off the floor. Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 288-90 (2011). See also claim elements 1[pre], 1[a], and 1[b].
1[d] providing a second amount of body weight support during the gait training as the user moves relative to the surface and the length of the tether is greater than the threshold length of the tether, the drive assembly configured to move the body weight support system relative to the support track to maintain the	The Accused Product discloses providing a second amount of body weight support during the gait training as the user moves relative to the surface and the length of the tether is greater than the threshold length of the tether, the drive assembly configured to move the body weight support system relative to the support track to maintain the body weight support system in a substantially overhead position relative to the user as the user moves relative to the surface.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
body weight support system in a substantially overhead position relative to the user as the user moves relative to the surface; and	For example, the Accused Product includes fall protection (shown in red), where full body weight support is provided when the length of the tether (shown in purple) is beyond the threshold length, and trolley tracking (shown in green), where the system (shown in blue) moves substantially overhead the user, as shown in the following exemplary disclosures: Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.

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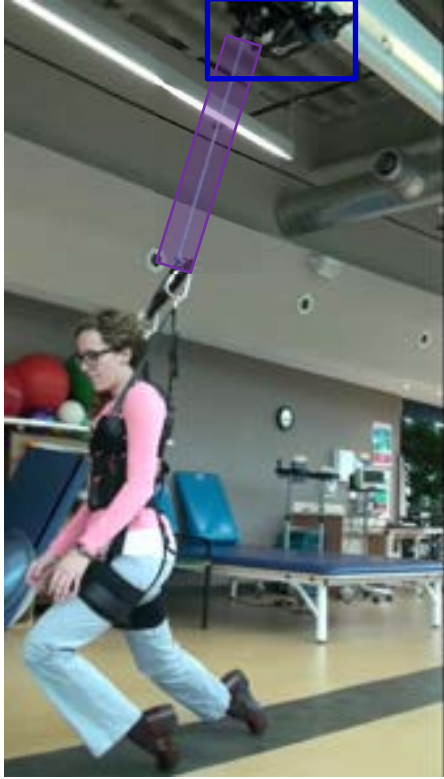
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Fall Distance Set at 5 Inches

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Bioness Inc. v. Aretech, LLC (E.D. Va.)

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Fall Distance Set at 10 Inches Aretech LLC, <i>ZeroG Gait and Balance System Fall Protection Demo</i>, YouTube (June 19, 2015), https://www.youtube.com/watch?v=nDKAHp5w1M4 at 0:08-0:14.

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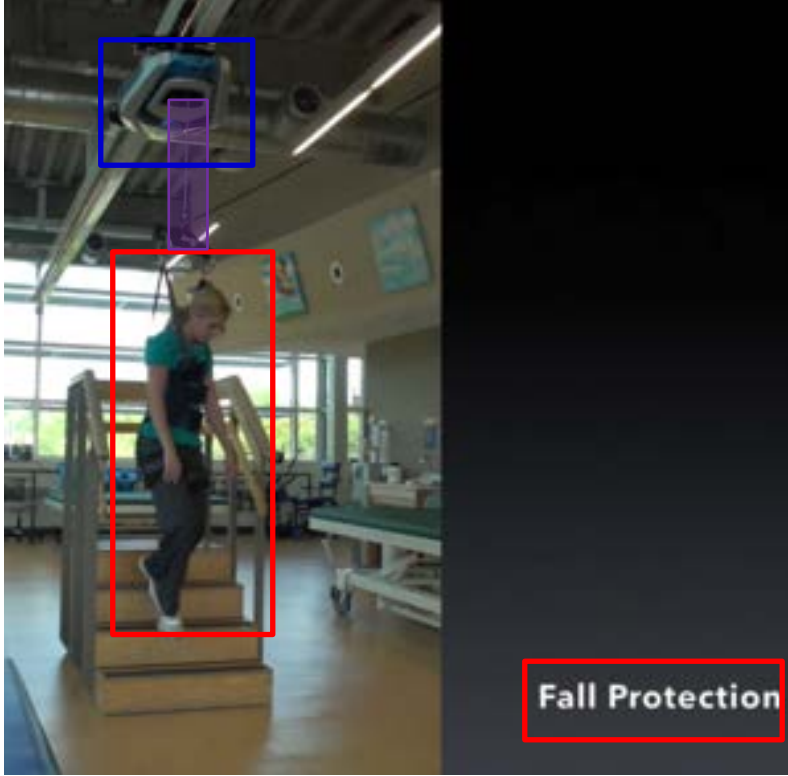
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 ...

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 1:31, 2:26.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	The trolley tracking algorithm controls the position of the trolley as a function of the position of the subject and the desired task. The angle of the rope is measured with a precision potentiometer (model GL60, Novotechnik; Southboro, Massachusetts) mounted to a small pivoting arm that the rope passes through as it exits the system. For perfect system tracking, the horizontal proportion of the rope force will be zero. If the trolley lies posterior to the subject, the rope will pull the user backward; if the trolley is anterior to the subject, the rope will pull them forward. Preliminary experiments with nondisabled subjects suggest that during walking, the subject is highly sensitive to horizontal forces; therefore, controlling the position of ZeroG with respect to the subject is critical. Having large transient errors in tracking when patients walk in ZeroG could potentially be destabilizing, limiting the effectiveness of the therapy. Figure 6 shows the trolley tracking control algorithm. The control objective is to modulate the drive force (F_T) to keep the actual rope angle (θ_{act}) equal to the reference angle (θ_{ref}). During nonlocomotor postural tasks, θ_{ref} is set to 0°, meaning the system stays directly above the subject. During overground walking, θ_{ref} is set to 3°, meaning the system is slightly in front of the subject. We found this slight bias angle to be the most comfortable to our subjects during the development of the algorithm. A velocity-dependent friction compensation force (F_f) is added to the drive force (F_T) so that the trolley will keep moving at a given velocity during constant-velocity phases where the rope angle is the same as the desired rope. The friction is nonlinear and has been identified on ZeroG [17]. ...

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	When dynamic BWS is enabled, the therapist can set the maximum fall distance for the patient. When the patient exceeds this distance, ZeroG will switch from dynamic to static BWS, which prevents them from falling any farther. In addition, if trolley tracking is enabled when a fall is detected, it will automatically switch off, preventing any further trolley movement along the track. ... ZeroG also has significant safety features. The therapist sets a “fall distance” the patient is allowed to descend before ZeroG switches over to static BWS, effectively catching the patient. In addition, the therapist wears a watch-like wireless safety switch. Upon pressing the switch, ZeroG will switch over to static BWS and the trolley will stop and hold its position along the track. These features ensure the highest level of patient safety during therapy sessions. Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 291-96 (2011). See also claim elements 1[pre], 1[a], 1[b], and 1[c].
1[e] displaying data associated with the gait training on a display of an electronic device included in the body weight support system.	The Accused Product discloses displaying data associated with the gait training on a display of an electronic device included in the body weight support system. For example, the Accused Product includes storing data associated with the gait training (shown in red) and showing the data on a display device (shown in blue), as shown in the following exemplary disclosures:

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Q. What data does ZeroG record from each training session? The ZeroG software contains a SQL database that is password encrypted. For each training session, important clinical measures are recorded such as distance walked, training minutes, falls prevented, and the minimum and maximum body-weight support. Depending on other activities performed during the session (treadmill training, target matching, games, etc.) there are additional metrics captured. Q. How can ZeroG be useful for research? For researchers who require more than clinical measures, ZeroG has a Researcher's Toolkit. ZeroG records system level signals at 1,000 times per second. This is extremely useful during gait studies when the precise rope force and rope angle need to be known throughout the gait cycle. <i>ZeroG FAQ's</i>, Aretech (2021), http://aretechllc.net/products/zerog-gait-and-balance/zerog-faqs.  The image shows a man in profile, wearing a dark shirt, pointing at a large monitor. The monitor displays the ZeroG software interface, which features a blue background with various circular gauges and data points. The ZeroG logo is visible in the top left corner of the screen. User Interface An intuitive touchscreen or wireless remote are used to operate ZeroG. Each was developed with therapist feedback to ensure a user-friendly design.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Session Reporting Important training data from each session is stored into a secure database that can be exported in various formats.  ... Tech Specs - Dynamic Body-Weight Support: 10-200 lbs - Static Body-Weight Support: Up to 450 lbs - Trolley Tracking: Up to 5 mph - Ceiling Track: Up to 100 feet standard (additional length optional) - Track Configuration: Straight, curved sections, or oval customized for each facility - Wireless User-Interface: Android based 5" device - Touchscreen User-Interface: 24" high-resolution display on mobile cart - Warranty: 2 years on all hardware - Aretech Harness Warranty: 1 year ZeroG Gait and Balance System, Aretech (2021), <a href="https://www.aretechllc.com/products/zerog-gait-and-balance.">https://www.aretechllc.com/products/zerog-gait-and-balance.

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U.S. Patent No. 10,668,316**Exemplary Evidence of Infringement**

Data Security	Response
Will PHI be accessed, stored and transmitted?	PHI is stored on the ZeroG touchscreen computer. However, there is an option to run ZeroG through a 'Quick Start' mode that does not log any PHI.
How is the database encrypted?	ZeroG is encrypted with 128-bit key.
What protective measures are taken in the event the touchscreen computer is removed from the premises?	The touchscreen must connect to the ZeroG robot in order to access the database. This prevents accessing PHI outside of the gym where ZeroG is installed.

ZeroG Gait and Balance System: System Security, Aretech.

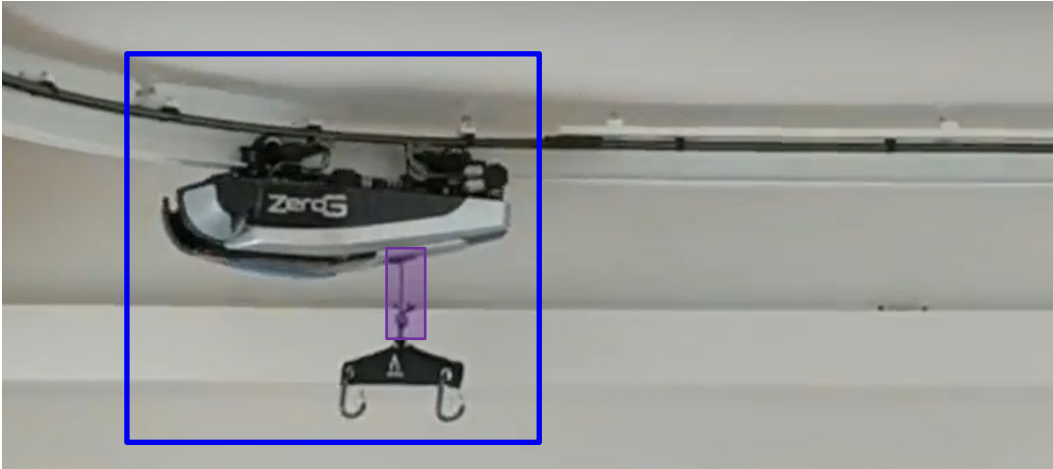
See also claim elements 1[pre], 1[a], 1[b], 1[c], and 1[d].

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
Claim 7	
7[pre] A method of using a body weight support system to provide body weight support during gait training, the body weight support system including a tether configured to be coupled to an attachment device worn by a user to couple the user to the body weight support system, the method comprising:	To the extent that the preamble is a limitation, it is met. Aretech uses, sells, offers for sale, or otherwise provides a body weight support system (shown in blue) embodying a method of providing body weight support using a tether (shown in purple) coupled to an attachment device (shown in yellow) worn by the user. For example:  Aretech LLC, <i>Aretech ZeroG Robotic Trolley on 243 Foot Track</i>, YouTube (Mar. 16, 2017), https://www.youtube.com/watch?v=vRqMXZJQk-g at 0:20.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Marco Fuentes, <i>UHN – Aretech profile</i>, Vimeo (Feb. 25, 2020), https://vimeo.com/393756162 at 0:10.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System, Aretech 11 (2019).</i>

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech, LLC, Facebook (June 1, 2021), https://www.facebook.com/AretechLLC/posts/1634573270068551.

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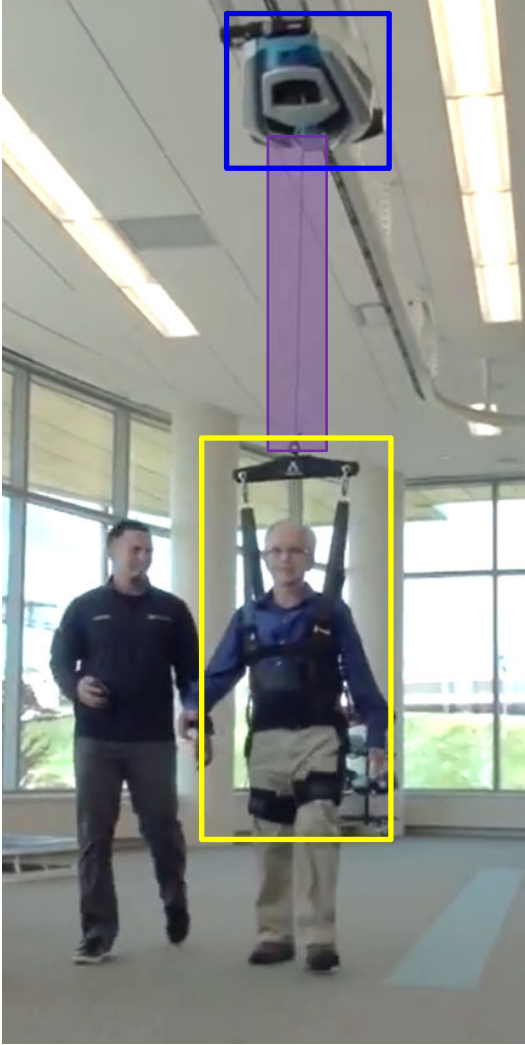
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech, LLC, Facebook (Dec. 11, 2020), https://www.facebook.com/AretechLLC/posts/1516400308552515.

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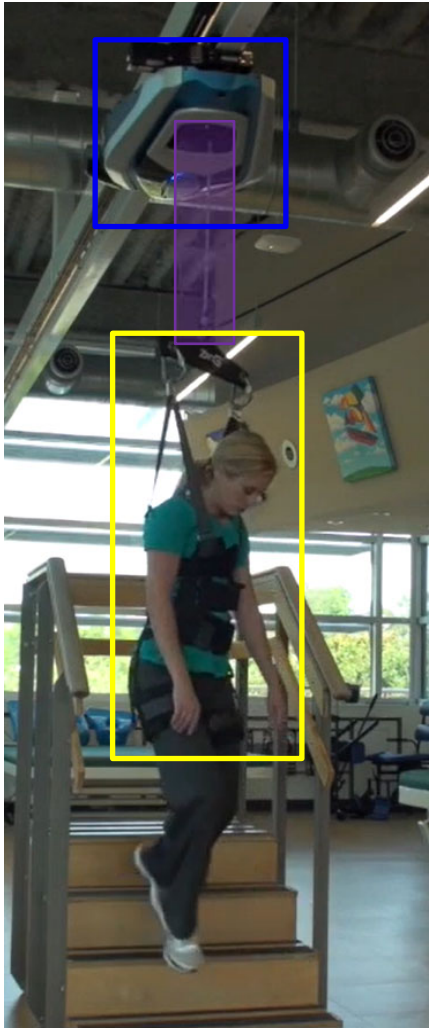
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Using ZeroG with a Balance Disorder</i>, YouTube (Apr. 25, 2017), https://www.youtube.com/watch?v=vRqMXZJQk-g at 1:09.

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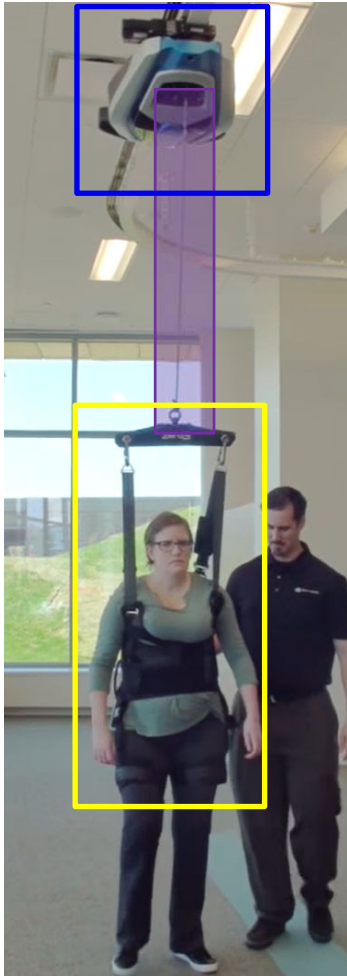
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 2:23.

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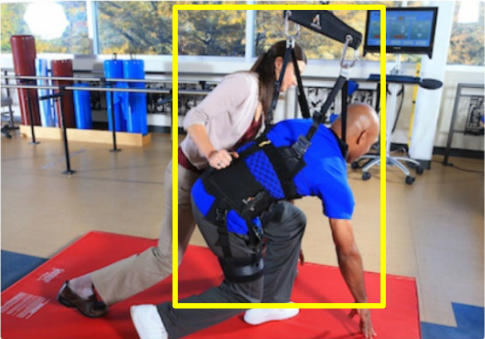
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>Aretech ZeroG Gait and Balance System</i>, YouTube (Sept. 25, 2017), https://www.youtube.com/watch?v=eUuXkU6yCP0 at 2:23.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Aretech Harnesses For use with Aretech products exclusively. Sizes toddler to 2XL to fit a variety of shapes comfortably.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.
7[a] defining a reference length of the tether when the attachment device is in an initial position;	The Accused Product discloses defining a reference length of the tether when the attachment device is in an initial position. For example, the Accused Product discloses defining the allowable length (shown in red) of the tether (shown in purple) coupled to the attachment device (shown in yellow), as shown in the following exemplary disclosures:

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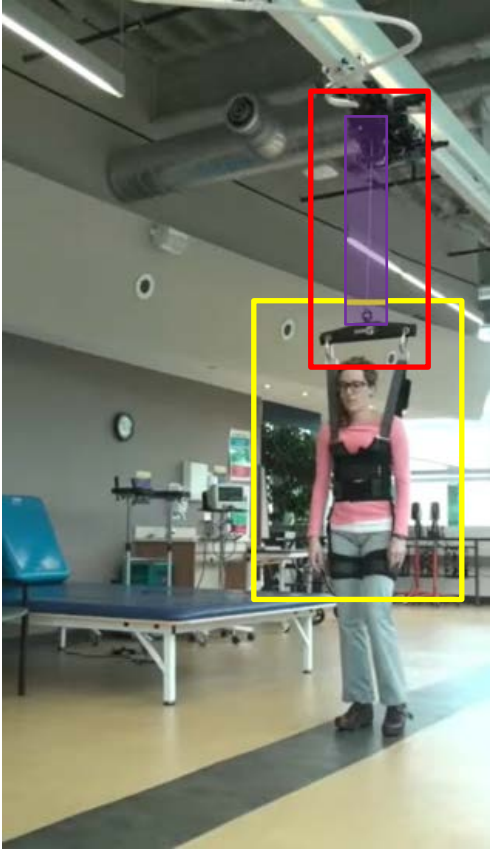
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>ZeroG Gait and Balance System Fall Protection Demo</i>, YouTube (June 19, 2015), https://www.youtube.com/watch?v=nDKAHp5w1M4 at 0:04.

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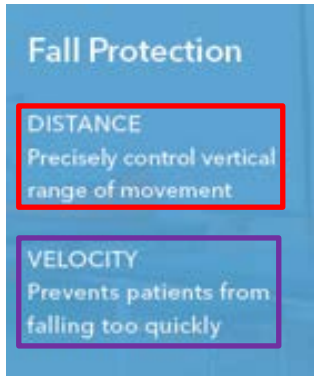
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System</i>, Aretech 3 (2019). See also claim element 7[pre].
7[b] defining a first criterion associated with a change in a length of the tether; defining a second criterion associated with a change in a length of the tether;	The Accused Product discloses defining a first criterion associated with a change in a length of the tether; defining a second criterion associated with a change in a length of the tether. For example, the Accused Product discloses associating the user falling with the user moving outside their allowed vertical range of movement (shown in red) and with the user moving faster than a certain velocity (shown in purple), as shown in the following exemplary disclosures:

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.  ZeroG Gait and Balance System, Aretech 3 (2019).

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 Aretech LLC, <i>ZeroG Gait and Balance System Fall Protection Demo</i>, YouTube (June 19, 2015), https://www.youtube.com/watch?v=nDKAHP5w1M4 at 0:08-0:14. <i>See also</i> claim elements 7[pre] and 7[a].
7[c] defining an amount of the body weight support to provide in response to the user falling during the gait training;	The Accused Product discloses defining an amount of the body weight support to provide in response to the user falling during the gait training. For example, the Accused Product discloses the system switching to static body-weight support (“BWS”) in response to a fall (shown in blue) and providing an amount of body

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	weight support to prevent the user from falling further (shown in red), as shown in the following exemplary disclosures: ZeroG also has significant safety features. The therapist sets a “fall distance” the patient is allowed to descend before ZeroG switches over to static BWS, effectively catching the patient. In addition, the therapist wears a watch-like wireless safety switch. Upon pressing the switch, ZeroG will switch over to static BWS and the trolley will stop and hold its position along the track. These features ensure the highest level of patient safety during therapy sessions. Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 296 (2011).

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Tech Specs Dynamic Body-Weight Support: 10-200 lbs Static Body-Weight Support: Up to 450 lbs Trolley Tracking: Up to 5 mph Ceiling Track: Up to 100 feet standard (additional length optional) Track Configuration: Straight, curved sections, or oval customized for each facility Wireless User-Interface: Android based 5" device Touchscreen User-Interface: 24" high-resolution display on mobile cart Warranty: 2 years on all hardware Aretech Harness Warranty: 1 year ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance/#product-tech-specs.

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Infringement of U.S. Patent No. 10,668,316

U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Q. How much body-weight support can ZeroG provide a patient? ZeroG has two unloading modes. In static body-weight support, the position of the patient is fixed so they are restricted from moving downwards. ZeroG can provide up to 450 lbs of static support. In dynamic body-weight support, the patient can move freely up and down while the level of support stays constant. ZeroG can provide between 10-200 lbs of dynamic support. <i>ZeroG FAQ's</i>, Aretech (2021), http://aretechllc.net/products/zerog-gait-and-balance/zerog-faqs. See also claim elements 7[pre], 7[a], and 7[b].
7[d] maintaining the body weight support system in a substantially overhead position relative to the user as the user moves relative to a surface;	The Accused Product discloses maintaining the body weight support system in a substantially overhead position relative to the user as the user moves relative to a surface. For example, the Accused Product discloses the system maintaining a substantially overhead position relative to the user (shown in purple), as shown in the following exemplary disclosures: Advanced Trolley Tracking The ZeroG robot anticipates and reacts to patient movements so they do not feel any drag from the trolley. ZeroG is the only system with proven accuracy¹. <i>ZeroG Gait and Balance System</i>, Aretech 3 (2019).

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	The trolley tracking algorithm controls the position of the trolley as a function of the position of the subject and the desired task. The angle of the rope is measured with a precision potentiometer (model GL60, Novotechnik; Southboro, Massachusetts) mounted to a small pivoting arm that the rope passes through as it exits the system. For perfect system tracking, the horizontal proportion of the rope force will be zero. If the trolley lies posterior to the subject, the rope will pull the user backward; if the trolley is anterior to the subject, the rope will pull them forward. Preliminary experiments with nondisabled subjects suggest that during walking, the subject is highly sensitive to horizontal forces; therefore, controlling the position of ZeroG with respect to the subject is critical. Having large transient errors in tracking when patients walk in ZeroG could potentially be destabilizing, limiting the effectiveness of the therapy. Figure 6 shows the trolley tracking control algorithm. The control objective is to modulate the drive force (F_T) to keep the actual rope angle (θ_{act}) equal to the reference angle (θ_{ref}). During nonlocomotor postural tasks, θ_{ref} is set to 0°, meaning the system stays directly above the subject. During overground walking, θ_{ref} is set to 3°, meaning the system is slightly in front of the subject. We found this slight bias angle to be the most comfortable to our subjects during the development of the algorithm. A velocity-dependent friction compensation force (F_f) is added to the drive force (F_T) so that the trolley will keep moving at a given velocity during constant-velocity phases where the rope angle is the same as the desired rope. The friction is nonlinear and has been identified on ZeroG [17].

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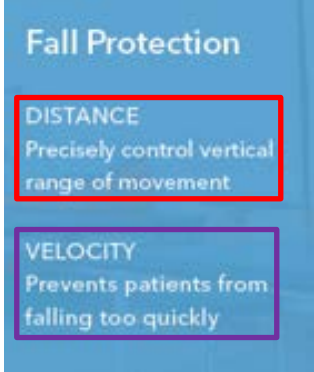
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 291-92 (2011). See also claim elements 7[pre], 7[a], 7[b], and 7[c].
7[e] determining a fall has occurred based on the first criterion and the second criterion being satisfied; and	The Accused Product discloses determining a fall has occurred based on the first criterion and the second criterion being satisfied. For example, the Accused Product discloses the system determining a fall when the user moves outside their allowed vertical range of movement (shown in red) and/or moves faster than a certain velocity (shown in purple), as shown in the following exemplary disclosures: Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast. ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance.

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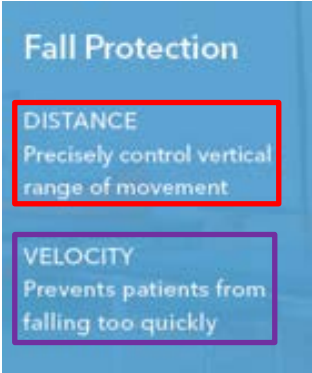
U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	 <i>ZeroG Gait and Balance System</i>, Aretech 3 (2019). ZeroG also has significant safety features. The therapist sets a “fall distance” the patient is allowed to descend before ZeroG switches over to static BWS, effectively catching the patient. In addition, the therapist wears a watch-like wireless safety switch. Upon pressing the switch, ZeroG will switch over to static BWS and the trolley will stop and hold its position along the track. These features ensure the highest level of patient safety during therapy sessions. Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 296 (2011). See also claim elements 7[pre], 7[a], 7[b], 7[c], and 7[d].
7[f] providing the amount of body weight support in response to the first criterion and the second criterion being satisfied.	The Accused Product discloses providing the amount of body weight support in response to the first criterion and the second criterion being satisfied.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	For example, the Accused Product discloses determining a fall when the user satisfies the first criterion of moving outside their allowed vertical range of movement (shown in red) and/or the second criterion of moving faster than a certain velocity (shown in purple). The system switches to static body-weight support (“BWS”) in response to a fall (shown in blue) and provides an amount of body weight support to prevent the user from falling further (shown in yellow), as shown in the following exemplary disclosures: Advanced Fall Protection A fall is prevented by setting an allowable range of movement or when a patient descends too fast.  ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance. 

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	<i>ZeroG Gait and Balance System</i>, Aretech 3 (2019). ZeroG also has significant safety features. The therapist sets a “fall distance” the patient is allowed to descend before ZeroG switches over to static BWS, effectively catching the patient. In addition, the therapist wears a watch-like wireless safety switch. Upon pressing the switch, ZeroG will switch over to static BWS and the trolley will stop and hold its position along the track. These features ensure the highest level of patient safety during therapy sessions. Joseph Hidler et al., <i>ZeroG: Overground gait and balance training system</i>, 48 J. Rehabilitation Res. & Dev. 287, 296 (2011).

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Tech Specs Dynamic Body-Weight Support: 10-200 lbs Static Body-Weight Support: Up to 450 lbs Trolley Tracking: Up to 5 mph Ceiling Track: Up to 100 feet standard (additional length optional) Track Configuration: Straight, curved sections, or oval customized for each facility Wireless User-Interface: Android based 5" device Touchscreen User-Interface: 24" high-resolution display on mobile cart Warranty: 2 years on all hardware Aretech Harness Warranty: 1 year ZeroG Gait and Balance System, Aretech (2021), https://www.aretechllc.com/products/zerog-gait-and-balance/#product-tech-specs.

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U.S. Patent No. 10,668,316	Exemplary Evidence of Infringement
	Q. How much body-weight support can ZeroG provide a patient? ZeroG has two unloading modes. In static body-weight support, the position of the patient is fixed so they are restricted from moving downwards. ZeroG can provide up to 450 lbs of static support. In dynamic body-weight support, the patient can move freely up and down while the level of support stays constant. ZeroG can provide between 10-200 lbs of dynamic support. <i>ZeroG FAQ's</i>, Aretech (2021), http://aretechllc.net/products/zerog-gait-and-balance/zerog-faqs. <i>See also</i> claim elements 7[pre], 7[a], 7[b], 7[c], 7[d], and 7[e].