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Introductory Physics Experiments Using the Wii Balance Board

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The College of New Jersey — The Wii, a video game console by Nintendo, utilizes several different controllers, such as the Wii remote (Wiimote) and the balance board, for game-playing. The balance board was introduced in early 2008. It contains four strain gauges and has Bluetooth connectivity at a relatively low price. Thanks to available open source code, such as GlovePie, any PC with Bluetooth capability can detect the information sent out by the balance board. Based on the ease with which the forces measured by each strain gauge can be obtained, we have designed several experiments for introductory physics courses that make use of this device. We present experiments to measure the forces generated when students lift their arms with and without added weights, distribution of forces on an extended object when weights are repositioned, and other normal forces cases. The results of our experiments are compared with those predicted by Newtonian mechanics.

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