General

Guideline Title

American Academy of Orthopaedic Surgeons clinical practice guideline on the diagnosis and treatment of acute Achilles tendon rupture.

Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons clinical practice guideline on the diagnosis and treatment of acute achilles tendon rupture. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2009 Dec 4. 219 p. [60 references]

Guideline Status

This is the current release of the guideline.

The American Academy of Orthopaedic Surgeons (AAOS) reaffirmed the currency of the guideline in 2014.

Recommendations

Major Recommendations

Definitions of the strength of recommendations (Strong, Moderate, Weak, Inconclusive, and Consensus) are provided at the end of the "Major Recommendations" field.

Note from the American Academy of Orthopaedic Surgeons (AAOS): This summary does not contain rationales that explain how and why these recommendations were developed nor does it contain the evidence supporting these recommendations. All readers of this summary are strongly urged to consult the full guideline and evidence report (see "Guideline Availability" field) for this information. The work group is confident that those who read the full guideline and evidence report will also see that the recommendations were developed using systematic evidence-based processes designed to combat bias, enhance transparency, and promote reproducibility. This summary of recommendations is not intended to stand alone.

1. In the absence of the reliable evidence, it is the opinion of this work group that a detailed history and physical exam be performed. The physical examination should include two or more of the following tests to establish the diagnosis of acute Achilles tendon rupture:
   - Clinical Thompson test (Simmonds squeeze test)
   - Decreased ankle plantar flexion strength
   - Presence of a palpable gap (defect, loss of contour)
   - Increased passive ankle dorsiflexion with gentle manipulation

   Strength of Recommendation – Consensus

2. The work group is unable to recommend for or against the routine use of magnetic resonance imaging (MRI), ultrasound (ultrasonography),

and radiograph (roentgenograms, x-rays) to confirm the diagnosis of acute Achilles tendon rupture.
Strength of Recommendation – Inconclusive

3. Non-operative treatment is an option for all patients with acute Achilles tendon rupture.
   Strength of Recommendation: Weak

4. For patients treated non-operatively, the work group is unable to recommend for or against the use of immediate functional bracing for patients with acute Achilles tendon rupture.
   Strength of Recommendation: Inconclusive

5. Operative treatment is an option in patients with acute Achilles tendon rupture.
   Strength of Recommendation: Weak

6. In the absence of reliable evidence, it is the opinion of the work group that although operative treatment is an option, it should be approached more cautiously in patients with diabetes, neuropathy, immunocompromised states, age above 65, tobacco use, sedentary lifestyle, obesity (BMI >30), peripheral vascular disease or local/systemic dermatologic disorders.
   Strength of Recommendation: Consensus

7. For patients who will be treated operatively for an acute Achilles tendon rupture, the work group is unable to recommend for or against preoperative immobilization or restricted weight bearing.
   Strength of Recommendation: Inconclusive

8. Open, limited open and percutaneous techniques are options for treating patients with acute Achilles tendon rupture.
   Strength of Recommendation: Weak

9. The work group cannot recommend for or against the use of allograft, autograft, xenograft, synthetic tissue, or biologic adjuncts in all acute Achilles tendon ruptures that are treated operatively.
   Strength of Recommendation: Inconclusive

10. The work group cannot recommend for or against the use of antithrombotic treatment for patients with acute Achilles tendon ruptures.
    Strength of Recommendation: Inconclusive

11. The work group suggests early (≤2 weeks) post-operative protected weight bearing for patients with acute Achilles tendon rupture who have been treated operatively.
    Strength of Recommendation: Moderate

12. The work group suggests the use of a protective device that allows mobilization by 2-4 weeks post operatively.
    Strength of Recommendation: Moderate

13. The work group is unable to recommend for or against post-operative physiotherapy for patients with acute Achilles tendon rupture.
    Strength of Recommendation: Inconclusive

14. In all patients with acute Achilles tendon rupture, irrespective of treatment type, the workgroup is unable to recommend a specific time at which patients can return to activities of daily living.
    Strength of Recommendation: Inconclusive

15. In patients who participate in sports it is an option to return them to sports within 3-6 months after operative treatment for acute Achilles tendon rupture.
    Strength of Recommendation: Weak

16. In patients with acute Achilles tendon rupture treated non-operatively, the work group is unable to recommend a specific time at which patients can return to athletic activity.
    Strength of Recommendation: Inconclusive

Definitions:

Strength of Recommendation

Strength	Overall Quality of Evidence	Description of Evidence	Guideline Language
Strong	Good	Level I evidence from more than one study with consistent findings for recommending for or against the intervention or diagnostic.	The work group *recommends*
Moderate	Fair	Level II or III evidence from more than one study with consistent findings, or Level I evidence from a single study for recommending for or against the intervention or diagnostic.	The work group *suggests*
Weak	Poor	Level IV or V evidence from more than one study with consistent findings, or Level II or III evidence from a single study for recommending for against the intervention or diagnostic.	*option*
Inconclusive	None or conflicting	The evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention or diagnostic.	The work group is *unable to recommend for or against*
Consensus	No evidence	There is no supporting evidence. In the absence of reliable evidence, the work group is making a recommendation based on their clinical opinion considering the known harms and benefits associated with the treatment.	In the absence of reliable evidence, it is the *opinion* of the work group

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Acute Achilles tendon rupture

Guideline Category

Diagnosis

Evaluation

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Orthopedic Surgery

Sports Medicine

Intended Users

Physicians

Guideline Objective(s)

- To serve as an information resource for decision makers and developers of practice guidelines and recommendations
- To help improve treatment of acute Achilles tendon rupture based on the current best evidence

Target Population

Adults (older than 19 years of age) with acute Achilles tendon rupture

Interventions and Practices Considered

1. Detailed history and physical examination including the following tests:
    - Clinical Thompson test (Simmonds squeeze test)
    - Decreased ankle plantar flexion strength
    - Presence of a palpable gap (defect, loss of contour)
    - Increased passive ankle dorsiflexion with gentle manipulation
2. Non-operative treatment
3. Operative treatment including
    - With caution in patients with diabetes, neuropathy, immunocompromised states, age above 65, tobacco use, sedentary lifestyle, obesity (bone mass index [BMI] >30), peripheral vascular disease or local/systemic dermatologic disorders.
    - Open, limited, and percutaneous techniques
4. Early (≤2 weeks) post-operative protected weight bearing
5. Protective device that allows mobilization
6. Resume sports 3-6 months after operative treatment, as appropriate

Note: No recommendations for or against use could be made for the use of the following interventions: the routine use of magnetic resonance imaging (MRI), ultrasound (ultrasonography), and radiograph (roentgenograms, x-rays) to confirm the diagnosis of acute Achilles tendon rupture; immediate functional bracing for patients treated non-operatively; preoperative immobilization or restricted weight bearing; use of allograft, autograft, xenograft, synthetic tissue, or biologic adjuncts; antithrombotic treatment; and post-operative physiotherapy.

Note: A specific time could not be recommended for return to activities of daily living irrespective of treatment type and return to athletic activity in patients treated non-operatively.

Major Outcomes Considered

- Sensitivity and specificity of diagnostic tests
- Pain relief
- Functional status
- Time to return to work, sports and activities of daily living
- Patient satisfaction
- Complications of operative procedures

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Study Inclusion Criteria

The study group developed *a priori* article inclusion criteria for review. These criteria are the "rules of evidence" and articles that do not meet them are, for the purposes of this guideline, not evidence.

To be included in the systematic reviews (and hence, in this guideline) an article had to be a report of a study that:

- Evaluated a treatment for acute Achilles tendon rupture. Acute Achilles tendon ruptures are defined as a rupture treated within zero to six weeks post injury.
- Was a full report of a clinical study and was published in the peer reviewed literature
- Was an English language article published after 1965
- Was not a cadaveric, animal, *in vitro*, or biomechanical study
- Was not a retrospective case series, medical records review, meeting abstract, unpublished study report, case report, historical article, editorial, letter, or commentary
- Was the most recent report of a study or the report with the largest number of enrolled patients in a study with multiple publications
- Enrolled ≥10 patients in each of its study groups
- Enrolled a patient population comprised of at least 80% of patients with acute Achilles tendon rupture
- Reported quantified results
- Must have followed 50% or more of its patients on at least one outcome; if less than 80% follow up the outcome was down graded.
- Study must use validated outcome measures

When considering studies for inclusion, the work group included only the best available evidence. Accordingly, they first included Level I evidence. In the absence of two or more studies of this Level, they sequentially searched for and included Level II through Level IV evidence, and did not proceed to a lower level if there were two or more studies of a higher level. For example, if there were two Level II studies that addressed a recommendation, they did not include Level III or IV studies.

Literature Searches

The work group attempted to make the searches for articles comprehensive. Using comprehensive literature searches ensures that the evidence the work group considered for this guideline is not biased for (or against) any particular point of view.

The work group searched for articles published from January 1966 to June 2009. Strategies for searching electronic databases were constructed by a Medical Librarian and reviewed by the work group. The search strategies are provided in Appendix IV in the original guideline document. Six electronic databases were searched: PubMed, EMBASE, CINAHL, The Cochrane Library, The National Guideline Clearinghouse and TRIP database.

All searches of electronic databases were supplemented with manual screening of bibliographies of all retrieved publications. The work group also searched the bibliographies of recent systematic reviews and other review articles for potentially relevant citations. Finally, a list of potentially relevant studies not identified by the searches was provided by the work group members. Fifty-six studies met the inclusion criteria and were included.

A study attrition diagram (provided in Appendix V in the original guideline document) documents, for each recommendation, the number of articles identified, where they were identified, the number of articles included, and the number of articles excluded.

2014 Reaffirmation

The 2009 guideline is based on a systematic review of published studies on the treatment of acute Achilles tendon rupture in adults, where adults were defined as older than 19 years of age.

To reaffirm currency the PubMed, Cochrane Library, and EMBASE databases were searched using the following search terms: (("Achilles Tendon"[mh] OR achilles[tw]) AND ((("Tendon Injuries"[mh] OR injuries[sh] OR injur*[tiab] OR ruptur*[tiab] OR re-ruptur*[tiab] OR tears[tiab] OR torn[tiab] OR tear[tiab]) AND (diagnosis[sh] OR diagnos*[tw] OR "Magnetic Resonance Imaging"[mh] OR MRI[tiab] OR Ultrasonography[mh] OR sonograph*[tiab] OR ultrasound[tiab] OR radiograph*[tiab] OR Radiography[mh] OR x-ray[tiab] OR imaging[tiab] OR gap[tiab] OR "Thompson test"[tw] OR therapy[sh] OR treated[tiab] OR treatment*[tiab] OR brace[tiab] OR bracing[tiab] OR cast[tiab] OR casting[tiab] OR casts[tw] OR "Casts, Surgical"[mh] OR immobiliz*[tiab] OR surgery[tiab] OR surgical*[tiab] OR operati*[tiab] OR repair*[tiab] OR reconstruct*[tiab] OR non-operativ*[tiab] OR nonoperativ*[tiab] OR "weight bearing"[tiab] OR "Recovery of Function"[mh] OR "Physical Therapy Modalities"[mh] OR physiotherapy[tiab] OR Anticoagulants[pa])) OR ((repair*[tiab] OR surgery[tiab] OR surgery[sh] OR surgical*

[tiab] OR operati*[tiab] OR repair*[tiab] OR reconstruct*[tiab] OR post-operative*[tiab] OR postoperative*[tiab]) AND ("Physical Therapy Modalities"[mh] OR physiotherapy[tiab] OR brace[tiab] OR bracing[tiab] OR cast[tiab] OR casting[tiab] OR casts[tw] OR "Casts, Surgical"[mh] OR immobiliz*[tiab] OR low-impact[tiab] OR activity[tiab] OR activities[tiab] OR "weight bearing"[tiab] OR weight-bearing[tiab] OR "Recovery of Function"[mh]))). The date range for 06/29/2009 to 11/05/2013 and the searches were performed on 11/05/2013.

Number of Source Documents

56 articles were included.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence for Primary Research Question[1]

Types of Studies				
	Therapeutic Studies Investigating the results of treatment	Prognostic Studies Investigating the effects of a patient characteristic on the outcome of disease	Diagnostic Studies Investigating a diagnostic test	Economic and Decision Analyses Developing an economic or decision model
Level I	• High quality randomized trial with statistically significant difference or no statistically significant difference but narrow confidence intervals • Systematic review[2] of Level I randomized controlled trials (RCTs) (and study results were homogenous[3])	• High quality prospective study[4] (all patients were enrolled at the same point in their disease with ≥80% follow-up of enrolled patients) • Systematic review[2] of Level I studies	• Testing of previously developed diagnostic criteria on consecutive patients (with universally applied reference "gold" standard) • Systematic review[2] of Level I studies	• Sensible costs and alternatives; values obtained from many studies; with multiway sensitivity analyses • Systematic review[2] of Level I studies
Level II	• Lesser quality RCT (e.g., <80% follow-up, no blinding, or improper randomization) • Prospective[4] comparative study[5] • Systematic review[2] of Level II studies or Level I studies with inconsistent results	• Retrospective study[6] • Untreated controls from an RCT • Lesser quality prospective study (e.g., patients enrolled at different points in their disease or <80% follow-up) • Systematic review[2] of Level II studies	• Development of diagnostic criteria on consecutive patients (with universally applied reference "gold" standard) • Systematic review[2] of Level II studies	• Sensible costs and alternatives; values obtained from limited studies; with multiway sensitivity analyses • Systematic review[2] of Level II studies
Level III	• Case control study[7] • Retrospective[6]	• Case control study[7]	• Study of nonconsecutive patients; without	• Analyses based on limited

Types of Studies	comparative study[5]		consistently applied reference "gold" standard	alternatives and costs; and poor estimates
	Therapeutic Studies Investigating the results of treatment • Systematic review[2] of Level III studies	Prognostic Studies Investigating the effects of a patient characteristic on the outcome of disease	Diagnostic Studies Investigating a diagnostic test • Systematic review[2] of Level III studies	Economic and Decision Analyses Developing an economic or decision model • Systematic review[2] of Level III studies
Level IV	• Case series[8]	• Case series	• Case-control study • Poor reference standard	• Analyses with no sensitivity analyses
Level V	Expert opinion	Expert opinion	Expert opinion	Expert opinion

[1] A complete assessment of quality of individual studies requires critical appraisal of all aspects of the study design.

[2] A combination of results from two or more prior studies.

[3] Studies provided consistent results.

[4] Study was started before the first patient enrolled.

[5] Patients treated one way (e.g., cemented hip arthroplasty) compared with a group of patients treated in another way (e.g., uncemented hip arthroplasty) at the same institution.

[6] The study was started after the first patient enrolled.

[7] Patients identified for the study based on their outcome, called "cases"; e.g., failed total hip arthroplasty, are compared to those who did not have outcome, called "controls"; e.g., successful total hip arthroplasty.

[8] Patients treated one way with no comparison group of patients treated in another way.

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction

Data elements extracted from studies were defined in consultation with the physician work group. Two analysts completed data extraction independently for all studies. The evidence tables were audited by the work group. Disagreements about the accuracy of extracted data were resolved by consensus. The elements extracted are provided in Appendix VI in the original guideline document.

The use of extracted data in the systematic reviews is another of the methods to combat bias. It ensures that the results are based on the numerical results reported in published articles and not on the authors' conclusions in the "Discussion Sections" of their articles. Such author conclusions can be influenced by bias.

Judging the Quality of Evidence

The work group assessed the quality of the evidence for each outcome at each time point reported in a study. They did not simply assess the overall quality of a study. The approach follows the recommendations of the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) working group as well as others.

The work group evaluated quality on a per outcome basis rather than a per study basis because quality is not necessarily the same for all outcomes and all follow-up times reported in a study. For example, a study might report results immediately after patients received a given treatment and

after some period of time has passed. Often, nearly all enrolled patients contribute data at early follow-up times but, at much later follow-up times, only a few patients may contribute data. One has more confidence in the earlier data than in the later data. The fact that the work group would assign a higher quality score to the earlier results reflects this difference in confidence.

The work group assessed the quality of treatment studies using a two step process. First, they assigned a Level of Evidence to all results reported in a study based solely on that study's design. Accordingly, all data presented in randomized controlled trials were initially categorized as Level I evidence, all results presented in non-randomized controlled trials and other prospective comparative studies were initially categorized as Level II, all results presented in retrospective comparative and case-control studies were initially categorized as Level III, and all results presented in case-series reports were initially categorized as Level IV. The work groups next assessed each outcome at each reported time point using a quality questionnaire and, when quality standards were not met, downgraded the Level of evidence (for this outcome at this time point) by one level (see Appendix VII in the original guideline document).

In studies investigating a diagnostic test, the work group used the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) instrument to identify potential bias and assess variability and the quality of reporting in studies reporting the effectiveness of diagnostic techniques. The work group utilized a two step process to assess the quality of diagnostic studies. All studies enrolling a prospective cohort of patients are initially categorized as Level I studies. Any study that did not enroll the appropriate spectrum of patients (e.g., case-control studies) was initially categorized as a Level IV study. A study that was determined to contain methodological flaws (i.e., QUADAS question answered 'no') that introduce bias was downgraded in a cumulative manner for each known bias (see Appendix VII in the original guideline document). For example, a study that is determined by the QUADAS instrument to have two biases is downgraded to Level III and a study that is determined to have four or more biases is downgraded to a Level V study. Those studies that do not sufficiently report their methods for a potential bias are downgraded to Level II since the work group is unable to determine if the bias did or did not bias the results of the study.

Assigning a Level of Evidence on the basis of study design plus other quality characteristics ties the Levels of Evidence that are reported more closely to quality than Levels of Evidence based only on study design. Because the work group ties quality to Levels of Evidence, they are able to characterize the confidence one can have in their results. Accordingly, the work group characterizes the confidence one can have in Level I evidence as high, the confidence one can have in Level II and III evidence as moderate, and the confidence one can have in Level IV and V evidence as low.

Statistical Methods

When possible, the work group reported the results of the statistical analyses conducted by the authors of the included studies. In some circumstances, statistical testing was not conducted; however, the authors reported sufficient quantitative data, including measures of dispersion or patient level data for statistical testing. In these circumstances they used the statistical program STATA (StatCorp LP, College Station, Texas) to conduct their own analysis to interpret the results of a study. P-values <0.05 were considered statistically significant. Any statistical analysis conducted by the American Academy of Orthopaedic Surgeons (AAOS) authors is denoted in the tables.

STATA was also used to determine 95% confidence intervals, using the method of Wilson, when authors of the included studies reported counts or proportions. The program was also used to determine the magnitude of the treatment effect. For data reported as means (and associated measures of dispersion) the work group calculated a standardized mean difference by the method of Hedges and Olkin. For proportions, they calculated the odds ratio as a measure of treatment effect. When no events occur ("zero event") in a proportion, the variance of the arcsine difference was used to determine statistical significance ($p <0.05$).

The work group used the program TechDig 2.0 (Ronald B. Jones, Mundelein, Illinois) to estimate means and variances from studies presenting data only in graphical form.

When published studies only reported the median, range, and size of the trial, the work group estimated their means and variances according to a published method.

Methods Used to Formulate the Recommendations

Expert Consensus (Nominal Group Technique)

Description of Methods Used to Formulate the Recommendations

This guideline and the underlying systematic reviews were prepared by an American Academy of Orthopaedic Surgeons (AAOS) physician work group with the assistance of the AAOS Clinical Practice Guidelines Unit in the Department of Research and Scientific Affairs at the AAOS. The

work group met on December 13, 2008 to establish the guideline's scope. The work group met again on July 31 and August 1, 2009 to write and vote on the final recommendations and rationales for each recommendation.

Formulating Preliminary Recommendations

The work group began work on this guideline by constructing a set of preliminary recommendations. These recommendations specify [what] should be done in [whom], [when], [where], and [how often or how long]. They function as questions for the systematic review that underpins each preliminary recommendation, and they do not function as final recommendations or conclusions. Preliminary recommendations do not need to be true.

Once established, these *a priori* preliminary recommendations cannot be modified until the final work group meeting. The *a priori* and inviolate nature of the preliminary recommendations combats bias by preventing a "change in course" if a systematic review yields results that are not to someone's liking. The results of each systematic review are presented and discussed at the final work group meeting. At this time the preliminary recommendations are modified in response to the evidence in the systematic review. All of the systematic reviews conducted for a given guideline are presented in it and, in general, all preliminary recommendations are modified.

Defining the Strength of the Recommendations

The strength of a recommendation expresses the degree of confidence one can have in a recommendation. As such, the strength expresses how possible it is that a recommendation will be overturned by future evidence. It is very difficult for future evidence to overturn a recommendation that is based on many high quality randomized controlled trials that show a large effect. It is much more likely that future evidence will overturn recommendations derived from a few small case series. Consequently, recommendations based on the former kind of evidence are rated as "strong" and recommendations based on the latter kind of evidence are given strength of recommendation of "weak".

To develop the strength of a recommendation, AAOS staff first assigned a preliminary strength rating for each recommendation that took only the quality and quantity of the available evidence into account (see 'Rating Scheme for the Strength of the Recommendations' field). Work group members then modified the preliminary strength rating using the 'Form for Assigning Grade of Recommendation (Interventions)' shown in Appendix VIII in the original guideline document. This form is based on recommendations of the GRADE Working group and requires the work group to consider the harms, benefits, and critical outcomes associated with a treatment. It also requires the work group to evaluate the applicability of the evidence. The final strength of the recommendation is assigned by the physician work group, which modifies the preliminary strength rating on the basis of these considerations.

Consensus Development

The recommendations and their strength were voted on using a structured voting technique known as the nominal group technique. The work group present details of this technique in Appendix IX in the original guideline document. Voting on guideline recommendations was conducted using a secret ballot and work group members were blinded to the responses of other members. If disagreement between work group members was significant, there was further discussion to see whether the disagreement(s) could be resolved. Up to three rounds of voting were held to attempt to resolve disagreements. If disagreements were not resolved following three voting rounds, no recommendation was adopted. Lack of agreement is a reason that the strength for some recommendations is labeled "Inconclusive."

2014 Reaffirmation

After review of the updated 2009-2013 literature, the AAOS determined that no changes were required.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendation

Strength	Overall Quality of Evidence	Description of Evidence	Guideline Language
Strong	Good	Level I evidence from more than one study with consistent findings for recommending for or against the intervention or diagnostic.	The work group *recommends*
Moderate	Fair	Level II or III evidence from more than one study with consistent findings, or Level I evidence from a single study for recommending for or against the intervention or	The work group *suggests*

Strength	Overall Quality of Evidence	Description of Evidence	Guideline Language
Weak	Poor	Level IV or V evidence from more than one study with consistent findings, or Level II or III evidence from a single study for recommending for against the intervention or diagnostic.	*option*
Inconclusive	None or conflicting	The evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention or diagnostic.	The work group is *unable to recommend for or against*
Consensus	No evidence	There is no supporting evidence. In the absence of reliable evidence, the work group is making a recommendation based on their clinical opinion considering the known harms and benefits associated with the treatment.	In the absence of reliable evidence, it is the *opinion* of the work group

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Peer Review

The draft of the guideline and evidence report were peer reviewed by outside specialty organizations that were nominated by the physician work group prior to the development of the guideline. Peer review was accomplished using a structured peer review form (see Appendix X in the original guideline document).

In addition, the physician members of the American Academy of Orthopaedic Surgeons (AAOS) Guidelines and Technology Oversight Committee, the Evidence Based Practice Committee and the Chairpersons of the AAOS Occupational Health and Workers' Compensation Committee and the Medical Liability Committee were given the opportunity to provide peer review of the draft document.

The work group forwarded the draft guideline to a total of 38 peer reviewers and 17 returned reviews. The disposition of all non-editorial peer review comments was documented and the guideline was modified in response to peer review. The peer reviews and the responses to them accompanied this guideline through the process of public commentary and the subsequent approval process. Peer reviewing organizations and peer reviewing individuals are listed in this document if they explicitly agree to allow them to publish this information (see Appendix X in the original guideline document).

Public Commentary

After modifying the draft in response to peer review, the guideline was submitted for a thirty-day period of "Public Commentary." Commentators consist of members of the AAOS Board of Directors (BOD), members of the Council on Research, Quality Assessment, and Technology (CORQAT), members of the Board of Councilors (BOC), and members of the Board of Specialty Societies (BOS). Based on these bodies, up to 185 commentators had the opportunity to provide input into the development of this guideline. Of these, 4 returned public comments.

For this guideline, outside specialty societies could post the confidential draft of the guideline to their "member only" website. The responses garnered from these postings were compiled by the specialty society and submitted as one succinct public commentary. In addition, members of the AAOS Board of Specialties (BOS) and Board of Councilors (BOC) were encouraged to provide input; including encouragement to seek input from colleagues not necessarily members of the BOS or BOC. As a result, the opportunity to comment on this guideline exceeds the number of public commentators for previously published AAOS guidelines as well as the numbers listed above.

The AAOS Guideline Approval Process

In response to the non-editorial comments submitted during the period of public commentary, the draft was again modified by the AAOS Clinical Practice Guidelines Unit and physician work group members. The AAOS Guidelines and Technology Oversight Committee, the AAOS Evidence-based Practice Committee, the AAOS Council on Research, Quality Assessment, and Technology, and the AAOS Board of Directors approved the final guideline draft. Descriptions of these bodies are provided in Appendix III in the original guideline document.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is specifically stated for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate diagnosis and treatment of acute Achilles tendon rupture, to enable pain relief and improvement or maintenance of the patient's functional status

Potential Harms

- Most treatments are associated with some known risks, especially invasive and operative treatments. In addition, contraindications vary widely based on the treatment administered. Therefore, discussions of available treatments and procedures applicable to the individual patient rely on mutual communication between the patient and physician, weighing the potential risks and benefits for that patient.
- Major complications associated with operative treatments include re-rupture and infection.

Contraindications

Contraindications

Contraindications vary widely based on the treatment administered. Therefore, discussions of available treatments and procedures applicable to the individual patient rely on mutual communication between the patient and physician, weighing the potential risks and benefits for that patient.

Qualifying Statements

Qualifying Statements

- This Clinical Practice Guideline was developed by an American Academy of Orthopaedic Surgeons (AAOS) physician volunteer Work Group based on a systematic review of the current scientific and clinical information and accepted approaches to treatment and/or diagnosis. This Clinical Practice Guideline is not intended to be a fixed protocol, as some patients may require more or less treatment or different means of diagnosis. Clinical patients may not necessarily be the same as those found in a clinical trial. Patient care and treatment should always be based on a clinician's independent medical judgment, given the individual patient's clinical circumstances.
- Some drugs or medical devices referenced or described in this Clinical Practice Guideline may not have been cleared by the U.S. Food and Drug Administration (FDA) or may have been cleared for a specific use only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or device he or she wishes to use in clinical practice.
- This summary of recommendations is not intended to stand alone. Treatment decisions should be made in light of all circumstances presented by the patient. Treatments and procedures applicable to the individual patient rely on mutual communication between patient,

physician and other healthcare practitioners.
- This guideline should not be construed as including all proper methods of care or excluding methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific procedure or treatment must be made in light of all circumstances presented by the patient and the needs and resources particular to the locality or institution.

Implementation of the Guideline

Description of Implementation Strategy

Guideline Dissemination Plans

The guideline document is also posted on the American Academy of Orthopaedic Surgeons (AAOS) website at http://www.aaos.org/research/guidelines/guide.asp .

Shorter versions of the guideline are available in other venues. Publication of most guidelines is announced by an Academy press release, articles authored by the work group and published in the Journal of the American Academy of Orthopaedic Surgeons, and articles published in AAOS *Now*. Most guidelines are also distributed at the AAOS Annual Meeting in various venues such as on Academy Row and at Committee Scientific Exhibits.

Selected guidelines are disseminated by webinar, an Online Module for the Orthopaedic Knowledge Online website, Radio Media Tours, Media Briefings, and by distributing them at relevant Continuing Medical Education (CME) courses and at the AAOS Resource Center.

Other dissemination efforts outside the AAOS include submitting the guideline to the National Guideline Clearinghouse and distributing the guideline at other medical specialty societies' meetings.

Implementation Tools

Quick Reference Guides/Physician Guides

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons clinical practice guideline on the diagnosis and treatment of acute achilles tendon rupture. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2009 Dec 4. 219 p. [60 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2009 Dec 4 (reaffirmed 2014)

Guideline Developer(s)

American Academy of Orthopaedic Surgeons - Medical Specialty Society

Source(s) of Funding

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Guideline Committee

This guideline and the underlying systematic reviews were prepared by an American Academy of Orthopaedic Surgeons (AAOS) physician work group, with the assistance of the AAOS Clinical Practice Guidelines Unit in the Department of Research and Scientific Affairs at the AAOS.

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Financial Disclosures/Conflicts of Interest

In accordance with American Academy of Orthopaedic Surgeons (AAOS) policy, all individuals whose names appear as authors or contributors to Clinical Practice Guideline filed a disclosure statement as part of the submission process. All panel members provided full disclosure of potential conflicts of interest prior to voting on the recommendations contained within this Clinical Practice Guidelines.

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Eric Michael Bluman, MD (Tacoma, WA): 4 (DePuy, A Johnson & Johnson Company). Submitted on: 08/23/2008 and last confirmed as accurate on 10/09/2008.

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William Charles Watters III, MD: 1 (North American Spine Society; Work Loss Data Institute); 2 (The Spine Journal); 5A (Stryker; Intrinsic Therapeutics; McKessen Health Care Solutions). Submitted on: 10/09/2007 at 08:09 PM and last confirmed as accurate on 04/23/2008.

Guideline Endorser(s)

American Orthopaedic Foot and Ankle Society - Medical Specialty Society

Guideline Status

This is the current release of the guideline.

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Guideline Availability

Electronic copies: Available from the American Academy of Orthopaedic Surgeons Web site .

Print copies: Available from the American Academy of Orthopaedic Surgeons, 6300 North River Road, Rosemont, IL 60018-4262. Telephone: (800) 626-6726 (800 346-AAOS); Fax: (847) 823-8125; Web site: www.aaos.org .

Availability of Companion Documents

The following is available:

- The diagnosis and treatment of acute Achilles tendon rupture. Summary of recommendations. Rosemont (IL): American Academy of Orthopaedic Surgeons; 2009 Dec. 3 p. Electronic copies: Available from the American Academy of Orthopaedic Surgeons (AAOS) Web site .

Print copies: Available from the American Academy of Orthopaedic Surgeons, 6300 North River Road, Rosemont, IL 60018-4262. Telephone: (800) 626-6726 (800 346-AAOS); Fax: (847) 823-8125; Web site: www.aaos.org .

The following is also available:

- Surgical techniques in orthopaedics: Achilles tendon disorders. DVD-Video. Continuing Medical Education (CME) course. Rosemont (IL): American Academy of Orthopaedic Surgeons; 2008 Mar. Electronic copies: Available from the AAOS Web site .

Patient Resources

None available

NGC Status

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