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### SWIM BUOYANCY AND BALANCE AID AND SWIM INSTRUCTION METHODS USING THE SAME

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#### Abstract

The present disclosure relates to a swim instruction aid comprising a buoyant member, a shell, and a handle coupled to the shell and/or buoyant member. Methods of swim instruction using the swim instruction aid comprise instructing a student to grasp a first swim instruction aid in a first hand and, optionally, a second swim instruction aid in a second hand, wherein the student grasps the first and optional second swim instruction aids using the handles thereof; and instructing the student to practice a swimming skill while in the water and while using the first and optional second swim instruction aids to increase the student's buoyancy, wherein the student practices the swimming skill until the student achieves a predetermined proficiency level.

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## Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application claims the benefit of and priority to U.S. Provisional Patent Application No. 63/552,765, filed Feb. 13, 2024, the entire contents of which are hereby incorporated by reference herein.

### BACKGROUND

[0002] Swim buoyancy aids are essential tools in swim instruction, particularly in the instruction of children and developmentally disabled students. For instance, buoyancy aids help keep swimmers afloat, reducing the risk of drowning, especially for beginners who have developed strong swimming skills or who lack the motor skills to remain afloat independently. Moreover, swim buoyancy aids afford a sense of security that helps an individual (e.g., students) build confidence in the water, making learners more comfortable and willing to practice swimming and more able to focus on skill development. Indeed, for some developmentally disabled individuals, the gentle pressure and support of buoyancy aids can have a calming effect, making swimming a therapeutic activity.

[0003] Moreover, swim buoyancy aids afford a degree of flexibility that facilitates progressive learning. Buoyancy aids can be adjusted to provide varying levels of support, allowing learners to gradually build strength and skill without becoming overwhelmed, while allowing the instructor to increase difficulty as learners develop strength, confidence, or proficiency. Such tools allow instructors and students to focus on specific skills (e.g., kicking techniques, breathing techniques, strokes, staying afloat, or combinations thereof) without worrying about the learner's ability to stay afloat or for the learner's safety. Thus, buoyancy aids serve as transitional tools that can be gradually removed or altered as the swimmer gains more confidence, strength, or skill, leading to independent swimming.

[0004] For children and developmentally disabled students (e.g., autistic adults) who may have underdeveloped motor coordination, buoyancy aids offer the necessary support to practice movements without fatigue, while providing a consistent and comfortable sensory experience. Accordingly, buoyancy aids allow learners to experience a sense of independence in the water while still having a safety net, promoting autonomy and self-reliance.

[0005] Buoyancy aids can come in various forms (e.g., vests, belts, noodles, etc.), allowing for customization based on the specific needs and abilities of the learner. Thus, buoyancy aids enable inclusive participation in swim classes, allowing children and developmentally disabled learners to join in group activities, promoting social interaction and integration. By making swimming easier and more enjoyable, buoyancy aids can foster a lifelong love for the activity, contributing to physical fitness and well-being.

[0006] The human body and brain are generally comfortable in a stable vertical position and stable horizontal position. However, when swimming, the human body is horizontal in an unstable medium (e.g., water) that is constantly changing. To learn how to swim (and to improve safety while doing so), it is important for the body and brain to find comfort in the new medium and learn how to move (e.g., swim) through the medium comfortably and safely.

[0007] Accordingly, it would be advantageous to develop swim buoyancy aids that are simple in design, relatively inexpensive, and flexible enough to be reconfigured to increase or decrease difficulty in line with the learner's proficiency level, strength, or confidence.

### SUMMARY

[0008] In one aspect, which may be combined with any other aspect or embodiment, the present disclosure relates to a swim instruction aid, comprising: a buoyant member; a shell enclosing at least a portion of the buoyant member; and a handle connected to the shell and/or the buoyant member.

[0009] In some embodiments, the buoyant member comprises a polyethylene foam or polyurethane foam.

[0010] In some embodiments, the buoyant member has a cylindrical shape. In some embodiments, a ratio between a length and a diameter of the buoyant member is at least 1.2.

[0011] In some embodiments, the shell comprises a metal or a polymeric material. In some embodiments, the shell comprises a polymeric material selected from the group consisting of: a polyvinyl chloride, a halogenated polyethylene, a high-density polyethylene, a polychloroprene, or a combination thereof.

[0012] In some embodiments, the buoyant member has a diameter of 2-4 inches. In some embodiments, the buoyant member has a diameter of 2.5-3.5 inches.

[0013] In some embodiments, the shell has a thickness of 0.01-0.5 inches. In some embodiments, the shell has a thickness of 0.1-0.3 inches. In some embodiments, the shell has a thickness of 0.15-0.25 inches.

[0014] In some embodiments, the swim instruction aid comprises no more than one handle.

[0015] In some embodiments, the shell encloses the buoyant member along its entire length and around its entire circumference. In some embodiments, the buoyant member is completely enclosed within the shell.

[0016] In some embodiments, the swim instruction aid comprises a leash configured to attach the combined buoyant member, shell, and handle to a user.

[0017] In another aspect, which may be combined with any other aspect or embodiment, the present disclosure relates to a swim instruction aid comprising: a buoyant member comprising a variable-buoyancy vessel with an internal volume of space having at least one opening configured to allow a material within the internal volume of space; and at least one handle connected to the variable-buoyancy vessel according to any embodiment disclosed herein.

[0018] In some embodiments, the material is water, air, or a combination thereof.

[0019] In some embodiments, the at least one handle is connected to the buoyant member by sealed grommets or sealed rivets.

[0020] In some embodiments, the variable-buoyancy vessel comprises a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE), a polyurethane, polycarbonate (PC), a polyvinyl chloride (PVC), a polypropylene (PP), a polyethylene terephthalate (PET), a polyamide, a polystyrene (PS), or a combination thereof.

[0021] In some embodiments, the at least one opening is configured as an inlet and outlet, whereby the material can intake into the internal volume and discharge from the internal volume.

[0022] In some embodiments, the variable-buoyancy vessel is configured to intake or discharge any amount of water to change the buoyancy via the at least one opening.

[0023] In some embodiments, wherein the variable-buoyancy vessel has cylindrical or tubular shape. In some embodiments, the buoyant member is a bottle. In some embodiments, the buoyant member is a bag.

[0024] In some embodiments, the inlet and outlet comprises a push-and-pull cap. In some embodiments, the inlet and outlet is configured as a twist cap, wherein the twist cap locks when sealed. In some embodiments, the inlet and outlet comprises a plurality of perforations. In some embodiments, the inlet and outlet is configured to be sealed by rolling a portion of the bag comprising the perforations into a closed configuration.

[0025] In some embodiments, the inlet and outlet is sealed with a clamp. In some embodiments, the inlet and outlet is sealed with a pressure seal.

[0026] In another aspect, which may be combined with any other aspect or embodiment, the present disclosure relates to a kit for swim instruction, the kit comprising two swim instruction aids according to any embodiment disclosed herein.

[0027] In some embodiments, the kit comprises instructions for using the two swim instruction aids.

[0028] In another aspect, which may be combined with any other aspect or embodiment, the present disclosure relates to a method for instructing a student in swimming, the method comprising: instructing the student to grasp a swim instruction aid in the student's hand, wherein the swim instruction aid is the swim instruction aid according to any of the embodiments disclosed herein, and wherein the student grasps the swim instruction aid using the handle; and instructing the student to practice a swimming skill while immersed in the water and while using the swim instruction aid to increase the student's buoyancy.

[0029] In some embodiments, the student has a developmental disability. In some embodiments, the swimming skill comprises remaining afloat, a kicking technique, a breathing technique, a stroke, or any combination thereof.

[0030] Additional aspects and/or embodiments of the invention will be provided, without limitation, in the detailed description of the present technology set forth below. The following detailed description is exemplary and explanatory, but it is not intended to be limiting.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

[0031] Various objects, aspects, features, and advantages of the disclosure will become more apparent and better understood by referring to the detailed description taken in conjunction with the accompanying figures.

[0032] FIG. 1 is a perspective view of a swim instruction aid according to the present disclosure.

[0033] FIG. 2A is a perspective view of a cylindrical buoyant member according to the present disclosure. FIG. 2B is a perspective view of a tubular buoyant member according to the present disclosure.

[0034] FIG. 3 is a process flowchart for a method of instructing swimming according to the present disclosure.

[0035] FIG. 4 is a perspective view of a swim instruction aid according to the present disclosure.

[0036] FIG. 5 is a perspective view of a swim instruction aid according to the present disclosure, in a rolled configuration.

[0037] FIG. 6 is a perspective view of a swim instruction aid according to the present disclosure, in an unrolled configuration.

### DETAILED DESCRIPTION

[0038] Swim Instruction Aid (“Swim Buoyancy Aid”)

[0039] Referring to FIG. 1, the present disclosure relates to a swim instruction aid (i.e., “buoyancy aid”) **100**. In some embodiments, the swim instruction aid **100** comprises a buoyant member **102** and a shell **104** encapsulating at least a portion of the buoyant member **102**. In some embodiments, the swim instruction aid **100** further comprises a handle **106** coupled to the shell **104** and/or the buoyant member **102**.

[0040] Referring to FIG. 4, the present disclosure also relates to a swim instruction aid **200** comprising a variable-buoyancy vessel **201**. In some embodiments, the swim instruction aid **200** comprises a handle **202** connected to the variable-buoyancy vessel **201** by sealed grommets or sealed rivets **204**. In some embodiments, the swim instruction aid **200** comprises a twist cap **206**, wherein the twist cap locks when sealed. In some embodiments, the swim instruction aid **200** comprises an inlet and outlet configured as a push-and-pull cap **208**.

[0041] Referring to FIG. 5, the present disclosure also relates to a swim instruction aid **300** comprising a variable-buoyancy vessel **301** and a handle **302** connected to the variable-buoyancy vessel **301** by sealed grommets or sealed rivets **304**. In some embodiments, the swim instruction aid **300** comprises an inlet and outlet that is sealed by rolling closed **306** to block entry or exit of a material (e.g., water) into or out of the variable-buoyancy vessel **301**.

[0042] Referring to FIG. 6, the present disclosure additionally relates to a swim instruction aid **300** comprising a variable-buoyancy vessel **301** and a handle **302** connected to the variable-buoyancy vessel **301** by sealed grommets or sealed rivets **304**. In some embodiments, the swim instruction aid **300** comprises an inlet and outlet configured as a plurality of perforations **308** which enable introduction or expulsion of a material (e.g., water) from the interior volume of the variable-buoyancy vessel when unrolled.

#### Buoyant Member

[0043] A swim instruction aid according to the present disclosure comprises a buoyant member. The buoyant member may be of any suitable shape or size and may comprise any suitable material to assist an individual (e.g., student) in remaining afloat in water. The shape and size of the buoyant member are not particularly limited. In some embodiments, the buoyant member may be cylindrical, tubular, rectangular prismatic, polygonal, spherical, disc-like, or any other suitable shape to facilitate buoyancy and ease of movement in water. In some embodiments, the buoyant member is cylindrical or tubular shape. In some embodiments, the buoyant member is a bottle of any suitable size and shape. In some embodiments, the buoyant member is a bag (e.g., a “flat PVC bag”).

[0044] Referring to FIG. 2A, in some embodiments, the buoyant member is cylindrical in shape, wherein the buoyant member has a longitudinal axis with a length (l) and a diameter (d). Referring to FIG. 2B, in some embodiments, the buoyant member is tubular in shape, with a length (l), outer diameter (d), inner diameter (i.d.), and wall thickness (t').

[0045] In some embodiments, the buoyant member is rigid. In some embodiments, the buoyant member is flexible and/or soft (e.g., similar to a “pool noodle” or other buoyancy device). In some embodiments, wherein the buoyant member is flexible, the buoyant member may be generally cylindrical or tubular in shape, for example, but may have some curvature along its longitudinal axis (i.e., along its length l). In some embodiments, the buoyant member is flexible and can be manipulated (e.g., squeezed) to allow a material (e.g., water) in and out of the interior volume of the buoyant member. In some embodiments, the buoyant member is a flexible bag. In some embodiments, the flexible bag is flat when empty.

[0046] The buoyant member may comprise any suitable material for aiding buoyancy in water. In some embodiments, the buoyant member comprises a hydrophobic or “waterproof” material. In some embodiments, the buoyant member comprises a polyethylene (e.g., a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE)), a polyurethane, a polycarbonate (PC), a polyvinyl chloride (PVC), a polypropylene (PP), a polyethylene terephthalate (PET), a polyamide (e.g., a Nylon), a polystyrene (PS), or a combination thereof. In some embodiments, the buoyant member comprises a polyethylene foam (e.g., a “pool noodle”) or polyurethane foam. In some embodiments, the buoyant member comprises a bottle (e.g., a drink bottle) comprising a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE)), a polyurethane, a polycarbonate (PC), a polyvinyl chloride (PVC), a polypropylene (PP), a polyethylene terephthalate (PET), a polyamide (e.g., a Nylon), a polystyrene (PS), or any combination thereof.

[0047] In some embodiments, the variable-buoyancy vessel is opaque, such that the individual (e.g., student) cannot view the amount of a material (e.g., water) within the variable-buoyancy vessel. In some embodiments, the variable-buoyancy vessel is at least partially transparent, such that the individual (e.g., student) can view the amount of a material (e.g., water) within the variable-buoyancy vessel.

[0048] In some embodiments, a buoyant member according to the present disclosure comprises a variable-buoyancy vessel (e.g., a polymeric vessel) with an opening, which may be closed and/or opened, e.g., with a twist-off or seated cap. In some embodiments, the buoyant member as disclosed herein comprises a variable-buoyancy vessel with an internal volume of space having at least one opening configured to allow a substance or material (e.g., water) within the internal volume of space. In some embodiments, the vessel or internal volume of space may be filled

(partially or fully) with the material or substance. In some embodiments, the substance or material is selected from air, water, sand, polymeric beads, or a combination thereof.

[0049] In some embodiments, the substance or material is water. In some embodiments, the at least one opening is configured as an inlet and outlet, whereby the substance or material (e.g., water) can intake into the internal volume and discharge from the internal volume. In some embodiments, the buoyant member can intake or discharge any amount of water to change the buoyancy. In some embodiments, the cap of the vessel may be opened or removed to permit addition or removal of the substance or material (e.g., water, sand, polymeric beads, another suitable substance, or a combination thereof), at the opening, then may be closed, to make the variable-buoyancy vessel less buoyant or more buoyant.

[0050] Referring to FIG. 4, in some embodiments, the inlet and outlet is configured as a push-and-pull cap. In some embodiments, the inlet and outlet is configured as twist cap. In some embodiments, the twist cap locks when sealed. Referring to FIG. 5 and FIG. 6, in some embodiments, the inlet and outlet is configured as a plurality of perforations. In some embodiments, the inlet and outlet is sealed by rolling closed (see FIG. 6). In some embodiments, the inlet and outlet is sealed via a pressure seal. In some embodiments, the inlet and outlet is rolled and sealed with a clamp. In some embodiments, the inlet and outlet is opened by unrolling the variable-buoyancy vessel (e.g., a bag) and exposing the plurality of perforations, which can be manipulated to intake or discharge the material (e.g., water) via the perforations.

[0051] In some embodiments, addition of the material or substance (e.g., water, sand, polymeric beads, another suitable substance, or a combination thereof) makes the variable-buoyancy vessel less buoyant. In some embodiments, addition of the material or substance (e.g., water, sand, polymeric beads, another suitable substance, or a combination thereof), makes the variable-buoyancy vessel more buoyant. In some embodiments, removal of the material or substance (e.g., water, air, sand, polymeric beads, another suitable substance, or a combination thereof) makes the variable-buoyancy vessel less buoyant. In some embodiments, removal of the material or substance (e.g., water, air, sand, polymeric beads, another suitable substance, or a combination thereof) makes the variable-buoyancy vessel more buoyant.

[0052] In some embodiments, wherein the buoyant member is a variable-buoyancy vessel as disclosed above, the handle may be directly coupled to the buoyant member. In some embodiments, wherein the buoyant member is a variable-buoyancy vessel as disclosed above, the swim instruction aid does not comprise a shell (e.g., the swim instruction aid comprises a buoyant member, wherein the buoyant member is a variable-buoyancy vessel containing a material or substance, such as air, water, sand, polymeric beads, or a combination thereof; and a handle coupled to the variable-buoyancy vessel).

[0053] In some embodiments, wherein the buoyant member is a variable-buoyancy vessel as disclosed above, the swim instruction aid comprises a shell (e.g., the swim instruction aid comprises a buoyant member, wherein the buoyant member is a variable-buoyancy vessel containing a material or substance, such as, air, water, sand, polymeric beads, or a combination thereof; a shell covering at least a portion of the buoyant member; and a handle coupled to the shell and/or the variable-buoyancy vessel).

[0054] In some embodiments, the dimensions (e.g., length/and/or diameter d) of the buoyant member may be configured to provide more or less stabilization (e.g., lateral stabilization) for an individual (e.g., student) using the buoyancy aid while in water. In some embodiments, the material making up the buoyant member may have a relatively high density or relatively low density, to achieve a relatively lower buoyancy or relatively higher buoyancy, respectively.

[0055] In some embodiments, the buoyant member has a length/of greater than or equal to about 6 inches, greater than or equal to about 7 inches, greater than or equal to about 8 inches, greater than or equal to about 9 inches, greater than or equal to about 10 inches, greater than or equal to about 11 inches, greater than or equal to about 12 inches, greater than or equal to 13 inches, greater than

or equal to 14 inches, greater than or equal to 15 inches, greater than or equal to 16 inches, greater than or equal to 17 inches, greater than or equal to about 18 inches, greater than or equal to 19 inches, greater than or equal to 20 inches, greater than or equal to 21 inches, greater than or equal to 22 inches, greater than or equal to 23 inches, greater than or equal to about 24 inches, greater than or equal to 25 inches, greater than or equal to 26 inches, greater than or equal to 27 inches, greater than or equal to 28 inches, greater than or equal to 29 inches, greater than or equal to about 30 inches, greater than or equal to about 31 inches, greater than or equal to about 32 inches, greater than or equal to about 33 inches, greater than or equal to about 34 inches, greater than or equal to about 35 inches, greater than or equal to about 36 inches, greater than or equal to about 37 inches, greater than or equal to about 38 inches, greater than or equal to about 39 inches, greater than or equal to about 40 inches, greater than or equal to about 41 inches, greater than or equal to about 42 inches, greater than or equal to about 43 inches, greater than or equal to about 44 inches, greater than or equal to about 45 inches, greater than or equal to about 46 inches, greater than or equal to about 47 inches, greater than or equal to about 48 inches, greater than or equal to about 49 inches, greater than or equal to about 50 inches, greater than or equal to about 51 inches, greater than or equal to about 52 inches, greater than or equal to about 53 inches, greater than or equal to about 54 inches, greater than or equal to about 60 inches, greater than or equal to about 66 inches, greater than or equal to about 72 inches, or any range or value including and/or in between any two of these values.

[0056] In some embodiments, the buoyant member has a diameter  $d$  of greater than or equal to about 1 inch, greater than or equal to about 1.5 inches, greater than or equal to about 2 inches, greater than or equal to about 2.5 inches, greater than or equal to about 3 inches, greater than or equal to about 3.5 inches, greater than or equal to about 4 inches, greater than or equal to about 4.5 inches, greater than or equal to about 5 inches, greater than or equal to about 5.5 inches, greater than or equal to about 6 inches, greater than or equal to about 6.5 inches, greater than or equal to about 7 inches, greater than or equal to about 7.5 inches, greater than or equal to about 8 inches, greater than or equal to about 8.5 inches, greater than or equal to about 9 inches, greater than or equal to about 9.5 inches, greater than or equal to about 10 inches, greater than or equal to about 10.5 inches, greater than or equal to about 11 inches, greater than or equal to about 11.5 inches, greater than or equal to about 12 inches, greater than or equal to about 12.5 inches, greater than or equal to about 13 inches, greater than or equal to about 13.5 inches, greater than or equal to about 14 inches, greater than or equal to about 14.5 inches, greater than or equal to about 15 inches, greater than or equal to about 15.5 inches, greater than or equal to about 16 inches, greater than or equal to about 16.5 inches, greater than or equal to about 17 inches, greater than or equal to about 17.5 inches, greater than or equal to about 18 inches, or any range or value including and/or in between any two of these values.

[0057] In some embodiments, the buoyant member has a diameter  $d$  of about 1 inch to about 8 inches, about 1.5 inches to about 7.5 inches, about 2 inches to about 7 inches, about 2.5 inches to about 6 inches, about 3 inches to about 5 inches, about 2 inches to about 5 inches, about 2 inches to about 4.5 inches, about 2 inches to about 4 inches, about 2 inches to about 3.5 inches, about 2 inches to about 3 inches, about 2.5 inches to about 5 inches, about 2.5 inches to about 4.5 inches, about 2.5 inches to about 4 inches, about 2.5 inches to about 3.5 inches, about 3 inches to about 5 inches, about 3 inches to about 4.5 inches, about 3 inches to about 4 inches, or any range or value including and/or between any two of these values.

[0058] In some embodiments, the buoyant member has an aspect ratio of greater than or equal to about 1, greater than or equal to about 1.1, greater than or equal to about 1.2, greater than or equal to about 1.3, greater than or equal to about 1.4, greater than or equal to about 1.5, greater than or equal to about 1.6, greater than or equal to about 1.7, greater than or equal to about 1.8, greater than or equal to about 1.9, greater than or equal to about 2, greater than or equal to about 2.5, greater than or equal to about 3, greater than or equal to about 3.5, greater than or equal to about 4, greater

than or equal to about 4.5, greater than or equal to about 5, greater than or equal to about 5.5, greater than or equal to about 6, greater than or equal to about 6.5, greater than or equal to about 7, greater than or equal to about 7.5, greater than or equal to about 8, greater than or equal to about 8.5, greater than or equal to about 9, greater than or equal to about 9.5, greater than or equal to about 10, greater than or equal to about 10.5, greater than or equal to about 11, greater than or equal to about 11.5, greater than or equal to about 12, or any range or value including and/or in between any two of these values.

#### Shell

[0059] Referring back to FIG. 1, a swim instruction aid **100** according to the present disclosure comprises a shell **104** covering and/or encapsulating at least a portion of the buoyant member **102**. The shell **104** may be of any suitable shape and may comprise any suitable material to assist an individual (e.g., student) in remaining afloat in water, as well as provide a strong attachment point for a handle **106** without compromising the integrity of the buoyant member. The shell may also enhance the structural integrity of the swim instruction aid and help to maintain consistency in the shape of the swim instruction aid to prevent fluctuations in the degree of lateral stabilization provided by the swim instruction aid while in use, as might be experienced due to curvature induced in a flexible buoyant member (e.g., a “pool noodle”).

[0060] The shape and size of the shell are not particularly limited and may be cylindrical, tubular, rectangular prismatic, polygonal, spherical, disc-like, or any other suitable shape to facilitate covering and/or encapsulating at least a portion of the buoyant member without significantly departing from the general shape of the buoyant member.

[0061] In some embodiments, the shell is rigid (e.g., a PVC tube). In some embodiments, the shell is flexible and soft (e.g., similar to a “pool noodle”). In some embodiments, the rigidity and weight of the shell may be determined by its wall thickness  $t$  (see FIG. 1).

[0062] The shell **104** may comprise any suitable material for aiding buoyancy in water providing structural stability to the swim instruction aid **100**, or providing a stable attachment point for handle **106**. In some embodiments, the shell comprises a hydrophobic or “waterproof” material. In some embodiments, the buoyant member comprises a polyethylene (e.g., a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE)), a polyurethane, a polyvinyl chloride (PVC), a polypropylene, a polyethylene terephthalate (PET), a polyamide (e.g., a Nylon), an ethylene-vinyl acetate (EVA), a polycarbonate (PC), an acrylonitrile butadiene styrene (ABS), a silicone, a polystyrene (PS), a fluoropolymer (e.g., PTFE), or any combination thereof. In some embodiments, the shell comprises a metal (e.g., a lightweight metal such as aluminum). In some embodiments, the shell comprises a polyvinyl chloride (PVC) (e.g., a PVC pipe or tube).

[0063] In some embodiments, the shell has a wall thickness of about 0.01 to about 0.5 inches, about 0.01 to about 0.4 inches, about 0.01 to about 0.3 inches, about 0.01 to about 0.25 inches, about 0.01 to about 0.2 inches, about 0.01 to about 0.125 inches, about 0.01 to about 0.1 inches, about 0.01 to about 0.0625 inches, about 0.01 to about 0.05 inches, about 0.01 to about 0.04 inches, about 0.01 to about 0.03 inches, about 0.01 to about 0.025 inches, about 0.01 to about 0.02 inches, about 0.1 to about 0.5 inches, about 0.1 to about 0.4 inches, about 0.1 to about 0.3 inches, about 0.1 to about 0.25 inches, about 0.1 to about 0.2 inches, about 0.1 to about 0.125 inches, about 0.15 to about 0.5 inches, about 0.15 to about 0.4 inches, about 0.15 to about 0.3 inches, about 0.15 to about 0.25 inches, about 0.15 to about 0.2 inches, or any range and/or value including and/or between any two of these values.

[0064] In some embodiments, the shell is affixed to the buoyant member using any suitable adhesive or mechanical fastener. In some embodiments, the shell is movable, such that it may be selectively positioned along the length/of the buoyant member. In some embodiments the shell is movable but may be temporarily held in place on the buoyant member by mechanical means, such as one or more fasteners, one or more straps, one or more detents, or any other suitable mechanical means.



[0065] In some embodiments a swim instruction aid comprises no more than one shell. In some embodiments, a swim instruction aid does not have a shell. In some embodiments, a swim instruction aid comprises more than one shell (e.g., 2, 3, or 4 shells). In such embodiments, multiple shells could facilitate attachment of multiple handles to the buoyant member. In some embodiments, the multiple shells are movable along the length of the swim instruction aid such that the spacing between two handles attached to two different shells can be adjusted to accommodate one student or one individual comfortably grasping the swim instruction aid with two hands. In some embodiments, more than two shells (e.g., 3 or 4 shells) are movable along the length of the swim instruction aid such that the spacing between two handles attached to two different shells can be adjusted to accommodate a one student or one individual comfortably grasping the swim instruction aid with two hands, while an instructor simultaneously may be able to grasp the swim instruction aid with one or two hands using one or two handles. Thus, the swim instruction aid may enable flexibility in the instruction methods used for the student.

#### Handle(s)

[0066] A swim instruction aid according to the present disclosure comprises a handle to enable an individual (e.g., student or instructor) to grasp and manipulate the swim instruction aid while in water.

[0067] In some embodiments, the handle is coupled directly to the shell. In some embodiments, the handle is coupled (e.g., connected) directly to the buoyant member. In some embodiment, the handle is coupled (e.g., connected) directly to the variable-buoyancy vessel. The handle may be coupled to the shell using any suitable mechanical fastener or adhesive. Suitable mechanical fasteners include, but are not limited to, screws, rivets, nuts, bolts, straps, clamps, grommets, or any combination thereof. In some embodiments, the mechanical fasteners are sealed (e.g., to prevent a material such as water from entering or escaping from the internal volume of the buoyant member). In some embodiments, the sealed fasteners are watertight and/or airtight. In some embodiments, the handle is formed as part of the shell (or buoyant member), such that the handle and shell (or buoyant member) are formed as a singular component, wherein no adhesive or mechanical fastener is required to couple the handle to the shell (or buoyant member).

[0068] In some embodiments, the handle is coupled to the shell and the buoyant member. In some embodiments, the handle is not directly coupled to the buoyant member.

[0069] The handle may comprise any suitable material to facilitate a secure, comfortable grip so that the individual or user (e.g., the student and/or the instructor) is able to manipulate the swim instruction aid while in water without losing contact with the swim instruction aid. In some embodiments, the manipulation comprises intaking or discharging any amount of material or substance as disclosed herein. In some embodiments, the handle is formed from a polymer, wood, metal, or any combination thereof. In some embodiments, the polymer can be manipulated. In some embodiments, the polymer can be manipulated by the individual or user (e.g., the student and/or the instructor) regardless of the pH and temperature of the water. In some embodiments, the ability to manipulate the handle by the individual user can aid in reducing anxiety. In some embodiments, the polymer comprises a polyethylene (e.g., a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE)), a polyurethane, a polyvinyl chloride (PVC), a polypropylene, a polyethylene terephthalate (PET), a polyamide (e.g., a Nylon), an ethylene-vinyl acetate (EVA), a polycarbonate (PC), an acrylonitrile butadiene styrene (ABS), a silicone, a polystyrene (PS), a fluoropolymer (e.g., PTFE), a natural rubber, a styrene-butadiene rubber (SBR), a polychloroprene (e.g., NEOPRENE®), a butyl rubber, a nitrile rubber, a thermoplastic elastomer, a fluoroelastomer (e.g., VITON™), a silicone rubber, a polyurethane rubber, or any combination thereof. In some embodiments, the handle may comprise a grip coupled to a strap or a cord, which may be coupled to the shell by mechanical means (e.g., a ring and clip or carabiner).

[0070] In some embodiments, a swim instruction aid as disclosed herein comprises at least one handle. In some embodiments, a swim instruction aid comprises no more than one handle. In some

embodiments, a swim instruction aid comprises more than one handle (e.g., 2, 3, 4, or more handles). In some embodiments, a swim instruction aid comprises at least one handle, at least two handles, at least three handles, or at least four or more handles. In some embodiments, a swim instruction aid comprises one or more handles, two or more handles, three or more handles, or four or more handles.

[0071] In some embodiments, a swim instruction aid as disclosed herein comprises a leash, which may couple the handle and/or shell and/or buoyant member and/or variable-buoyancy vessel to the user's wrist (e.g., by a cord and VELCRO® wristband wrapped around the student's wrist), thereby preventing the swim instruction aid from floating away from the user, should the user lose his or her grip on the handle.

#### Kits

[0072] In another aspect, which may be combined with any other aspect or embodiment, the present disclosure relates to a kit, the kit comprising one or more swim instruction aids according to the present disclosure. In some embodiments, the kit contains a container which contains the one or more swim instruction aids as disclosed herein; such containers can be boxes, bags, pouches, blister-packs, other suitable container forms, or a combination thereof. Such containers can be made of plastic, glass, a paper material (e.g., a heavy paper-based product such as cardboard), wood, or a combination thereof.

[0073] In some embodiments, the kit further comprises instructions for use. In some embodiments, the instructions generally include information detailing the use of the one or more swim instruction aid(s) for swim instruction (e.g., for methods as disclosed herein). In some embodiments, the instructions include at least one of the following: description of the methods of use as disclosed herein; precautions; warnings; description(s) of how to use the one or more swim instruction aid(s) for swim instruction as disclosed herein; or description(s) of how to build the one or more swim instruction aid(s) as disclosed herein. The instructions may be printed directly on the container, or as a label applied to the container, or as a separate sheet, pamphlet, card, or folder supplied in or with the container. In some embodiments, the kit components may be packaged together or separated into two or more containers.

[0074] In some embodiments, the kit comprises: two shells and handle assemblies, wherein each shell and handle assembly comprises a shell coupled to one or more handles; and a plurality of paired buoyant members. For purposes of this disclosure, the term “paired buoyant members” means two buoyant members which are substantially identical to one another (e.g., having the same buoyancy by virtue of having the same dimensions, shape, and density, and comprising the same material(s)), such that each buoyant member in the paired buoyant members may be coupled to a shell and handle assembly to obtain a swim instruction aid.

[0075] In some embodiments, the kit comprises multiple types of paired buoyant members, with each pair of buoyant members comprising buoyant members of a unique density, length, diameter, or any combination thereof. For example, a kit may comprise n pairs of buoyant members: a first pair of buoyant members having buoyant members of a first length; a second pair of buoyant members having buoyant members of a second length; a third pair of buoyant members having buoyant members of a third length, . . . , and an nth pair of buoyant members having buoyant members of an nth length, wherein the first length, second length, third length, . . . and nth length are all different from one another (and optionally wherein the buoyant members in the first, second, third, . . . , and nth pairs all have the same density and diameter). In such kits, the buoyant members may be interchangeable, such that an individual (e.g., student) who has mastered a swimming skill using a first pair of buoyant members having a first length may replace the first pair of buoyant members with a second pair of buoyant members having a shorter length (affording less lateral stabilization and/or less buoyancy), thereby increasing the difficulty of practicing a swimming skill.

[0076] As another example, a kit may comprise n pairs of buoyant members: a first pair of buoyant members having buoyant members of a first density; a second pair of buoyant members having

buoyant members of a second density; a third pair of buoyant members having buoyant members of a third density, . . . , and an nth pair of buoyant members having buoyant members of an nth density, wherein the first density, second density, third density, . . . and nth density are all different from one another (and optionally wherein the buoyant members in the first, second, third, . . . , and nth pairs all have the same length and/or diameter). In some embodiments, the buoyant members may be interchangeable, such that an individual (e.g., student) who has mastered a swimming skill using a first pair of buoyant members having a first density may replace the first pair of buoyant members with a second pair of buoyant members having a greater density (affording less buoyancy and/or lateral stabilization), thereby increasing the difficulty of practicing a swimming skill.

[0077] In some embodiments, buoyant members may be coded (e.g., color-coded or number-coded) to indicate their density or length (thereby indicating difficulty). In some embodiments, buoyant members of different densities and/or lengths may appear identical in color, shape, etc., to one another, to avoid indicating a new difficulty level to a student, thereby reducing anxiety in the student.

#### Methods of Swim Instruction

[0078] In another aspect, the present disclosure relates to a method for instructing a student in swimming. In some embodiments, the method comprises: instructing the student to grasp a first swim instruction aid in a first hand, wherein the swim instruction aid is the swim instruction aid according to any of the embodiments disclosed herein, and wherein the student grasps the first swim instruction aid using the handle; instructing the student to practice a swimming skill while in the water and while using the first swim instruction aid to increase the student's buoyancy. In some embodiments, the student grasps a first swim instruction aid in a first hand after entering the water. In some embodiments, the student grasps a first swim instruction aid in a first hand before entering the water. In some embodiments, the student enters the water after grasping a first swim instruction aid in a first hand and the student is lifted by the level of buoyancy that the first swim instruction aid is configured to provide. In some embodiments, the first swim instruction aid assists the student by maintaining the level of buoyancy that the first swim instruction aid is configured to provide. In some embodiments, the student has a feeling of buoyancy the first swim instruction aid is configured to provide once the student stops grasping the first swim instruction aid after a predetermined time.

[0079] In some embodiments, the method comprises: instructing the student to grasp a first swim instruction aid in a first hand and a second swim instruction aid in a second hand, wherein the first and second swim instruction aids are swim instruction aids according to any of the embodiments disclosed herein, and wherein the student grasps the first and second swim instruction aids using the handles thereof; and instructing the student to practice a swimming skill while in the water and while using the first and second swim instruction aids to increase the student's buoyancy. In some embodiments, the student grasps a first swim instruction aid in a first hand and a second swim instruction aid in a second hand after entering the water. In some embodiments, the student grasps a first swim instruction aid in a first hand and a second swim instruction aid in a second hand before entering the water. In some embodiments, the student enters the water after grasping a first swim instruction aid in a first hand and a second swim instruction aid in a second hand and the student is lifted by the level of buoyancy that the first swim instruction aid and the second swim instruction aid is configured to provide. In some embodiments, the first swim instruction aid and the second swim instruction aid assists the student by maintaining the level of buoyancy that the first swim instruction aid and the second swim instruction aid is configured to provide. In some embodiments, the student has a feeling of buoyancy the first swim instruction aid and the second swim instruction aid is configured to provide once the student stops grasping the first swim instruction aid and/or second swim instruction aid after a predetermined time.

[0080] In some embodiments, when the student grasps a first swim instruction aid in a first hand (and optionally a second swim instruction aid in a second hand), then enters the water, the student

sees the bottom of a pool, causing the brain to assume the student is falling, thereby inducing the hands to drop down to brace the fall, which in turn pushes the swim instruction aid(s) under the water, which lifts the student by buoyancy. Depending on buoyancy of the swim instruction aid(s), the student will experience a higher or lower level of assistance in remaining afloat in the water. This feeling of buoyancy is experienced by the brain, and a new sensation is processed by the brain and body, helping the student to experience an increased level of comfort in the water.

[0081] In some embodiments, the swimming skill comprises the student remaining afloat for a predetermined time on their front side or back side in water. In some embodiments, the swimming skill comprises a kicking technique (e.g., a flutter kick, a dolphin kick, a breaststroke kick, a scissor kick, elementary backstroke or any combination thereof), which may be performed for a predetermined time or distance. In some embodiments, the swimming skill comprises a breathing technique (e.g., trickle breathing, bilateral breathing, butterfly breathing, explosive breathing, or a combination thereof), for a predetermined time or distance. In some embodiments, the swimming skill comprises a flutter kick. In some embodiments, the swimming skill comprises a stroke (e.g., a front crawl ("freestyle") stroke, a backstroke, a breaststroke, a butterfly stroke, a sidestroke, a trudgen stroke, or any combination thereof). In some embodiments, the swimming skill comprises two or more of remaining afloat, performing a kick, performing a breathing technique, and performing a stroke for a predetermined time or distance. In some embodiments, the swimming skill is floating in water and balancing in water. In some embodiments, floating and balancing can be in any position in the water (e.g., front, right side, left side, or back). Generally, the floating in the water or balancing in the water can be achieved in any position. The student can be balancing or floating on their front, right side, left side, or back. In some embodiments, balancing can be achieved whereby a student may flutter kick on their side with a lead arm out and the trailing arm sitting on their exposed hip, the ear is in the water, and the face is fully exposed to the air. The student can simultaneously stay balanced, move with their leg propulsion, and work on their ability to inhale air in a safe position, leading to the breathing position for when the swimming skill is freestyle or front crawl, for example.

[0082] Generally, the swim instruction aid can be pushed underwater at chest level, thereby allowing the chest to drop and the hips to rise. This can aid in the swimming skill of breaststroke (e.g., breaststroke kick). In this position, the body can engage the transverse abdominis, which will decrease the chances of the swimmer using lower back muscles to get into the same position, thereby keeping the body balanced and level instead of dropping forward and back. In some embodiments, the swim instruction aid is underwater and positioned under the individual's chest. In some embodiments, the swimming skill is breaststroke or breaststroke kick. In some embodiments, the swim instruction aid helps the individual's body engage the transverse abdominis.

[0083] The swim instruction aid can be used when the individual's arms are extended out and in front of the body while the swimming aid is in the individual's hand (e.g., one hand or both hands). Legs can flutter kick or breaststroke kick behind the body, thereby allowing the swimmer to learn the skill of gently raising their head to gain access to air and then placing their face back into the water to exhale. In some embodiments, the swim instruction aid is placed in the individual's hands. In some embodiments, the individual's arms are extended out and in front of the body. In some embodiments, the swimming skill is a flutter kick or breaststroke kick. In some embodiments, the skill is a breathing technique. In some embodiments, the individual (e.g., a student) holds the swimming aid under the chest so that the individual's hips assume an open position with the chest pressing down into the water, such that the individual can practice freestyle kicking or flutter kicking with the body in the proper position.

[0084] In some embodiments, the student is a child (ages 2-17) or an adult (ages 18 or older). In some embodiments, the student has a developmental disability (e.g., autism spectrum disorder (ASD), intellectual disability (ID), Down Syndrome, fetal alcohol spectrum disorder(s), attention-deficit/hyperactivity disorder (ADHD), Williams Syndrome (WS), Angelman Syndrome,

Klinefelter Syndrome, or any combination thereof).

[0085] Referring now to FIG. 3, in some embodiments, the method comprises: [0086] (1) instructing the student to grasp a first swim instruction aid in a first hand and, optionally, a second swim instruction aid in a second hand, wherein the first and optional second swim instruction aids are swim instruction aids according to any of the embodiments disclosed herein, and wherein the first and optional second swim instruction aids comprise a buoyant member having a first buoyancy, and wherein the student grasps the first and optional second swim instruction aids using the handles thereof; and [0087] instructing the student to practice a swimming skill while in the water and while using the first and optional second swim instruction aids to increase the student's buoyancy, wherein the student practices the swimming skill until the student achieves a first proficiency level; [0088] (2) instructing the student to grasp the first swim instruction aid in the first hand and, optionally, the second swim instruction aid in the second hand, wherein the first and optional second swim instruction aids are swim instruction aids according to any of the embodiments disclosed herein, and wherein the first and optional second swim instruction aids comprise a buoyant member having a second buoyancy different from the first buoyancy, and wherein the student grasps the first and optional second swim instruction aids using the handles thereof; and [0089] instructing the student to practice a swimming skill while in the water and while using the first and optional second swim instruction aids to increase the student's buoyancy, wherein the student practices the swimming skill until the student achieves a second proficiency level; and [0090] wherein the first buoyancy is less than or greater than the second buoyancy. [0091] In some embodiments, the second buoyancy is obtained by intaking a material (e.g., water, air, or a combination thereof) into a variable-buoyancy vessel via one or more openings. For example, in embodiments where the second buoyancy is less than the first buoyancy, the second buoyancy is obtained by intaking water into the interior volume of the variable-buoyancy vessel or expelling air from the interior volume via one or more openings. This can be accomplished by the instructor or the individual (e.g., the student) in situ (i.e., without leaving the pool), by intaking water from the pool and/or expelling air from the variable-buoyancy vessel via one or more openings. Similarly, in embodiments where the second buoyancy is greater than the first buoyancy, the second buoyancy is obtained by expelling water into the pool and/or intaking air into the interior volume of the variable-buoyancy vessel via one or more openings. This can be accomplished by the instructor or the individual (e.g., the student) in situ (i.e., without leaving the pool), by expelling water from the interior volume into the pool and/or intaking air from the surroundings.

[0092] According to the methods disclosed herein, the student may benefit from the increased difficulty level afforded by using buoyant members of different buoyancy (e.g., gradually decreasing buoyancy after achieving a certain proficiency level in a swimming skill, or gradually increasing buoyancy if the student experiences difficulty in achieving a certain proficiency level). In some embodiments, the proficiency level may be achieved by performing a swimming skill (e.g., remaining afloat, a kicking technique, a breathing technique, or any combination thereof) for a predetermined amount of time or for a predetermined distance in the water.

[0093] Generally, the methods as disclosed herein achieve proficiency when, for example, the individual's body is position in the water, chest down and hips up toward the top of the water. The instructor can use varying levels of buoyancy as described herein to help the individual achieve this position. The swim instructor can manipulate the buoyancy of the swimming aid to achieve consistency of the correct position. A high rate of buoyancy in the swimming aid allows the swimmer to push into the swimming aid so they can find the point at which the body floats and/or balances. As the buoyancy decreases in the swimming aid, the body needs to relax more so that the decreased buoyancy in the swimming aid can still support the individual's body. As the individual becomes comfortable with the swimming skill, the swim instructor can proceed to more complex skills.

[0094] In some embodiments, the buoyancy afforded by the swim instruction aid may be increased by using a buoyant member of a longer length, while the buoyancy afforded by the swim instruction aid may be decreased by using a buoyant member of a shorter length. In some embodiments, the buoyancy afforded by the swim instruction aid may be increased by using a buoyant member of a larger diameter, while the buoyancy afforded by the swim instruction aid may be decreased by using a buoyant member of a smaller diameter. In some embodiments, the buoyancy afforded by the swim instruction aid may be increased by using a buoyant member of a lower density, while the buoyancy afforded by the swim instruction aid may be decreased by using a buoyant member of a higher density. In some embodiments, the swim instructor can alter the buoyancy during the swim instruction. In some embodiments, less buoyancy increases anxiety in the individual. In some embodiments, less buoyancy makes the individual feel as if they are falling. In some embodiments, a relatively high level of buoyancy will help the individual relax, enabling the student to learn to lay in the water without a solid surface for support. As the brain becomes comfortable with a new position and the attendant sensation, instruction can introduce more complicated skills, thereby helping to develop more advanced swim capability in the individual.

[0095] In some embodiments, wherein the buoyant member comprises a variable-buoyancy vessel with an opening, which may be closed and/or opened (e.g., with a twist-off or seated cap, the vessel may be filled with air, water, sand, polymeric beads, or a combination thereof), the cap of the variable-buoyancy vessel may be opened or removed to permit addition or removal of water, sand, polymeric beads, or another substance at the opening, then may be closed, to make the vessel less buoyant or more buoyant. In this manner, a single buoyant member may be used to achieve varying levels of buoyancy, eliminating the need to replace a first buoyant member with a second buoyant member to achieve a different buoyancy/difficulty level.

[0096] In some embodiments, a first swim instruction aid having a first buoyant member is grasped in a first hand (e.g., lead hand) and a second swim instruction aid having a second buoyant member is grasped in a second hand (e.g., trailing hand), wherein the first buoyant member is different from the second buoyant member. According to such embodiments, the use of different buoyant members having different buoyancies may aid in correcting strength or coordination imbalances or may aid in developing core strength. For instance, a student may grasp a first swim instruction aid in a first hand (e.g., lead hand) and a second swim instruction aid in a second hand (e.g., trailing hand), wherein the first swim instruction aid has a buoyant member of greater density than the buoyant member of the second swim instruction aid. Thus, the buoyancy experienced by the student in water may be asymmetric.

[0097] In some embodiments, an instructor may grasp the first and/or second swim instruction aid using a first hand and/or a second hand while the student is practicing the swimming skill. In such embodiments, this allows the instructor to maintain a degree of control over the student's movement and proximity to the instructor, to increase the student's comfort level, to increase the level of safety, or to increase the instructor's ability to closely observe the student while the student is practicing the swimming skill.

#### Definitions

[0098] As utilized herein, the terms “approximately,” “about,” “substantially,” and similar terms are intended to have a broad meaning in harmony with the common and accepted usage by those of ordinary skill in the art to which the subject matter of this disclosure pertains. It should be understood by those of skill in the art who review this disclosure that these terms are intended to allow a description of certain features described and claimed without restricting the scope of these features to the precise numerical ranges provided. Accordingly, these terms should be interpreted as indicating that insubstantial or inconsequential modifications or alterations of the subject matter described and claimed are considered to be within the scope of the disclosure as recited in the appended claims.

[0099] It should be noted that the term “exemplary” and variations thereof, as used herein to

describe various embodiments, are intended to indicate that such embodiments are possible examples, representations, or illustrations of possible embodiments (and such terms are not intended to connote that such embodiments are necessarily extraordinary or superlative examples). [0100] The term “coupled” or “connected” and variations thereof, as used herein, means the joining of two members directly or indirectly to one another. Such joining may be stationary (e.g., permanent or fixed) or moveable (e.g., removable or releasable). Such joining may be achieved with the two members coupled directly to each other, with the two members coupled to each other using a separate intervening member and any additional intermediate members coupled with one another, or with the two members coupled to each other using an intervening member that is integrally formed as a single unitary body with one of the two members. If “coupled” or variations thereof are modified by an additional term (e.g., directly coupled), the generic definition of “coupled” provided above is modified by the plain language meaning of the additional term (e.g., “directly coupled” means the joining of two members without any separate intervening member), resulting in a narrower definition than the generic definition of “coupled” provided above. Such coupling may be mechanical, electrical, or fluidic.

[0101] The term “or,” as used herein, is used in its inclusive sense (and not in its exclusive sense) so that when used to connect a list of elements, the term “or” means one, some, or all of the elements in the list. Conjunctive language such as the phrase “at least one of X, Y, and Z,” unless specifically stated otherwise, is understood to convey that an element may be either X, Y, Z; X and Y; X and Z; Y and Z; or X, Y, and Z (i.e., any combination of X, Y, and Z). Thus, such conjunctive language is not generally intended to imply that some embodiments require at least one of X, at least one of Y, and at least one of Z to each be present, unless otherwise indicated.

[0102] References herein to the positions of elements (e.g., “top,” “bottom,” “above,” “below”) are merely used to describe the orientation of various elements in the FIGURES. It should be noted that the orientation of various elements may differ according to other exemplary embodiments, and that such variations are intended to be encompassed by the present disclosure.

[0103] It is important to note that the construction and arrangement of the swim instruction aid as shown in the various exemplary embodiments is illustrative only. Additionally, any element disclosed in one embodiment may be incorporated or utilized with any other embodiment disclosed herein. Although only one example of an element from one embodiment that can be incorporated or utilized in another embodiment has been described above, it should be appreciated that other elements of the various embodiments may be incorporated or utilized with any of the other embodiments disclosed herein.

## Claims

1. A swim instruction aid, comprising: a buoyant member comprising a variable-buoyancy vessel having an internal volume of space and having at least one opening configured to allow a material to enter the internal volume of space; and at least one handle connected to the variable-buoyancy vessel.
2. The swim instruction aid of claim 1, wherein the material is water.
3. The swim instruction aid of claim 1, wherein the at least one handle is connected to the variable-buoyancy vessel by sealed grommets or sealed rivets.
4. The swim instruction aid of claim 1, wherein the variable-buoyancy vessel is made from a material selected from a high-density polyethylene (HDPE) or a low-density polyethylene (LDPE), a polyurethane, polycarbonate (PC), a polyvinyl chloride (PVC), a polypropylene (PP), a polyethylene terephthalate (PET), a polyamide, a polystyrene (PS), or a combination thereof.
5. The swim instruction aid of claim 1, wherein the at least one opening is configured as an inlet and outlet, whereby the material can intake into the internal volume and discharge from the internal volume through the at least one opening.

- 6.** The swim instruction aid of claim 1, wherein the variable-buoyancy vessel is configured to intake or discharge any amount of the material to change the buoyancy.
  - 7.** The swim instruction aid of claim 1, wherein the variable-buoyancy vessel has a cylindrical or tubular shape.
  - 8.** The swim instruction aid of claim 1, wherein the at least one opening is configured as a push-and-pull cap.
  - 9.** The swim instruction aid of claim 1, wherein the at least one opening is configured as a twist cap, wherein the twist cap locks when sealed.
  - 10.** The swim instruction aid of claim 1, wherein the buoyant member is a bottle.
  - 11.** The swim instruction aid of claim 1, wherein the buoyant member is a bag.
  - 12.** The swim instruction aid of claim 1, wherein the at least one opening comprises a plurality of perforations.
  - 13.** The swim instruction aid of claim 1, wherein the at least one opening is sealed with a clamp.
  - 14.** The swim instruction aid of claim 1, wherein the at least one opening is sealed with a pressure seal.
  - 15.** A kit for swim instruction, the kit comprising: one or more swim instruction aids according to claim 1.
  - 16.** The kit according to claim 15, comprising two or more of the swim instruction aids.
  - 17.** The kit according to claim 15, further comprising instructions for using the one or more swim instruction aids.
  - 18.** A method for instructing a student in swimming, the method comprising: instructing the student to grasp a swim instruction aid in the student's hand, wherein the swim instruction aid is the swim instruction aid according to claim 1, and wherein the student grasps the swim instruction aid using the handle; instructing the student to practice a swimming skill while immersed in the water and while grasping the swim instruction aid, thereby increasing the student's buoyancy.
  - 19.** The method of claim 18, wherein the student is an individual having a developmental disability.
  - 20.** The method of claim 18, wherein the swimming skill comprises remaining afloat, a kicking technique, a breathing technique, a stroke, or any combination thereof.
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