

Instrument Grasp

MODULE OVERVIEW

This module introduces the correct grasp for holding a periodontal instrument. It begins by explaining the parts of a periodontal instrument and proper glove selection for instrumentation. Covered next is the correct finger placement for the modified pen grasp. This module also contains exercises designed to help develop and maintain the strength of the hand muscles.

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KEY TERMS

Handle
Shank

Working-end
Modified pen grasp

LEARNING OBJECTIVES

1. Given a variety of periodontal instruments, identify the parts of each instrument.
2. Understand the relationship among correct finger position in the modified pen grasp, the prevention of musculoskeletal problems, and the control of a periodontal instrument during instrumentation.
3. Demonstrate correct finger position for the modified pen grasp.
4. Describe the function each finger serves in the modified pen grasp.
5. Recognize incorrect finger position in the modified pen grasp and describe how to correct the problem(s).
6. Select the correct glove size for your hands and explain how the glove size selected meets the criteria for proper glove fit.
7. Understand the relationship between proper glove fit and the prevention of musculoskeletal problems in the hands.
8. Perform exercises for improved hand strength.

SECTION I

Instrument and Finger Identification

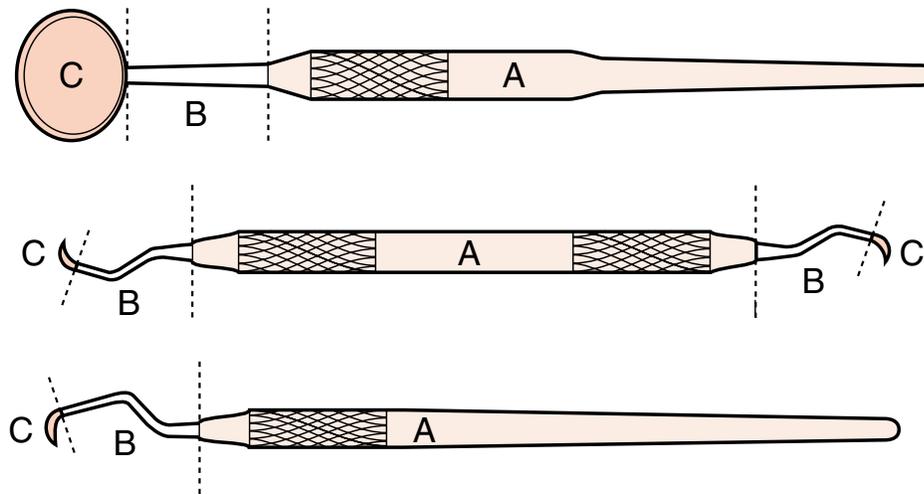
A correct instrument grasp requires precise finger placement on the instrument (Table 3-1). To follow the instructions for the grasp, you must be able to identify (1) the parts of a periodontal instrument and (2) the fingers for use in the modified pen grasp.

PARTS OF THE PERIODONTAL INSTRUMENT

Handle—the part of a periodontal instrument used for holding the instrument.

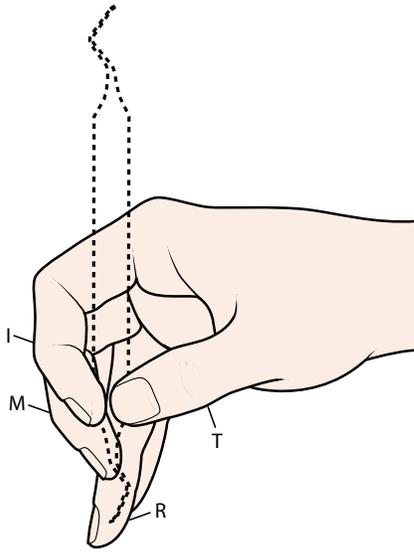
Shank—a rod-shaped length of metal located between the handle and the working-end of a dental instrument. The shank is an extension device that increases the length of the instrument so that the working-end can be positioned on the tooth root. Look closely at the instrument handle; usually you will be able to see a line or edge where the handle joins the shank. The shank is generally much smaller in diameter than the handle. The shank may be straight, or it may be bent in one or more places.

Working-End—the part of a dental instrument that does the work of the instrument. The working-end begins where the instrument shank ends. The shank is circular and smooth, but the working-end is shaped or flattened on some of its surfaces. The working-end may terminate in a sharp point or a rounded surface. It may be thin and wirelike or look somewhat like a tiny measuring stick. In some cases, the working-end is a small mirror. An instrument may have one or two working-ends.

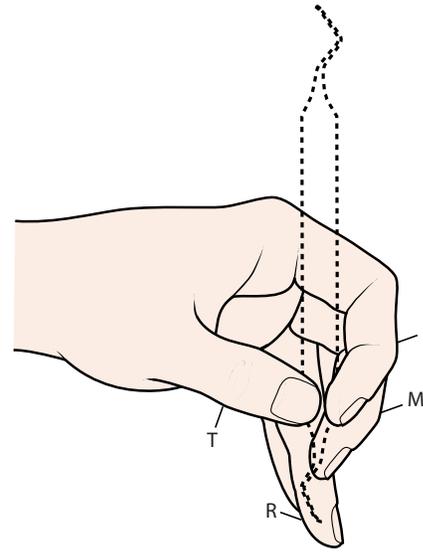


A. Handle
B. Shank
C. Working-End

FINGER IDENTIFICATION FOR THE GRASP



RIGHT-HANDED CLINICIAN



LEFT-HANDED CLINICIAN

Finger Identification and Placement in Modified Pen Grasp. The index finger (I) and thumb (T) hold the instrument handle. The middle finger (M) rests on the instrument shank. The ring finger (R) advances ahead of the other fingers to act as a support for the hand and instrument.

TABLE 3-1. Finger Placement and Function

Digit(s)	Placement	Function
Index and Thumb	On the instrument handle	Hold the instrument
Middle Finger	Rests lightly on the shank	Helps to guide the working-end Feels vibrations transmitted from the working-end to the shank
Ring Finger	On oral structure; often a tooth surface Advances ahead of the other fingers in the grasp	Stabilizes the hand for control and strength
Little Finger	Near ring finger, held in a natural, relaxed manner	Has no function in the grasp

SECTION 2

Grasp for Periodontal Instrumentation**THE MODIFIED PEN GRASP**

The Modified Pen Grasp. The modified pen grasp is the recommended grasp for holding a periodontal instrument. This grasp allows precise control of the working-end, permits a wide range of movement, and facilitates good tactile conduction.

RIGHT-Handed Clinician: Modified Pen Grasp

Right-Handed Clinician: Side View



Right-Handed Clinician: Front View

LEFT-Handed Clinician: Modified Pen Grasp



Left-Handed Clinician: Side View

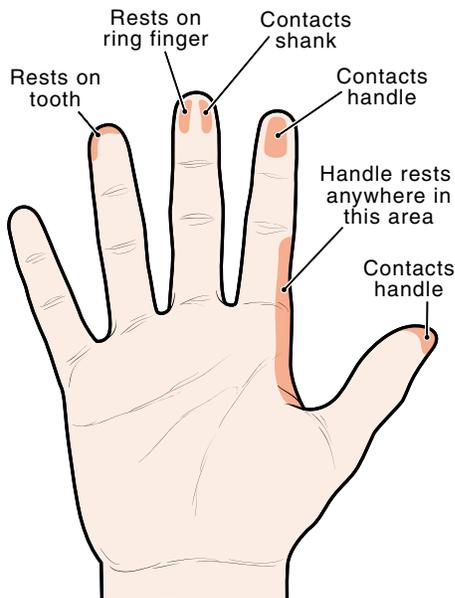


Left-Handed Clinician: Front View

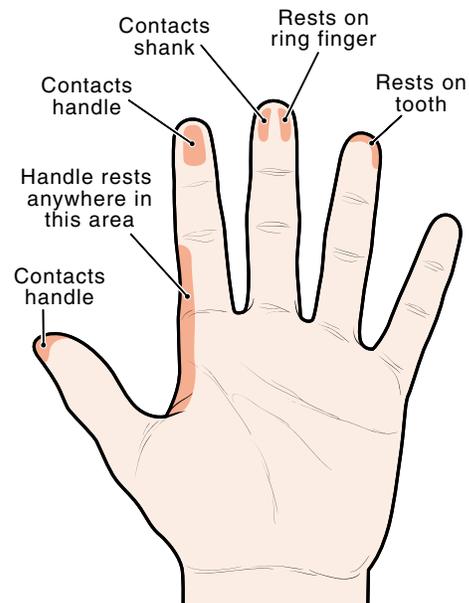
FINE-TUNING YOUR GRASP

Successful instrumentation technique depends to a great degree on the precise placement of each finger of your dominant hand in the modified pen grasp. Use the illustrations below and the Summary Sheet on the next page to fine-tune your grasp.

Finger Placement in the Grasp



RIGHT-Handed Clinician



LEFT-Handed Clinician

TABLE 3-2. Summary Sheet: Correct Finger Placement

Digit	Recommended Position
Index and Thumb	<p>The finger pads rest opposite each other at or near the junction of the handle and the shank.</p> <p>The fingers do not overlap; there is a tiny space between them.</p> <p>These fingers should hold the handle in a relaxed manner. If your fingers are blanched, you are holding too tightly.</p> <p>The index finger and thumb curve outward from the handle in a C-shape; this position places the finger pads on the handle in the best position for instrumentation.</p> <p>These fingers should not bend inward toward the handle in a U-shape. This U-shape causes the pads to lift off of the handle, making it difficult to roll the instrument during instrumentation.</p>
Middle	<p>One side of the finger pad rests lightly on the instrument shank. The other side of the finger pad rests against (or slightly overlaps) the ring finger.</p> <p>Not used to hold the instrument. You should be able to lift your middle finger off the shank without dropping the instrument. If you drop the instrument, then you are incorrectly using the middle finger to help hold the instrument.</p>
Ring	<p>Fingertip, not the pad, of the dominant hand balances firmly on the tooth to support the weight of the hand and instrument. When grasping the dental mirror, the rest may be on a tooth or against the patient's lip or cheek area.</p> <p>The ring finger of the dominant hand advances ahead of the other fingers in the grasp. It is held straight and upright to act as a strong support beam for the hand. The finger should not feel tense, but it should not be held limply on the tooth.</p>
Little	<p>This finger should be held in a relaxed manner.</p>

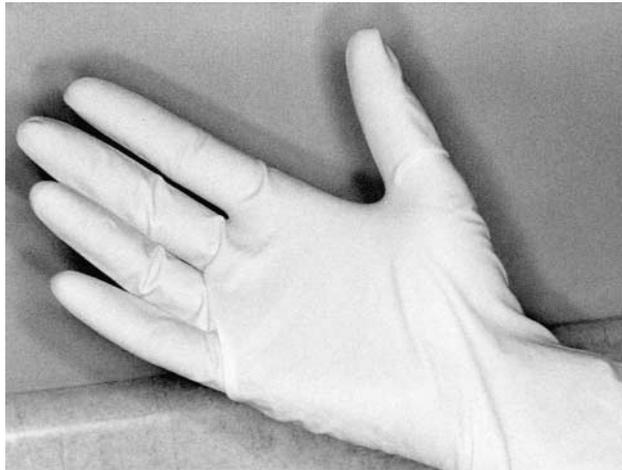
SECTION 3

Glove Use

PROPER GLOVE FIT FOR INSTRUMENTATION

Proper glove fit is important in avoiding muscle strain during instrumentation (see Summary Sheet on next page). In fact, **surgical glove-induced injury** is a type of musculoskeletal disorder that is caused by improperly fitting gloves. Symptoms include numbness, tingling, or pain in the wrist, hand, and/or fingers. This disorder is caused by wearing gloves that are too tight or by wearing ambidextrous gloves. It is best to wear right- and left-fitted gloves that are loose fitting across the palm of the hand and wrist.

Correct Glove Fit. Gloves should be loose fitting across the palm and wrist areas of the hand. The index finger of your opposite hand should slip easily under the wrist area of the gloved hand.



Incorrect Glove Fit. Gloves that are tight fitting across the palm and/or wrist area of your hand can cause muscle strain during instrumentation.



TABLE 3-3. Summary Sheet: Effective Glove Use

Recommendations	
Type	<p>Latex—the most durable; good flexibility; some individuals are allergic to latex</p> <p>Nitrile—provides good dexterity and is tougher than latex</p> <p>Neoprene or Polymer—much less durable than latex</p> <p>Vinyl—least durable; not flexible, breaks rather than gives</p>
Hand Care	<p>Maintain short fingernails to prevent punctures</p> <p>During nonworking hours, apply hand lotions to maintain skin integrity</p>
Lotions	<p>Avoid using lotions under gloves that can compromise the integrity of the glove material. Avoid petroleum-based lotions or those containing lanolin, cocoa butter, mineral oil, or jojoba oil.</p>
Jewelry	<p>Remove jewelry before donning gloves; it presents a puncture hazard</p> <p>Jewelry interferes with thorough washing and rinsing of hands and increases the risk of skin irritation</p>
Size	<p>Select right- and left-hand fitted gloves that come in a full range of sizes (i.e., 5-1/2, 6, 6-1/2, etc., rather than S, M, L)</p> <p>Gloves should never be tight across the palm or at the wrist</p>
Use	<p>Change gloves every hour; the probability of punctures increases over time</p> <p>Gloves have been worn too long if hands are sweaty or skin is wrinkled</p> <p>Wash and rinse hands thoroughly in between glove changes</p>

SECTION 4

Exercises for Improved Hand Strength

Well-conditioned muscles have improved control and endurance, allow for freer wrist movement, and reduce the likelihood of injury. The hand exercises shown here will help you to develop and maintain muscle strength for instrumentation.

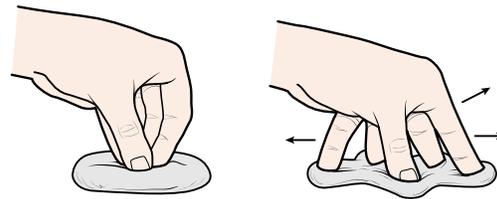
Directions: These exercises use Power Putty, a silicone rubber material that resists both squeezing and stretching forces. For each exercise illustrated, squeeze or stretch the Power Putty for the suggested number of repetitions. The exercise set, for both hands doing all nine exercises, should take no more than 10 to 20 minutes. When exercising, maintain your hands at waist level.

CAUTION: Not all exercise programs are suitable for everyone; discontinue any exercise that causes you discomfort and consult a medical expert. If you have or suspect that you may have a musculoskeletal injury, do not attempt these exercises without the permission of a physician. Any user assumes the risk of injury resulting from performing the exercises. The creators and authors disclaim any liabilities in connection with the exercises and advice herein.

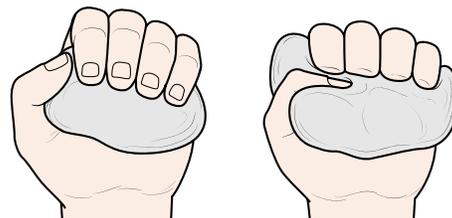
- 1. Full Grip (flexor muscles).** Squeeze putty with your fingers against the palm of your hand. Roll it over and around in your hand, and repeat as rapidly and with as much strength as possible. Suggested Repetitions: 10

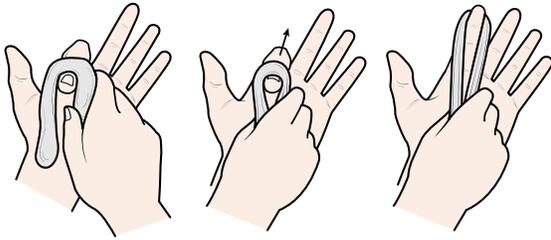


- 2. All Finger Spread (extensor and abductor muscles).** Form putty into a thick pancake shape and place on a tabletop. Bunch fingertips together and place in putty. Spread fingers out as fast as possible. Suggested Repetitions: 3

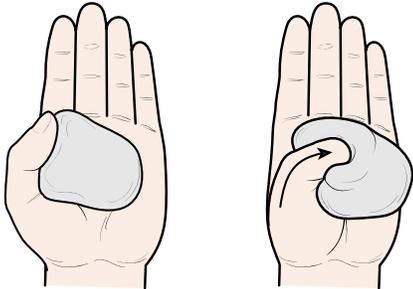


- 3. Fingers Dig (flexor muscles).** Place putty in the palm of your hand and dig fingertips deep into the putty. Release the fingers, roll putty over and repeat. Suggested Repetitions: 10

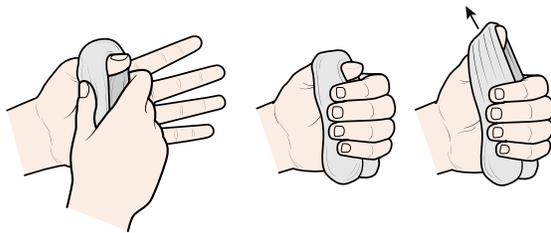




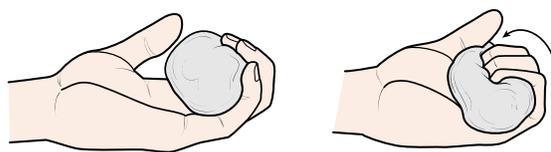
- 4. Finger Extension (extensor muscles).** Close one finger into palm of hand. Wrap putty over tip of finger and hold loose ends with the other hand. As quickly as possible, extend finger to a fully opened position. Regulate difficulty by increasing or decreasing thickness of putty wrapped over the fingertip. Repeat with each finger. Suggested Repetitions: 3



- 5. Thumb Press (flexor muscles).** Form putty into a barrel shape and place in the palm of your hand. Press your thumb into the putty with as much force as you can. Reform putty and repeat. Suggested Repetitions: 5

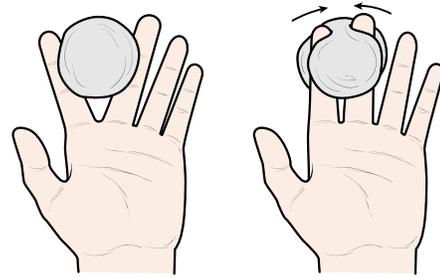


- 6. Thumb Extension (extensor muscles).** Bend your thumb toward the palm of the hand; wrap putty over the thumb tip. Hold the loose ends down and extend the thumb open as quickly as possible. Regulate difficulty by increasing or decreasing the thickness of putty wrapped over tip of thumb. Suggested Repetitions: 3

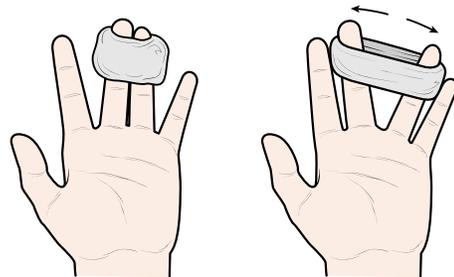


- 7. Fingers Only (flexor muscles).** Lay putty across fingers and squeeze with fingertips only. Keep the palm of your hand flat and open. Rotate putty with thumb and repeat. Suggested Repetitions: 10

8. Finger Scissors (adductor muscles). Form putty into the shape of a ball and place between any two fingers. Squeeze fingers together in scissorlike motion. Repeat with each pair of fingers. Suggested Repetitions: 3



9. Finger Splits (abductor muscles). Mold putty around any two fingers while they are close together. Spread fingers apart as quickly as possible. Repeat exercise with each pair of fingers. Suggested Repetitions: 3



Hand exercises are reprinted with permission of *SportsHealth*.

Power Putty is available in four levels of rigidity: soft, soft/medium, medium/firm, and hard.

Power Putty can be purchased in sport stores or directly from: *SportsHealth*, 527 West Windsor Road, Glendale, California 91204 USA, (818) 240-7170.

SECTION 5

Skill Application**PRACTICAL FOCUS**

Evaluate the modified pen grasp in photographs 1 to 9 below. Indicate if each grasp is correct or incorrect. For each incorrect grasp element describe (1) what is incorrect about the finger placement and (2) what problems might result from the incorrect finger placement.



PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4



PHOTO 5



PHOTO 6



PHOTO 7



PHOTO 8



PHOTO 9

Examine the gloved hands pictured in photograph 10 below. Evaluate the glove fit for the right and left hands.



RIGHT

LEFT

PHOTO 10

SKILL PRACTICE CHECKLIST MODULE 3 Instrument Grasp

Module 3 has a skill practice checklist rather than a Skill Evaluation. Use the Checklist to help you assess your ability to grasp an instrument outside the mouth. Your ability to use a modified pen grasp in the mouth will be evaluated in Modules 4, 5, and 6.

Student: _____ 1 = Grasp with mirror hand

Instructor: _____ 2 = Grasp with instrument hand

Date: _____

DIRECTIONS: For each grasp, the student uses **Column S** and the instructor uses **Column I**. For each grasp, indicate the preliminary skill level as: **S** (satisfactory), **I** (improvement needed), or **U** (unsatisfactory).

CRITERIA:	Grasp 1		Grasp 2	
	S	I	S	I
Identifies handle, shank, and working-end(s) of mirror or instrument				
Describes the function each finger serves in the grasp				
Describes criteria for proper glove fit				
Holds handle with pad tips of index finger and thumb				
Thumb and index finger positioned opposite one another on handle				
Thumb and index finger do not touch or overlap				
Pad of middle finger rests lightly on shank				
Pad of middle finger touches the ring finger				
Thumb, index, and middle fingers are bent and relaxed (form "C" shape)				
Ring finger is straight and supports weight of hand				
Instrument handle rests against hand				
Grasp is relaxed (no blanching of fingers)				

