SURFING INSTRUCTION APPARATUS AND METHOD

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ABSTRACT
Riding a surfboard on sizeable waves is generally very demanding and time-consuming to learn. Beginners tire quickly when paddling against incoming surf and repeatedly fall when first learning to catch and ride waves. A motorized surfboard wirelessly controllable by the instructor, the student, or both facilitates instruction and practice on a floating board moving at variable speeds in a relatively safe, controlled calm-water setting. This system provides an intermediate learning environment between dry land or still water and the vastly more challenging ocean surf. Later, in a surf zone, the board’s motor propulsion assists with paddling so that the student can concentrate on wave-riding. Inland-dwelling students can use this system to learn to ride a board on an existing nearby lake, river, or large swimming pool before a holiday trip to the seashore or an artificial-surf pool.
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RELATED APPLICATIONS


FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

[0002] None

APPENDICES

[0003] None

BACKGROUND

[0004] Related fields include specialized systems and devices for teaching athletic activities, education and demonstration of wave motion, and physical education for developing and testing coordination. The particular focus is instruction in surfing (balancing on a floating board while it moves across a water surface) using remote control of a self-contained propulsion system integrated in the board.

[0005] Many forms of surfing have developed since the mid-20th century. Body surfing, body board surfing, kayak surfing, standup paddle surfing, windsurfing, and kite-surfing are a few examples. The ancestor and best-known of all these surfing variations, and what is customarily meant by the unmodified term "surfing," is the riding, typically in a standing position, of a wave as it crests and breaks. This practice—variously viewed as a ritual, an art, a pastime, and a competitive sport—developed in Polynesia, and possibly independently on the west coast of South America, before European contact.

[0006] The traditional surfing “longboard” is 2.4 m or longer, rounded at the nose, tapered or rounded at the tail, and may have one or more skegs (perpendicular fins) on the bottom. “Shortboards,” developed in the 1960’s are typically 1.5-2.1 m, with pointed noses and 2-5 skegs. While shortboards can be highly maneuverable by a skilled surfer on the right kind of board, longboards are more stable in the water and thus typically preferred for teaching beginners.

[0007] Even on the more stable longboard, surfing is a very difficult skill to learn. The process of riding a wave involves:

[0008] 1. Paddling out to the sloping swells. A surfer needs to catch a wave before its front face becomes vertical. This requires wading in from the shore, mounting the board in a prone, kneeling or sitting position, then paddling and “duck-diving” through approaching broken and cresting waves (“whitewater surf”) until reaching the sloping-swell zone. Although moderate skill and coordination is needed, this stage is very demanding of endurance and strength.

[0009] 2. Catching a wave. The surfer chooses a promising swell and paddles the surfboard to reach the ever-steepening wave at a time, position, and angle for the wave face to properly accelerate the board. Typically the surfer lies prone and paddles with great intensity (“takes off”) to meet the chosen wave. When the acceleration of the wave takes over, the surfer need paddle no longer: he has “dropped in” the wave. This stage requires a burst of strength and speed, combined with excellent timing and agile maneuvering.

[0010] 3. Popping up to a standing position on the board. Once the surfer has dropped in, she immediately executes the “pop-up.” Maintaining her balance on the moving board, she quickly transitions from the prone position all the way to standing. This stage requires agility, flexibility, and dynamic balance as the slope and speed of the wave continue to develop.

[0011] 4. Maneuver and trim. Once standing, the surfer must position the surfboard in the wave as it grows and crests. He may move his center of gravity to the left or to the right to execute turns, or back and forth to “trim” (flatten the plane of the board to gain speed) or to slow down by raising the nose. This stage requires coordination, timing, dynamic balance, and a keen awareness of changing peripheral conditions.

[0012] As can be imagined, putting all these skills together generally requires much practice, usually accompanied by guidance. Although some individual steps—the pop-up motion, for instance—may be practiced on land or in stationary water, almost all prior surfing instruction depended on access to waves of sufficient size and energy to catch and ride while standing. Because beginners will initially fall off the board (“wipe out”) repeatedly, a sandy beach is much more appropriate than a rocky coastline or concrete seawall is highly desirable. Even in such places, weather and tidal conditions vary the character of the waves by the day or by the hour so that they are frequently either too rough or too calm; Hawaiian kahuna priests even have traditional prayers to summon good surfing waves.

[0013] Comparison with another aquatic adventure activity is helpful here: SCUBA (Self-Contained Underwater Breathing Apparatus) diving students almost always initially learn in the safe and predictable environment of a swimming pool. Only after learning the moves and getting familiar with the equipment does the student venture into the uncontrolled setting of the ocean (or other large body of water). With the exception of elaborate, high-maintenance “wave pools” at a handful of expensive parks and resorts, a similarly safe and predictable initial learning environment has not been available for the beginning surfing student. Anecdotal evidence from surf school owners is that approximately half of the beginning students give up after only a few lessons because of the difficulty of paddling very hard, feeling the surfboard drop-in to the wave, and then immediately executing a popup and maneuvering the board into trim.

[0014] Therefore, surf instructors and their students would benefit from a system that provides an intermediate learning and practice environment between dry land and uncontrolled natural waves. Preferably, such a system would be affordable and capable of sharing available resources rather than requiring extensive dedicated construction and constant skilled maintenance.

SUMMARY

[0015] An apparatus for surfing instruction includes a motorized surfboard (MSB) designed to look, feel, and behave like a conventional unmotorized surfboard such as a longboard. The board’s motor responds to signals reaching an on-board wireless receiver (OBWR). A rider’s wireless transmitter (RWT) is controlled by actuators that are easy to reach and identify without looking. The RWT assembly is light-
Each wireless transmitter is a physically separate device, not mechanically coupled to the MSB. Operator control signals, such as “on/off” or “accelerate/decelerate,” are received by the OBWR and translated to corresponding control signals for the propulsion motor. An RWT, an IWT, and one or more auxiliary transmitters may be used individually or together for various purposes in the teaching process.

In some embodiments, the IWT is identical to the RWT. In other embodiments, the IWT may include additional control features, longer signal range, or the capability to override the RWT (analogous to a driving or aviation teacher’s set of controls). The IWT may differ from the RWT in size, shape, design or user interface. For example, the instructor’s wireless transmitter could be a portable high-power “console” operated from a nearby pier where the instructor could observe and assist the student, perhaps also using a wireless voice link to the student on the board in the water. The student’s corresponding voice link could be incorporated in the RWT, or in a separate waterproof wireless headset or bone-conduction earpiece, or even in a waterproof amplified speaker in the surfboard. Alternatively, an instructor’s “console” interface could consist of software running on a computer with the IWT connected as a peripheral input/output device. Such a computer (portable in most embodiments) could also be configured to capture, store, and process data from, for example, a video camera recording the lesson, an audio feed from the voice link, or MSB data from an on-board transmitter. Audio, video, mechanical, environmental, and propulsion-control data recorded by the software could be used later for post-lesson analysis and archival of examples for future classes.

The teaching method comprises a progressive set of practice activities using the apparatus described above. The student or the instructor uses a wireless transmitter to activate or deactivate or throttle the MSB motor to provide episodes of forward thrust and surfboard speed at specific points in the lesson. The motor’s propulsion may simulate the physical dynamics of specific situations in wave surfing in a calm-water environment. When the student progresses to a site with surfable waves, the motor may help the student reach the swells without debilitating fatigue, then take off at the necessary speed for drop-in.

The MSB controlled by the rider, a nearby teacher, or both allows students to learn the essential moves of surfing not just only in ocean surf, but also in any quiet body of water including lakes, quiet rivers, and man made pools. They can also learn in the ocean at places or times too calm for normal surfing. The wirelessly controllable MSB not only decouples the wave-catching practice from the conditioning necessary to prolonged strenuous paddling; it is also fun to ride, even on flat water. After mastering basic balancing, position changes, and weight-shifting maneuvers while moving through water on the MSB, the student will have a much easier time catching and riding that first wave at the surfing destination.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows an example of a calm-water surfing lesson using an MSB, a wearable RWT, and a console-type IWT.

FIGS. 2A and 2B show an example of a motorized surfboard with integrated wireless receiver.

FIG. 3 shows an example of a wearable wireless transmitter assembly for controlling a motorized surfboard.

TEACHING APPARATUS

The teaching apparatus has the following properties: (1) The MSB has the shape and feel of a traditional unmotorized surfboard; for example, a longboard; (2) The MSB’s integrated motor can propel the board with rider at approximately 60-100 km/hr (this is not an absolute speed requirement, but an optimal speed for teaching purposes); (3) The motor can be controlled by a wireless receiver providing at least “on” and “off” commands. (4) The receiver communicates with a rider’s wireless transmitter (RWT), an instructor’s wireless transmitter (IWT), and any designated auxiliary transmitter. (5) The RWT can be operated while lying, standing, kneeling, sitting or in any other position on the MSB in water, where the MSB is providing flotation for the student.

FIG. 1 illustrates the overall concepts involved. Student 101 practices on MSB 102, gaining experience in balancing and maneuvering a freely floating board that moves through water 100 of its own accord. Water 100 is relatively calm—much less dangerous for a beginning surfer than many surf locations. Nor is it crowded with impatient veteran surfers, as many popular surf spots tend to be. Student 101’s experience is controllable to be relaxing or challenging according to her goals and skill level. The motor and wireless receiver for MSB 102 are inside the board under streamlined hatch 103, giving MSB 102 the same size and type of surface as an unmotorized board. MSB 102 has a wireless communication link 105 to RWT 104, illustrated here as a wearable controller on student 102’s hand and forearm. Student 102 may use RWT 104 to control the activation, deactivation, and speed of the motor in MSB 102 while instructor 111 observes from nearby. Alternatively, instructor 111 may control the motor in MSB 102 from where he stands, using wireless communication link 115 from IWT 114. In some embodiments, RWT 104 also has a wireless communication link 125 to IWT 114.

Here, IWT 114 is shown as a ruggedized console embodiment with enhanced antennas 119, motor on-off button 112, and motor throttle fader 113. Instructor-to-student link 125 may include a voice link, usable on IWT 114 via microphone/speaker assembly 121. RWT 105 may have a panic button that uses RWT-IWT channel 125 to illuminate indicator 122 on IWT 114, or produce an audible alert.

If the communications links 105 and 115 to MSB 102 are full-duplex, the MSB can be queried as well as commanded, or can issue alerts on its own. It can, for example, report its speed, temperature, and remaining fuel or electrical charge for Instructor 111 to monitor or record. Some enhanced embodiments may allow instructor 111 to monitor the pitch 126 and roll 127 of MSB 102 in the water, to more easily diagnose student 101’s balance problems.

FIGS. 2A and 2B are two different conceptual views—a top view and an exploded cross-section along line A-A—of another MSB design suitable for this teaching system. Longboard-type MSB 200 with typical fins 201 has an integrated electric jet-pump propulsion unit 202 installed in its undersurface. Propulsion unit 202 is controlled by a motor controller, which in turn is controlled by a wireless receiver.
These parts and their associated circuitry are incorporated in electronics control unit 203, shown here as also recessed in the undersurface of MSB 200. Power is supplied by a removable waterproof rechargeable electric power pack 204 in a receptacle in the top surface of MSB 200. In this example all components are contained inside, or fared into the contours of the MSB so as to substantially preserve the classic shape, feel and performance of a traditional unmotorized longboard.

[0028] Those knowledgeable in the art are aware that a longboard can have a range of lengths (typically 2.4-3.4 m) and a range of widths (typically 56-66 cm) and can have a variety of fin configurations (typically single, dual, tri fin and quad fin). Alternatively, the MSB could be a motorized “short board” (<2.4 m length) for teaching advanced students who have already mastered the more stable, but less maneuverable, longboard. The MSB can be constructed from a variety of materials including, but not limited to: (1) Polyurethane foam and polyester resin with fiberglass; (2) extruded poly styrene and epoxy with fiberglass; or (3) polyethylene foam with LDPE (low density polyethylene) HDPE (high density polyethylene), or components and coatings comprising a combination of the two. This last construction method results in the “soft board” or “foamie.” This board has a soft and forgiving surface, which is particularly amenable to beginners who are likely to fall frequently at first and may be reassured by the supportive feel of a yielding top layer. Serious injuries are less likely when falling on or from a foamie, compared to a waxed wooden or hard-shelled board, and the surface of a foamie need not be slippery under the rider’s feet. If collisions happen, foamies are less likely to cause serious injuries than hard boards.

[0029] In various alternative embodiments of the MSB, the energy source for propulsion can be a battery, an array of batteries, a fuel cell, a capacitor or capacitor array, compressed gas in a tank, combustible liquid fuel, or any other device or means of storing energy. The propulsion source can be any means of propelling the MSB forward (for example, an enclosed water jet pump with electric motor power; one or more rear-mounted propellers driven by a small internal-combustion engine; a compressed-air-operated impeller). Circuitry and software associated with, or intermediary to, the wireless receiver and motor controller may implement additional features such as a “soft” automatic throttle-down providing a smooth (rather than abrupt) end to each episode of forward thrust (helping Student to preserve balance during the change-of-state associated with motor power-down).

[0030] Some embodiments of the IWT and RWT can receive and interpret information from a wireless board-data transmitter integrated in the MSB. Various versions output the interpreted information in real time (for instance, warning the rider or instructor when the battery charge or fuel level is low), store the information in a storage element for later review, or both. The output may be visual, audible, or tactile using suitable indicator lights, displays, speakers, or haptic interfaces. A microprocessor-and-display-equipped wireless phone or wireless-enabled tablet computer may be connected to the IWT to process, store, and display the information, or alternatively may be the IWT with appropriate application software and short-range wireless pairing to the board data transmitter and, optionally, the RWT.

[0031] FIG. 3 illustrates a weirable, hand-operated embodiment of a wireless transmitter assembly for remote control of the MSB propulsion system. Variants of this embodiment may be configured as RWTs or IWTs. Waterproof trigger switch unit 303 responds to one or more actuators, such as buttons 305 and 308. Buttons such as 305, very near user’s thumb 307, may correspond to frequent activities such as throttle control or motor activation and deactivation. Buttons such as 308, reachably by thumb 307 by a larger, more necessarily intentional motion, may correspond to emergency functions such as a student panic button or widerband distress signal. Switch unit 303 and its actuators are integrated in handstrap 301. Handstrap 301 securely, removably attaches to user’s hand near the thumb 307. Alternate embodiments include, for example, an elastic band attached at both ends to a plastic mounting surface or an open-ended fabric band incorporating patches of commercially available hook-and-loop fastening material (for example, VELCRO™) positioned to facilitate hand-length adjustment for various hand sizes. Trigger switch unit 303 sends signals from actuators 305 and 308 through ruggedized waterproof power leads 306 to a wireless transmitter (or transceiver, for full-duplex communication) inside ruggedized waterproof transmitter case 302. Transmitter case 302, which may also house a compact lightweight power supply, is secured to a weirable armband 304. Armband 304 as shown here positions transmitter case 302 near the outer side of user’s elbow, but alternate embodiments of armband 304 may be worn on the wrist, upper arm, or shoulder. Armband 304 may be made of elastic material (for example, neoprene wet-suit material) or any other suitably rugged, waterproof, adjustable or sized design. Along with a pocket or attachment for waterproof case 302, armband 304 preferably includes strain-relief for power leads 306.

[0032] When a user operates button 305 by moving thumb 307, the wireless transmitter inside case 302 signals the wireless receiver in the MSB: for example, to activate the propulsion system to move the MSB through the water. In one embodiment, propulsion continues as long as button 305 is held down. When button 305 is released, the wireless transmitter in transmitter case 302 sends a “deactivate” command to the MSB. Deactivation, in some embodiments, includes a “soft” incremental power-down lasting approximately 1-3 seconds, to avoid destabilizing the surfer with a sudden power-off. Advantageously, this convenient thumb-operated one-handed wireless transmitter allows the surfer to control the jet-pump propulsion system without making any limb movements (e.g. reaching for controls with feet or hands) that would inevitably disrupt surfer’s precise dynamic balance on the surfboard. This can be critically important for safety and control.

[0033] The wireless transmitter may use technology similar to that used to lock and unlock cars (a wireless FOB and receiver unit operating at a frequency of approximately 300 MHz). The actuators can be configured for either left-hand or right-hand operation.

[0034] In another embodiment, as previously discussed above, the instructor may operate an enhanced or fuller-featured wireless transmitter assembly or console, incorporating for example the ability to transmit override signals to override student’s wireless propulsion control in an emergency situation.

[0035] In another embodiment, the wireless transmitter/receiver/motor-controller system may also incorporate “throttle control” functionality so that propulsion power level and/or surfboard speed may be selected and adjusted by the operator(s). Motor controller electronics and associated circuitry and software in the motorized surfboard may also
incorporate automatic acceleration/deceleration control functionality to provide “smooth”, rather than sudden, starts and stops when the propulsion is activated and deactivated.

Teaching Methodology

[0036] Conventional surfing instruction usually begins with introductory “dry land” practice of surfing movements and techniques. The system described here may be used either instead of or along with conventional dry-land exercises.

[0037] The MSB, incorporating a wireless receiver controlling the surfboard’s propulsion motor in response to signals from a wireless transmitter operated by a student or an instructor facilitates a range of teaching methods, including:

[0038] 1. Water entry and board mounting: Student enters the water with the MSB and practices climbing onto the upper surface of the floating MSB. When Student can easily climb onto the board from chest-deep calm water, Instructor may use the IWT to pulse the motor, simulating choppy or chaotic water moving the board around while Student climbs on.

[0039] 2. Paddling practice: Instructor teaches Student to efficiently paddle while lying prone, kneeling, or sitting on the MSB. Student may then practice alone. Resistance may be supplied by mounting the board backwards (tail pointing forward) and activating the motor at a low power setting to work against the paddling, as practice for paddling against incoming waves to reach the zone of sloping swells.

[0040] 3. Wave catching, takeoff, and pop-up practice in calm water with propulsion: In the water, Student can paddle and then “pop up”, using propulsion to simulate the sensation of catching a wave and taking off. The propulsion can be controlled Student, riding the board and simulating the “wave size” and timing she feels ready for, or by Instructor who observes the student and controls the propulsion first to make it easy for Student to keep her balance, then to make it more challenging as Student’s proficiency and confidence increase.

[0041] 4. Maneuver and trim practice in calm water with propulsion: When Student has mastered standing on the MSB with propulsion activated to move the board through relatively calm water, Instructor can teach Student to maneuver by shifting his weight on the board. Shifting weight left or right causes the board to turn in the corresponding directions. Shifting weight forward and back adjusts the trim for faster or slower travel. Student can then practice alone, trying various ways of weight-shifting under power and becoming accustomed to the way the MSB responds. Student learns through practice how far forward he may move on the board to increase speed before the nose dips down into the water and the board “pears” (the nose digs down into the water, the board pitches sharply or may flip completely over, and the surfer often falls off the board. Optimal trim (minimizing drag for highest speed on a given wave) tends to have the nose of the board 5-8 cm out of the water, but this is difficult to judge from above, and looking directly down detracts from balance in any case. A surfer typically learns to find the right trim by feel after practicing repeatedly, which is much more safely done in a lake or large swimming pool than in the ocean.

Those skilled in the art will be aware that weight shifting on the board can be accomplished in a variety of ways including simple leaning, shuffling, or “walking the board” (moving the feet one over the other). These maneuvers are essentially the same for both “regular foot” (left foot forward) and “goofy foot” (right foot forward) surfers, the only difference being the direction the surfer faces while standing on the board.

[0042] 5. Wave catching, takeoff, pop-up, maneuver and trim practice in surf with propulsion assist: When Student has mastered the moves in calm water with Instructor controlling propulsion via the IWT, the lessons can move into a surf zone and the use of the MSB, RWT and IWT can continue there. To reach the sloping-swell zone and drop in on a wave, Student may paddle, use MSB propulsion, or do some of each. The propulsion timing may be under Student’s control, under Instructor’s control, or some combination thereof. The voice-link and instructor-override embodiments are beneficial here for Student’s safety and comfort. With the propulsion assist to repeatedly traverse the incoming breakers, Student can practice dropping in, maneuvering, and trimming for longer than she could if she were exhausted by prolonged paddling. One or more auxiliary wireless transmitters may be mounted on a buoy, boat, or pier near the sloping-swell zone to alert the student that he has gone out far enough, or is about to go out too far.

[0043] Learning how to ride a wave well enough for effective recreation can often be done over the course of a one- or two-week seaside vacation. Learning to paddle a surfboard efficiently through incoming breakers to the sloping-swell zone, then paddle rapidly to catch a wave—and conditioning the body to do so repeatedly without tiring—can take several weeks or months. Mastery of paddling is reportedly a major deterrent for beginning students and a dominant cause of attrition from classes. Therefore, decoupling the mastery of wave-riding from that of paddling, as this system does, is likely to attract and retain a markedly increased number of surfing students.

[0044] The recreational, tourism, and physical-education industries stand to benefit from a system that facilitates surfing instruction. More casual vacationers would be willing to pay for surfing lessons if the process could be almost immediately enjoyable. Once students master the moves in a safe and predictable environment, they will master the ocean wave riding environment with greater confidence and speed.

[0045] In addition, the surf instruction industry will be able to teach students in situations where there are no suitable ocean waves available suitable for teaching (for example, if the waves are too small or too large to be suitable for instruction.) In these cases the class can move to a quiet body of water. Students who live inland can be taught the basic surfing moves on local lakes, rivers, or even large swimming pools, to quickly become “ocean-ready” after arriving at an ocean-surf travel destination.

[0046] Currently preferred embodiments of a surfing instruction system using wireless control of a motorized surfboard have been described in this written description and the accompanying drawings. This purely illustrative description is intended to enable those with skill in the art to practice representative embodiments without undue experimentation, either with the patent owner’s permission or after the invention passes to the public domain. Only the appended claims and their unpatentable variations, however, delineate the boundaries of patent protection.
We claim:

1. Apparatus for surfing instruction, comprising:
   a motorized surfboard with a propulsion system and a
   wireless receiver configured to control the activation
   state of the propulsion system, and
   an instructor’s wireless transmitter in communication with
   the wireless receiver to control the propulsion system,
   where the instructor’s wireless transmitter is configured to
   control a motion of the motorized surfboard through
   water from a position off the motorized surfboard.

2. The apparatus of claim 1, further comprising a rider’s
   wireless transmitter in communication with the wireless
   receiver to control the propulsion system from a position on
   the motorized surfboard.

3. The apparatus of claim 2, where the rider’s wireless
   transmitter is wearable and comprises actuators positioned on
   a rider’s transmitter-operating hand.

4. The apparatus of claim 2, where:
   the wireless receiver is configured to recognize an override
   signal taking precedence over any other wireless signal
   received, and
   the instructor’s wireless transmitter is configured to trans-^
   mit the override signal following an instructor’s
   demand.

5. The apparatus of claim 2, further comprising a wireless
   communication link between the rider’s wireless transmitter
   and the instructor’s wireless transmitter.

6. The apparatus of claim 5, where the wireless communi-^
   cation link comprises a voice channel.

7. The apparatus of claim 1, further comprising:
   a board-data transmitter embedded in the motorized surf-^
   board, configured to transmit information collected by
   integrated sensing elements, and
   a board-data receiver configured to receive the information
   from the board transmitter and accessible to at least one
   of the instructor and the rider,
   a processing element configured to interpret the informa-
   tion from the board-data receiver, and
   an output device to present the information interpreted by
   the processor in a human-comprehensible form.

8. The apparatus of claim 7, further comprising a storage
   element connected to the processor and configured to store
   the information interpreted by the processor.

9. The apparatus of claim 7, where
   the information comprises one of the group consisting of
   fuel level, battery charge level, motor power level, board
   speed, temperature, and board pitch or roll angle, and
   the output device comprises one of the group consisting of
   a real-time display, a display associated with the storage
   element, an audio speaker, and a haptic transducer.

10. The apparatus of claim 1, further comprising an auxil-^
    iary wireless transmitter remote from, but communicating
    with, at least one of the group consisting of the motorized
    surfboard, the rider’s wireless transmitter, and the instructor’s
    wireless transmitter.

11. A method for surfing instruction using the apparatus of
    claim 1, comprising:
    placing the motorized surfboard of claim 1 in a natural or
    human-made body of water;

arranging for a student to mount the motorized surfboard;
using the instructor’s wireless transmitter of claim 1 to
activate the propulsion system of claim 1 and cause the
motorized surfboard, carrying the mounted student, to
move across the surface of the water.

12. The method of claim 11, further comprising instructing
    or observing the student in the practice of at least one of
    surfing balance, paddling, wave-catching, takeoff, pop-up,
    weight-shifting, or maneuvering on the motorized surfboard
    as the propulsion system moves the motorized surfboard
    across the surface of the water.

13. The method of claim 11, where the water is too calm for
    unmotorized surfing.

14. The method of claim 13, further comprising at least one of:
    operating the propulsion system at variable speeds accord-
    ing to the student’s skill level,
    operating the propulsion system in a pulsed or otherwise
    variable mode to simulate the changing forces of waves
    and currents, and
    directing the propulsion system to work against the stu-
    dent’s paddling to build strength for paddling against
    incoming waves.

15. The method of claim 11, further comprising recording
    at least one of
    the instructions given to the student,
    the student’s comments, and
    the student’s performance.

16. The method of claim 11, further comprising at least one of
    monitoring information from a board-data transmitter, and
    recording information from the board-data transmitter to
    review with or without the student at a later time.

17. The method of claim 11, further comprising:
    providing a rider’s wireless transmitter to the student, and
    teaching the student to control the propulsion system using
    the rider’s wireless transmitter while riding the motor-
    ized surfboard.

18. The method of claim 17, further comprising communi-
    cating with the student over a wireless link between
    the instructor’s wireless transmitter and the rider’s wireless
    transmitter while the student is on or near the motorized surfboard.

19. The method of claim 17, further comprising taking
    control of the motorized surfboard from the student by acti-
    vating an override switch on the instructor’s wireless trans-
    mitter.

20. The method of claim 11, where the water has waves of
    a suitable size for unmotorized surfing, and further comprising
    at least one of:
    using the propulsion system to propel the motorized surf-
    board against breaking waves to reach a zone of sloping
    swells,
    using the propulsion system to reach a necessary speed for
    catching a wave, and
    controlling the propulsion system to help the student evade
    hazards in the water.

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