THIRD
EDITION

Fundamentals of Periodontal Instrumentation

Jill S. Nield-Gehrig
Ginger A. Houseman

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OF

Periodontal Instrumentation

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Williams & Wilkins
A WAVERLY COMPANY

BALTIMORE • PHILADELPHIA • LONDON • PARIS • BANGKOK
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Executive Editor: Darlene Cooke
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Illustration Planner: Mario Fernández
Typesetter: Mario Fernández
Printer: Port City Press
Binder: Port City Press
Cover Designer: Cathy Cotter

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Baltimore, Maryland 21201-2436 USA

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1400 North Providence Road
Building II, Suite 5025
Media, Pennsylvania 19063-2043 USA

Accurate indications, adverse reactions, and dosage schedules for drugs are provided in this book, but it is possible that they may change. The reader is urged to review the package information data of the manufacturers of the medications mentioned.

Printed in the United States of America

Library of Congress Cataloging in Publication Data

Nield-Gehrig, Jill S. (Jill Shiffer)
Fundamentals of periodontal instrumentation / Jill S. Nield-Gehrig, Ginger Houseman.—3rd ed.
p. cm.
Rev. ed. of: Fundamentals of dental hygiene instrumentation / Jill Shiffer Nield, Ginger Ann Houseman. 2nd ed. 1988.
Includes bibliographical references and index.
ISBN 0-683-06516-6
1. Dental insatruments and apparatus—Programmed instruction. 2. Dental hygiene—Programmed instruction. I. Houseman, Gingert Ann. II. Nield-Gehrig, Jill S. (Jill Shiffer). Fundamentals of dental hygiene instrumentation. III. Title.
[DNLM: 1. Dental Prophylaxis—instrumentation. 2. Dental Prophylaxis—methods.
WU 113 N6673f 1996]
RK681.N53 1996
617.6'01—dc20
DNLM/DLC
for Library of Congress 95-19095
CIP

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Foreword

Perhaps the most comprehensive dental hygiene instrumentation text ever written, the newly revised third edition of **FUNDAMENTALS OF PERIODONTAL INSTRUMENTATION** has the solution to every problem encountered in teaching and learning instrumentation. Educators, students, and clinicians worldwide will find this to be the most state-of-the-art instrumentation textbook available. Not only is the content invaluable to students and educators, but practicing clinicians wishing to hone their skills will be able to teach themselves using this new edition.

The familiar format for self-teaching and self-evaluation remains in this edition, while the latest techniques in periodontal instrumentation have been added. In the last decade, the prevention of disease transmission and musculoskeletal injuries has become of paramount importance. Approaches to periodontal assessment and soft tissue management have changed the selection and sequence of treatment. These concepts are incorporated throughout this new edition. There are comparisons of "Old Paradigms" and "New Paradigms" to aid the educator and learner in differentiating the current concepts from the outdated concepts.

The individual modules may be presented in a sequence to meet individual course objectives. The **Basic Skills** section focuses on proper body mechanics and techniques that prevent repetitive strain injuries (RSIs) such as carpel tunnel syndrome, as well as back and neck injuries. Changes in positioning zones, proper movement of muscle groups, and prevention of muscle fatigue are emphasized throughout the Basic Skills modules. Techniques for the prevention of RSIs are emphasized throughout the textbook. "Mechanics Checks" throughout the text provide self-evaluation checklists to determine if proper body mechanics and techniques are being employed.

The **Periodontal Debridement** modules include techniques with hand-activated instruments, adaptation to specific root morphology, and an entirely new section on safe and practical applications of advanced fulcrums. Assessment and care of dental implants is addressed in a complete, informative module. Current concepts for the use of sonic and ultrasonic instruments are presented in *Periodontal Debridement: Use of Ultrasonic and Sonic Instruments*. Applications for air polishing in extrinsic stain removal are presented, along with traditional stain removal techniques. A major

change in this edition is in the presentation of periodontal disease states and how they relate to changes in the periodontium. The understanding of causes and effects of periodontal diseases is reinforced throughout the modules to better prepare the learner to analyze tissue conditions for accurate periodontal assessments and ideal treatment plans.

Teaching psychomotor skills for instrumentation is the greatest challenge in dental hygiene education. Explaining the finite details of instrumentation techniques in a step-by-step presentation requires the expertise of an extraordinary educator. Lead author, Jill S. Nield-Gehrig, is just that kind of educator; her writing derives its foundation from years of experience as a clinical educator. She captures the very essence of instrumentation through pictures, illustrations, and descriptive words. Her dedication to students, faculty, and patients is unfolded before us in the form of a textbook that instructs us how to teach instrumentation.

Those of us who have had the honor of teaching with Jill Nield-Gehrig were able to learn first hand her strategies for teaching instrumentation. **Fundamentals of Periodontal Instrumentation**, third edition, gives everyone access to her effective teaching/learning strategies in the form of a textbook. Every attempt has been made on my part to describe the excellence of this textbook; however, true appreciation can only be realized when educators and learners use it and experience the astounding results for themselves.

CYNTHIA R. BIRON, RDH, EMT, MA
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To the Course Instructor

TEXT OVERVIEW

Many textbooks address the cognitive "why" of periodontal instrumentation. This one, however, guides the clinician step by step through the psychomotor "how" of instrumentation technique. **Fundamentals of Periodontal Instrumentation** is a "hands-on" guide to instrumentation which emphasizes:

- detailed, step-by-step instructions for both right- and left-handed clinicians;
- the fundamental skills; and
- instrument use according to classification, rather than by specific instrument.

Textbook modules are divided into three major sections:

- Basic Skills
- Patient Assessment
- Periodontal Debridement

MODULE SEQUENCE

Each module of this text is designed to be used independently, permitting the course instructor to customize the module sequence to meet the particular needs of the course or curriculum.

Sequence Example 1:

1. Modules 1 to 7: Basic Skills
2. Module 8: Periodontal Probes
3. Module 9: Explorers
4. Modules 10 to 13: Hand-Activated Instruments
5. Module 14: Ultrasonic and Sonic Instruments
6. Module 15: Sharpening: Hand-Activated Instruments
7. Module 16: Extrinsic Stain Removal

Sequence Example 2:

1. Modules 1 to 7: Basic Skills
2. Module 14: Ultrasonic and Sonic Instruments
3. Module 8: Periodontal Probes
4. Module 9: Explorers
5. Modules 10 to 13: Hand-Activated Instruments
6. Module 15: Sharpening: Hand-Activated Instruments
7. Module 16: Extrinsic Stain Removal

Sequence Example 3:

1. Modules 1 to 7: Basic Skills
2. Module 14: Ultrasonic and Sonic Instruments
3. Modules 10 to 13: Hand-Activated Instruments
4. Module 8: Periodontal Probes
5. Module 9: Explorers
6. Module 15: Sharpening: Hand-Activated Instruments
7. Module 16: Extrinsic Stain Removal

Sequence Example 4:

1. Modules 1 to 7: Basic Skills
2. Modules 10 to 13: Hand-Activated Instruments
3. Module 15: Sharpening: Hand-Activated Instruments
4. Module 14: Ultrasonic and Sonic Instruments
5. Module 8: Periodontal Probes
6. Module 9: Explorers
7. Module 16: Extrinsic Stain Removal

Throughout the text, emphasis is placed on fostering the autonomy and decision-making skills of the learner. The content is presented in a step by step tutorial manner that allows the learner to work independently. This format permits a group of learners to work independently of one another, giving each the flexibility to spend more time on a skill that he or she finds more difficult and to move on when a skill is mastered. The instructor, freed from the task of endlessly repeating the same information, assumes the role of facilitator of the skill acquisition process. Learners should be encouraged to complete the self-evaluations in the textbook; faithful self-evaluation helps the learner develop the ability to assess his or her own level of skill mastery.

I appreciate the enthusiastic comments and suggestions from clinicians, educators, and students about the previous editions, and welcome your continued input. It is my sincere hope that this textbook will help learners to acquire the psychomotor skills basic to nonsurgical periodontal treatment.

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Contents

Basic Skills

1
MODULE

Mathematical Principles and Anatomic Descriptions

General Objectives: Upon completion of this module, you should be familiar with the mathematical principles and anatomic descriptions used in periodontal instrumentation.

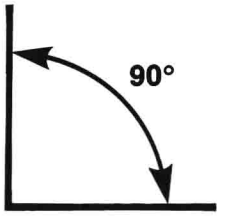
Required Equipment:

- pencils: #2 lead, red, and blue
- millimeter ruler

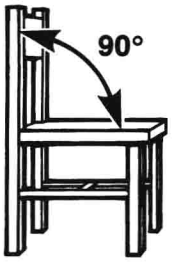
This module contains a review of the mathematical principles and anatomic descriptors that you need to know when learning periodontal instrumentation. None of these concepts or terms is difficult, and you have probably studied them in the past. You should, however, review them now to be sure that you have a clear understanding of each principle or descriptor. You will apply these concepts and terms frequently as you study the use of periodontal instruments.

Geometric Angles

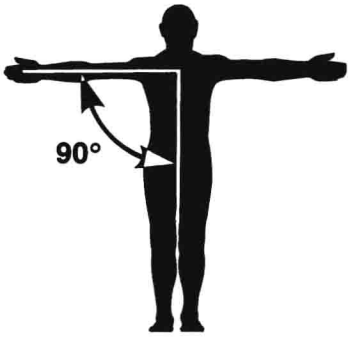
The correct use of periodontal instruments requires the clinician to have a thorough understanding of geometric angles. A knowledge of geometric angles allows you to understand the various design characteristics of different periodontal instruments. This knowledge also is needed in order to correctly position the working end of the instrument against the tooth surface for effective calculus removal. The 90-degree angle and the 45-degree angle are commonly used reference points in instrumentation. For example, when moving the cutting edge across the tooth surface, the cutting edge meets the tooth surface at an angle that is less than 90-degrees but greater than 45-degrees. Review the every day examples of 90-degree and 45-degree angles shown below.



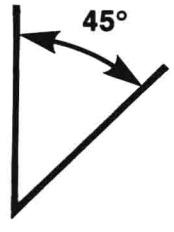
90-degree angle (also known as a right angle).



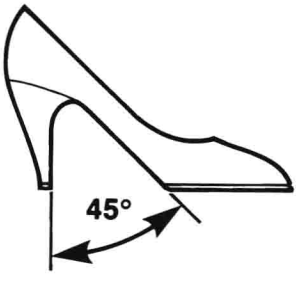
The seat of this chair is at a 90-degree angle to the chair back.



This man's arms are at a 90-degree angle to the midline of his body.



45-degree angle.



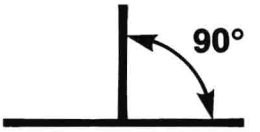
The sole of this shoe forms a 45-degree angle with the heel.

This man's arms are at a 45-degree angle to the midline of his body.

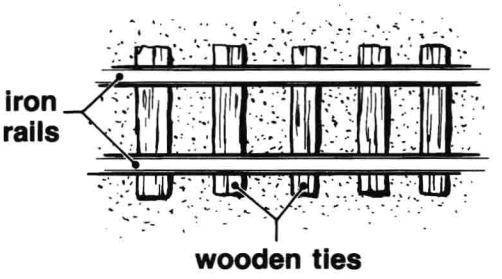
Parallel and Perpendicular

To correctly position an instrument, you will need to understand the terms **parallel** and **perpendicular**.

Parallel lines will never meet.



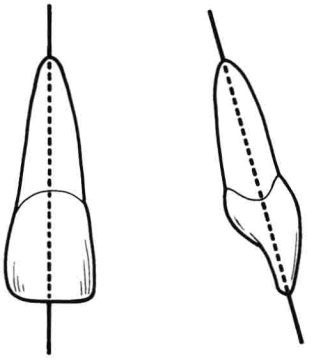
Perpendicular lines meet at right angles.



The iron rails of a railroad track are *parallel* to each other. The wooden ties of the railroad track are perpendicular to the iron rails.

Long Axis

In instrumentation, the instrument handle is held parallel to the long axis of an anterior tooth.



The long axis is an imaginary dividing line through the center of a tooth.