# Modification of a Surfboard in Shape and Fin, for People With Balance Problems Due to Neuromuscular Disabilities

Cordero, Noeliz (School: Abelardo Martinez Otero)

Different types of surfboards, with different parts that affect the "behavior" of these when riding them. Each part has a variety of modifications that are used for a specific type of person, sea condition, or category, such as: speed, balance, and maneuverability. It was identified that the main limitation of people with neuromuscular disabilities (NMD) when practicing surfing is balance. Therefore, the purpose of this research was to build a prototype of a surfboard for people with NMD, using a different shape and fin of a conventional surfboard to provide more balance. The hypothesis formulated was that the prototype for people with NMD would provide more balance time than a conventional board. Before making the prototype to scale model, it was embodied in an isometric paper. For the elaboration of the prototype, the following modifications were made: nose rocker raised to a front progression of 9.8 inches in reference to the horizontal, flat tail rocker with an inclination of 2.77 degrees with a "squash" shape, rounded edge or "rail" combined with the style "carving" and "bottom V" modified to vertical form linked to the fifth fin. When comparing the prototype with a conventional surfboard, the results reflected a 30-second increase in balance time. In conclusion, the prototype provides a longer balance time to people with NMD. The results obtained may allow people with NMD could practice this sport as part of their rehabilitation or physical activity.

**Awards Won:**