

# Kienbock's Disease: Nonoperative

This protocol is intended to provide the clinician with a guideline for the conservative rehabilitation course of a patient who have **Kienbock's disease**. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications.

Kienbock's Disease is the avascular necrosis of the lunate which can lead to progressive wrist pain and abnormal carpal motion. Diagnosis can be made with wrist radiographs in advanced cases but may require MRI for detection of early disease. Necrosis of the lunate stems from an acute trauma of the wrist which malunion or nonunion of lunate fracture. Other causes can be biomechanical factors: ulnar negative variance, decreased radial inclination, and repetitive trauma.

Anatomic factors are geometry of lunate and decreased vascular supply to lunate.

A classification scale is used to determine severity and treatment.

Lichtman Classification	
Stage I	No visible changes in x-ray, changes seen on MRI
Stage II	Sclerosis of lunate
Stage IIIA	Lunate collapse, no scaphoid rotation
Stage IIIB	Lunate collapse, fixed scaphoid rotation
Stage IV	Degenerated adjacent intercarpal joints

## Guidelines

### Indication

- Stage I or II Kienbock's Disease

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Rehabilitation appointments	<ul style="list-style-type: none"> <li>1-2 visits or as instructed by therapist</li> </ul>
Rehabilitation goals and priorities	<ul style="list-style-type: none"> <li>Unloading the wrist (lunate) with use of orthoses, exercises, and activity modifications to decrease pain and improve function</li> </ul>
Suggested therapeutic exercises	<ul style="list-style-type: none"> <li>Moist heat (2 sessions per day)</li> <li>Use of compression for neutral warm</li> <li>Kinesiotape tape for carpal stability</li> <li>Maximize ROM thorough AROM of wrist and digits <ul style="list-style-type: none"> <li>Gentle AROM: limited to dart throwing movement pain-free</li> <li>Gentle fisting (wrist neutral)</li> <li>Tendon glides (wrist neutral)</li> <li>Supination/pronation</li> </ul> </li> <li>Depending on deformity (volar or dorsal tilt of lunate), perform wrist stabilization exercises per pain tolerance <ul style="list-style-type: none"> <li>For volar tilt, strengthen APL, ECRB/L, and FCU</li> <li>For dorsal tilt, strengthen ECU, FCR, and hypothenar</li> </ul> </li> </ul>
Modalities	<ul style="list-style-type: none"> <li>Ultrasound <ul style="list-style-type: none"> <li>3 MHz</li> <li>Dorsal or volar wrist 100% (thermal): increase blood flow through vasodilation</li> </ul> </li> <li>Ultrasound has limited evidence clinically</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>Minimize weightbearing through hand and wrist</li> <li>Minimize tight and repetitive gripping</li> </ul>
Orthosis	<ul style="list-style-type: none"> <li>Fabricate neutral wrist/hand orthosis <ul style="list-style-type: none"> <li>Worn at night and during activities of stress (positioning and/or loading)</li> </ul> </li> </ul>
Progression criteria	<ul style="list-style-type: none"> <li>Per pain tolerance</li> </ul>