All orthodontic treatment modalities can be improved by the application of sound biomechanics, yet most orthodontic therapy today is delivered without consideration of forces or force systems. Orthodontic hardware itself is only a means to an end point, such as tooth alignment, bone remodeling, or growth modifications; the orthodontist can achieve these goals only by manipulating forces, regardless of the techniques used. Written by a world-renowned authority on the subject, this book teaches biomechanics in an easy-to-understand and engaging way, using universal examples outside orthodontics to illustrate basic force systems and how they function and then applying these principles to the practice of clinical orthodontics. The authors cover all of the force systems an orthodontist needs to understand to deliver effective treatment, explaining how each can be controlled and manipulated and demonstrating the forces at work through highly instructive 3D illustrations. Most chapters conclude with the presentation of several study problems, allowing the reader an opportunity to practice developing treatment plans using the biomechanics concepts discussed in each chapter. (Answers are provided at the end of the book.) This book is sure to be an instant classic.

Contents

Part I: The Basics and Single-Force Applications
01. Why We Need Biomechanics
02. Concurrent Forces Systems
03. Nonconcurrent Force Systems and Forces on a Free Body
04. Headgear
05. The Creative Use of Maxillomandibular Elastics
06. Single Forces and Deep Bite Correction by Intrusion
07. Deep Overbite Correction by Posterior Extrusion
08. Equilibrium

Part II: The Biomechanics of Tooth Movement
09. The Biomechanics of Altering Tooth Position
10. 3D Concepts in Tooth Movement
11. Orthodontic Anchorage
12. Stress, Strain, and the Biological Response

Part III: Advanced Appliance Therapy
13. Lingual Arches
14. Extraction Therapies and Space Closure
15. Forces From Wires and Brackets
16. Statically Determinate Appliances and Creative Mechanics
17. Biomechanics and Treatment of Dentofacial Deformity
18. The Biomechanics of Miniscrews: From Single-Tooth Control to Total-Arch Movement

Part IV: Advanced Mechanics of Materials
19. The Role of Friction in Orthodontic Appliances
20. Properties and Structures of Orthodontic Wire Materials
21. How to Select an Archwire

Fachgebiet(e): Kieferorthopädie