Tuna has efficient hydrodynamic multiple small fins for stability

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Michael S. Triantafyllou described "tuna fin hydraulics inspire aquatic robotics " (1). During the late 18th century, wing designs were based on anatomical studies on dolphins, trout and tuna by the "father of aerodynamics", Sir George Cayley (2,3). Fish that are adapted for fast swimming, like tuna, are generally fusiform in shape and this is considered an efficient, hydrodynamic shape (4,5). The hydraulic-fin-manufacture utilized multiple small fins instead of large hydraulic fins through the experiment for adopting better boat stabilizers (6). By using two, four or six smaller active fins grouped together, the more small fins system produces better results without causing drag and slowing boats (6). Tuna has such efficient hydrodynamic multiple small fins including 1st dorsal fin, 2nd dorsal fin, finlets, caudal fin, pelvic fin, pectoral fin, and anal fin.

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