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Skin and Bones, Sinew and Gristle: the Mechanical Behavior of Fish Skeletal Tissues; I. Introduction
II. A Primer on Mechanical BehaviorIII. Bone; IV. Cartilage; V. Tendon; VI. Skin; VII. Whole Body Mechanics; VIII. Conclusions; References; Chapter 6: Functional Properties of Skeletal Muscle; I. Introduction; II. Ultrastructure; III. Fiber Types; IV. Patterns of Innervation; V. Mechanics of Contraction; VI. Scaling; VII. Axial Variation; VIII. Effects of Temperature; IX. Summary; X. Future Directions; References; Chapter 7: Structure, Kinematics, And Muscle Dynamics In Undulatory Swimming; I. Introduction; II. Myomere Structure and Force Transmission?Pathways; III. Steady Swimming Kinematics
IV. Muscle Dynamics Along the Body in Steady SwimmingV. Specializations in Thunniform Swimmers; VI. Summary and Future Directions; References; Chapter 8: Stability and Maneuverability; I. Introduction; II. General Principles; III. Stability; IV. Maneuvering; V. Future Directions; References; Chapter 9: Fast-start Mechanics; I. Introduction; II. Initiation of the Fast Start; III. Muscular Contraction Acts to Bend the Fish; IV. Stage 1 Body Bending Occurs with a Traveling Wave of Curvature; V. Muscle Power Production and Force Transmission to the Water
VI. Hydrodynamic Forces Accelerate the BodyVII. Variations in Fast-Start Performance; VIII. Conclusions; IX. Future Directions; References; Chapter 10: Mechanics of Pectoral Fin Swimming in Fishes; I. Introduction; II. Pectoral Fin Morphology; III. Motor Patterns of Pectoral Fin Locomotion; IV. Pectoral Fin Kinematics; V. Fluid Dynamics; VI. Pectoral Fin Swimming Performance; VII. Ecomorphology of Pectoral Fin Propulsion; VIII. Summary and Areas for Future Research; References; Chapter 11: Hydrodynamics of Undulatory Propulsion; I. Introduction; II. Classical Modes of Undulatory Propulsion
III. Theory of Undulatory Propulsion

Sommario/riassunto

The first in two decades to exclusively integrate physiological and biomechanical studies of fish locomotion, feeding and breathing, making this book both comprehensive and unique. This book reviews and integrates recent developments in research on fish biomechanics, with particular emphasis on experimental results derived from the application of innovative new technologies to this area of research, such as high-speed video, sonomicrometry and digital imaging of flow fields. The collective chapters, written by leaders in the field, provide a multidisciplinary view and synthesis of the latest i

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1.10.3. Drag characteristics: (dimensionless); 1.10.4. Side lift coefficient: CY (dimensionless); 1.10.5. Roll coefficients; 1.10.6. Pitch coefficients; 1.10.7. Yaw coefficients; Chapter 2. Design and Optimization of anUnmanned Aerial Vehicle (UAV); 2.1. General design of the drone; 2.2. Weight estimation; 2.3. Size estimation; 2.4. Mass and inertia evaluation; 2.4.1. Mass evaluation; 2.4.2. Measurement of the roll inertia (A)
2.4.3. Measurement of pitch inertia (B)2.4.4. Measurement of yaw inertia (C); 2.5. Convergence toward the target; Chapter 3. Organization of the Auto-Pilot; 3.1. Position of the drone in open space; 3.2. The Dog Law; 3.3. Flight tests; 3.4. Altitude control system; 3.5. Altitude measurement on an actual drone; Bibliography; Index

Sommario/riassunto

In the field of aeronautical dynamics, this book offers readers a design tool which enables them to solve the different problems that can occur during the planning stage of a private project. The authors present a system for the modeling, design and calculation of the flying qualities of airplanes and drones, with a complete mathematical model by Matlab/Simulink. As such, this book may be useful for design engineers as well as for keen airplane amateurs.The authors expound the various phases involved in the design process of an airplane, starting with the formulation of a design tool, un