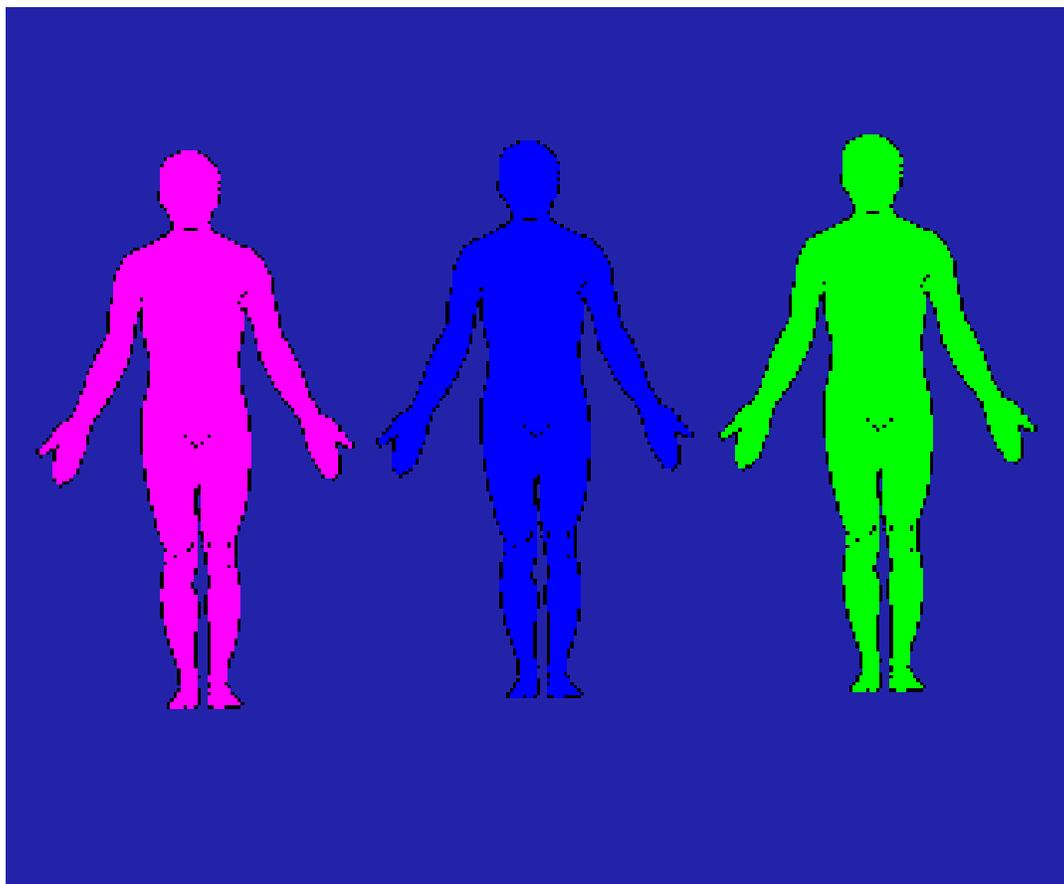




American Academy of Orthopaedic Surgeons



AAOS Outcomes Material Users Guide

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Disclaimer

The normative data files, scoring algorithms, results, documentation, SPSS syntax files and questionnaires (hereinafter referred to as the AAOS Outcomes Material) contained in the outcomes section of the American Academy of Orthopaedic Surgeons web site are protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The American Academy of Orthopaedic Surgeons owns all title and copyrights in and to the AAOS Outcomes Material. All rights are reserved. The material is made available as a public service to the medical community.

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Using the Material from the AAOS Normative Data Study

Overview

The American Academy of Orthopaedic Surgeons (Academy) is making its Outcomes Questionnaires, Normative Data and Scoring Algorithms available to orthopaedic surgeons, musculoskeletal care providers, and researchers in order to help improve the care of patients with

musculoskeletal disorders by providing the tools necessary to critically analyze medical and surgical treatment using validated patient-based outcomes questionnaires.

What Outcomes Material is Available from the Academy's Web Site?

The following materials are available from the outcomes section of the Academy's web site:

- A set of 11 generic, anatomic-regional, patient-based questionnaires to collect outcomes data
- A series of optional specialized modules to customize the generic questionnaires to meet more specific needs, including a physician form
- A patient satisfaction questionnaire
- The results of the AAOS Normative Data Study
- Documentation of the validity and reliability tests from the Normative Data Study
- Standard scoring and Norms Base scoring Excel tables that contain the norms for all questionnaires and scales
- Normative Data for each set of questionnaires (SPSS, Excel, and text data files)
- Standard and Norms Based scoring algorithms
- SPSS syntax for scoring the standard and norms based scales
- Documentation on how to use the questionnaires and normative data

The Questionnaires

The Academy offers 11 patient-based questionnaires (see Appendix 1). These outcomes questionnaires have been thoroughly validated and tested. A list of the articles documenting the development and testing of the questionnaires is available from the Academy. The questionnaires represent the consensus of a broad cross-section of orthopaedic surgeons as to what constitutes the minimum data set to define quality of care in musculoskeletal conditions. Each questionnaire takes approximately fifteen minutes to complete. The questionnaires all have a baseline and follow-up versions. Follow-up data should be collected at 3 and/or 6, 12, and 24 months as appropriate to the specific condition and treatment. A series of more specific modules has also been developed to address specialized needs.

The Patient Satisfaction questionnaire is a nine-item questionnaire designed to assess the satisfaction of your patients with the process and quality of care

Normative Data Study Results

Overall Results

The overall results can be found in the AAOS Normative Data Study & Scoring document, which is available on the Academy's web site in both MS Word[®] and PDF[®] formats. The document presents the Norms Based Scoring normative scores for each scale broken down by various demographic markers. This document also explains the rationale behind the study and documents the study design and methods.

The norms from the standard scoring of the scales and the NBS of the scales can also be found on the Academy's web site in a series of MS Excel[®] tables for each questionnaire.

Results of the Validity and Reliability Tests

Each Academy questionnaire contains a number of scales intended to measure the functional status of respondents. Multi-trait scaling analyses were performed to evaluate questionnaire items and scales in terms of the characteristics that contribute most to their usefulness as measures.

The results of these multi-trait reliability and validity tests are reported in the ***Normative Data Study Reliability and Validity Tests*** document, which is available on the Academy's web site in both MS Word[®] and PDF[®] formats.

Questionnaire Scale Scoring

Norms Based Scoring

As part of its Normative Data Study, the Academy has developed new Norms Based Scoring (NBS) algorithms, which transform the original standard scale scores into an easy to interpret NBS.

NBS allows for an extremely easy method of interpreting and comparing the results of a given test across scales. It can be applied to the raw scores of the Academy outcomes questionnaires.

The Academy questionnaires were developed to be scored on a 0-100 scale. This produces results

that vary across the scales, resulting in difficulty when trying to compare performance across the different scales. For example, a score of 80 on the shoe-comfort scale appears to be equal to a score of 80 on the lower limb core scale. Because of the differences in the mean scores of these two scales, an 80 on the lower limb core scale is actually 10 points below the norm, while an 80 on the shoe-comfort scale is 6 points above the norm as measured in the general U.S. population.

NBS of the Academy questionnaires in the general U.S. population standardizes each scale to a mean of 50 and a standard deviation of 10. This is the approach currently used for scoring the SF-36[®] and the Headache Impact Test[™] (HIT).

The advantage of NBS is easier interpretation. When interpreting the scores you no longer have to remember the norms for all of the scales on the 11 Academy questionnaires. With NBS any score above 50 is above the general population norm while a score below 50 is below the general population norm.

The conversion algorithms for the NBS can be found in the appropriate chapters in the **AAOS Normative Data Study & Scoring** document, which is available on the Academy's web site in both MS Word[®] and PDF[®] formats.

Standard Scoring

The original standard scoring algorithms have been updated to match the numbering in the new 2000 version of the Academy's questionnaires.

The algorithms for the standard scoring for the scales can be found in the appendixes of the **AAOS Normative Data Study & Scoring** document, which is available on the Academy's web site in both MS Word[®] and PDF[®] formats.

Available Normative Data Study Files

Three types of files from the normative data study are being made available through the Academy's website, normative data files, MS Excels[®] result tables, and SPSS[®] syntax files which contain the scoring algorithms for the questionnaire scales.

Including version 2000 of the Academy's questionnaires, which is being released with the normative data study material, three versions of the Academy's questionnaires have been made

available publicly. These are Versions 1.0, 2.0 and 2000. While the content varies slightly from version to version, the proprietary scales and questions contained within these scales remain the same from version to version. The majority of the changes are cosmetic in nature. For example, the latest version (Version 2000) has been reformatted to make the questionnaires easier for patients to complete. Other changes include the addition or deletion of demographic questions. For example, the homunculus has been removed from the latest edition of the questionnaires because patients were not using the homunculus.

When using the data sets and the SPSS[®] syntax files, it is important to remember that the numbering and variable names match the normative data study version of the Academy's questionnaires. In order to match the data provided to the version of the Academy's questionnaires that you are using, a question index/library has been provided on their web site. **AAOSQLIB.XLS** is an MS Excel file, which lists each question and its variable name within the normative data and SPSS[®] files. The first column of each table gives the text of each question. The second column gives the variable name for each question.

Depending on the version of the Academy's questionnaires you are currently using, some of the questions that appear in the data set may not be part of the question set you are using. However, all of the scale questions exist in each version of the questionnaires.

The data collection tools for the normative data study also contained extra questions that are not part of the Academy's questionnaires for the purpose of testing various ideas. These questions remained in the datasets and are listed in **AAOSQLIB.XLS**. Also, several versions of the SF-36[®] were used in the normative data study and the comorbidities questions were placed into two separated locations in the questionnaires, depending on the data collection tool completed by each study participant. The remaining columns in the **AAOSQLIB.XLS** Excel tables denote which version of the SF-36[®] was completed by each participant and the location of the comorbidity questions on their questionnaire.

Data Files

The normative data files have been provided to allow researchers to use the data to develop norms that specifically match the protocols of their studies. By stratifying the data by the demographic markers that are important to your study, you can obtain norms that match the patients within your study. For example, if you are only studying women over sixty, you can isolate the data for women over sixty from the rest of the data set.

The data is being made available in three formats, SPSS® data files, MS Excel® data tables, and tab delineated text. Most databases and data analysis programs should be able to read at least one of these data formats.

Two sets of data files have been provided. The first set is to be used with the original scoring of the questionnaires. This data set has the original scales scores for each respondent appended to the end of each record. The second set is for use with the NBS of the scales. This data set has both the original scales scores and the norms based scale scores for each respondent appended to the end of each record.

Syntax

Two sets of SPSS® syntax files have been provided. The first set of SPSS® syntax contains the original standard scoring algorithms for the Academy's questionnaires and their scales. The second set of SPSS® syntax contains the NBS conversion algorithms for each of the scales. In order to create norms based scores for raw data collected in your study or practice, both the original standard scoring and new norms based scoring algorithms are necessary.

If you use any program other than SPSS® to analysis your data you must program your own scoring following the algorithms listed in the **AAOS Normative Data Study & Scoring** document. Only SPSS® syntax scoring algorithms are being provided by the Academy.

The scoring algorithms for the SF-36® Version 2.0 must be obtained separately from the developers of the SF-36®. Contact information has been provided in the **AAOS Normative Data Study & Scoring** document.

Determining Your Outcomes Needs

To make the decision to on which questionnaires to use and how to implement an outcomes program in your practice, you should perform the following steps:

- Assess your data collection objectives
- Assess your clinical/office environment
- Determine your experience with data collection
- Evaluate your clinical flow
- Evaluate your current computer system
- Evaluate your current staffing
- Evaluate your current office space
- Evaluate your financial resources
- Determine which set of vendors fits your clinical/office environment
- Evaluate specific systems
- Purchase or develop an outcomes data collection system

Assess Your Data Collection Objectives

Before you decide on what type of data collection system you want to develop or purchase, it is a good idea to ask a series of questions dealing with the objectives of collecting outcomes data for your practice. These questions include: Why have you decided to collect data? Are you interested in research, in collecting data for assessing your practice and to support continuous quality improvement initiatives, or both? Are all the physicians in your practice going to participate or only some? Are you interested in adding other questionnaires to the set available from the Academy? Do you want to perform other functions (e.g., integrate your medical records) with the system that you want to purchase or develop? What analyses are you interested in performing? Are you interested in sending some of your data to other peers or institutions?

The answers to these questions will help determine the basic requirements of the data collection system you need.

Assess Your Current Clinical/Office Environment

Before you purchase or develop a data collection system, you need to assess the current capabilities of your staff to collect data.

Determine Your Experience with Data Collection

How experienced is your staff with data collection? Have you had patients complete forms (other than insurance and payment forms) before? Does your staff understand the importance of collecting an unbiased sample of your practice? Answering these questions will determine what level of support and training you may need and what type of system may be best suited to match the experience of your staff.

Evaluate Your Clinical Flow

The questionnaires each take approximately 15 minutes to complete. The patient should complete them before you see the patient and he/she must complete them on his/her own. You should assess whether the clinical process (e.g., logistics and space) that you have in place, allows for the patient to complete the outcomes questionnaires and if not, what modifications are needed. Also, if you are interested in using the Patient Satisfaction Questionnaire, you need to be able to have patients complete the 9-item questionnaire, which takes less than 3 minutes, **after** patients have seen the physician but **before** they leave your office.

Evaluate Your Current Computer System

Determine what computer software and hardware you currently have in your facility and whether you will use that software and hardware (i.e., a given computer station) to collect and analysis your data. Is the station that you are thinking of using available or is it used mostly for other purposes? Do you want to have your patient outcomes data in the same system with accounting records? Is the station in a secure place?

Evaluate Your Current Staffing

Assess your staffing levels to determine what type of data entry is best for you. Different data collection and transmission systems require different levels of staff involvement and effort. Data entry

can be done by the patient (e.g., touch screen etc.), by your staff (e.g., manual data entry, scannable forms etc.) or by a third party vendor (e.g., questionnaires mailed to a data processing service).

Evaluate Your Current Office Space

You will need to choose a space that is private and quiet for the patient to complete the forms. This is especially true with systems where the patient enters the data directly into the computer. You should review the space available in your office for data collection before you make your decision, however, it would be acceptable to administer questionnaires in waiting room also.

Perform a Cost-Benefit Analysis

The data collection systems vary in price. It can also be costly to develop your own data collection system. Before you decide how much money you want to invest in outcomes data collection, you should do a cost/benefit analysis of the importance of collecting outcomes data for your practice. You need to be realistic in assessing the costs of installing the necessary infrastructure (i.e., staff, technology, space) to implement an outcomes data collection program. You should not underestimate the potential benefits of collecting outcomes data (e.g., comparing how your patients perform, developing targets for continuous improvement, documenting quality, contracting with managed care).

For example, you may want to answer the following questions: What is the potential impact of collecting outcomes data on your revenue? Will collection of outcomes data affect your ability to get (better) contracts from managed care organizations? What will be the impact on your practice of showing high quality results? Do you have sufficient staff to take on the extra activity of administering the questionnaires? The answers to these questions will help you determine how much money and effort you are willing to invest in not only the data collection system but also changing your staffing levels, your clinical flow and office space, etc.

In Appendix 4, we have provided a worksheet to help you perform a cost/benefit analysis.

Outcomes Protocol and Implementation

The ability of the Academy outcomes questionnaires to give you meaningful data to evaluate your practice, and to eventually provide effective evidence-based clinical guidelines and algorithms, is based on the users making an effort to ensure the quality of each and every one of the patient records sent to the database. You need to keep in mind, and impress upon the minds of all the staff involved in collecting data from the patient, that every questionnaire that is incomplete, every questionnaire that has unreliable data, weakens your outcomes database. It is critical to the success of your data collection that you implement steps to ensure the quality of the data (i.e., its accuracy and completeness) at every step of the collection and transmission process. The following sections suggest ways of administering the questionnaires to maximize response rates and insure the quality of the data being collected.

Developing a Data Collection Protocol

Determine how you will integrate data collection into the clinical flow of your office.

Obtaining Informed Consent

Keep in mind that many states, hospitals, universities and other entities have specific requirements for obtaining patient consent. It is important that you are familiar with your state's and institution's policies regarding patient consent. It is the your responsibility to make sure that all appropriate state laws and institution policies are followed when obtaining patient consent.

Stress Confidentiality

After obtaining a patient's verbal agreement to fill out the questionnaire, give the patient a copy of the consent form to read. Offer to read the form to her/him if she/he wishes. Stress confidentiality, the patient's right to stop at any time or to refuse to answer any question, and the voluntary nature of the participation. Offer to answer any questions the patient has at this time. After having read the consent form and having all questions answered, the patient is to sign the form on the line indicated, and date it. Give the patient a copy of the form to keep for future reference.

Example of a Consent Form

What follows is an example of a consent form. You may want to change it to fit your own style.

"You are being asked to take approximately 15 minutes to complete a questionnaire developed by the American Academy of Orthopaedic Surgeons and various Specialty Societies. The questionnaire includes some general questions about you and some questions about why you are seeing the doctor today. The information you provide will help your doctor to better understand your health and condition.

Completion of the questionnaire is voluntary. You can refuse to answer any question and you can stop at any time. Your name will be kept in strict confidence and will not be associated with your questionnaire answers outside of this office. Once the questionnaire has been completed, an encrypted identification number will identify the data.

The medical care you receive from your doctor will not be affected by whether or not you decide to complete the questionnaire. If you are having specific problems or symptoms, you should tell your physician about these directly.

If you have questions about your rights as a participant, you can contact Dr. XXXXXXX at (xxx) xxx-xxxx. If you agree to complete the questionnaire, please sign below."

Signature of Participant
Printed Name of Participant

Date

Selecting Patient Groups

You may collect data on every single patient that walks into your office, (however, doing so may create a burden on the staff that may be too great); or you may decide that the benefit of collecting outcomes data on a certain type of patient is not cost-effective for you; or you may decide that, for a certain period of time, you just want to collect data on a sample of your practice. The Academy recommends that you start "small" and then ramp-up to larger numbers of patients over time. You have total freedom to choose what type of patients you select to follow. Once you make that choice however, you must collect data on every patient that fits your selected criteria (e.g., certain complaint; only surgeries; revisions; etc.). This requirement is needed to avoid any "selection" bias in the database.

Identifying Potential Participants

The identification and screening of patients to complete the questionnaires, and the accurate documentation of these activities, provide very important information about the patient population from which the eventual data are compiled. By documenting to whom the questionnaires were administered to and who refused to complete them, we can better understand how the patients at each practice site are alike or different from each other.

The exact procedures you use to identify potential participants will depend on the specific situation at your clinical site. It is important for you to establish a standardized method that works at your site, and ensure that all eligible patients have a chance to be identified and included. You may need to establish a liaison with several staff members at your site with whom you can regularly check to learn of new potentially eligible patients.

There are no guidelines as to what exact group of patients you must assess. It is up to your practice to decide what type of diagnosis or intervention you want to evaluate. However, once you decide on the type of patient you want to enroll, you must enroll all eligible patients of that type. To keep the data pool varied and representative, don't discriminate by gender, age, race, etc. The type of patient you decide to assess will determine the questionnaire you use in assessing them (e.g., DASH; Spine; Lower Limb; Pediatrics; see section "Choosing the Right Questionnaire").

Screening for Eligibility

Patients should meet the following specific eligibility criteria:

- Able to read English
- Able to read the questionnaires (for children, parents able to read)
- Able to understand and give informed consent.

You should also determine if other eligibility requirements are need for your particular data collection needs. You should eliminate patients who do not meet the your predetermined eligibility criteria.

In some circumstances, you may not be able to access all this information before contacting the patient. If you think that it is highly probable that the patient will prove to be eligible, go ahead and

administer the questionnaire. You may find that you later eliminate the patient based on further information.

You must attempt to enroll all patients who meet the eligibility requirements. Under no circumstances should your knowledge or impressions of whether or not a potential participant would be a "good" questionnaire subject (e.g., easy to interview, intelligent, pleasant manner, talkative, etc.) affect your willingness to investigate, screen, and/or enroll the patient.

Approaching Patients for Participation

After you have determined that a potential participant is eligible, approach the patient to invite him/her to participate. Suggested strategies for doing so are discussed below.

Preparation

Be prepared to answer questions and enroll the patient at first contact, since willingness to participate is often strongest at this time. Pick a time for the first contact when you expect to have a few uninterrupted minutes with the patient, perhaps while he/she is in the waiting room before he/she is called into an examination room. Keep in mind that your recruitment success depends, in great part, on your ability to make the benefits of completing the questionnaire sound interesting and of value to the patient.

Before your initial contact with the patient, be certain that you have all the materials you might need. You should have a questionnaire, #2 pencils or pens, and if possible, a clipboard available for the patient to use as a work surface for completing the questionnaire.

Explaining the Purpose of Assessing Outcomes

Be brief, clear, and confident. Approach the patient confidently and with a positive attitude. The confidence you show will increase your chances of obtaining participation. Know the patient's name in order to greet him/her. Your initial introduction should be as brief and clear as possible. Use language that is easily understood and avoid jargon. A sample introductory script is shown below. It is not necessary for you to read this script verbatim. In fact, it is preferable that you introduce yourself and the reason for having the patient participate in outcomes assessment in your own words once

you are comfortable doing this. Your introduction should give the patient a general idea of what to expect in the questionnaire he/she will be filling out today and in the future (i.e., the Follow-up questionnaires).

A Sample Introduction

"Your doctor(s) would like to better understand how you and other patients with medical problems feel, how well you are able to do your usual activities, and how you rate your own health. To help us better understand these things about you and other patients, we will ask you to complete a series of questionnaires, some today, and others will be completed after you see the doctor.

The questionnaire that you are filling out is simple to complete. Please remember, this is not a test and there are no right or wrong answers. You are the only person who knows what the answers to the questions are. Choose the response that best represents the way you feel. I will quickly review the questionnaire at the end of your appointment to make sure that all the questions have been completed.

Please complete the questionnaire while waiting to see the doctor. No one should assist you in completing the questionnaire (unless a parent is filling it out for a young child). [Optional: Bring the questionnaire into the examination room with you, and give it to the doctor. Your doctor will/may review your responses and then give it back to you.] Please return the questionnaire to me at the end of your visit".

Many patients will be satisfied with this introductory statement. Others will have questions or concerns. Some of the most common questions asked by participants and the possible responses are provided below in the section "Questions Frequently Asked by Patients." You may want to create a sheet with the questions and answers and give it to the patient to read. You should be prepared to respond to these concerns verbally as well, and should become adept at expressing these ideas in your own words. If you do not know the answer to someone's question, admit it and offer to find out either then or later, depending on how important it is to their participation.

Questions from Patients Completing the Questionnaires

It is normal for patients to ask questions about filling out forms. The way you answer those questions can have a substantial impact on how the patient will fill out the questionnaires. Answering the patient's questions gives you an opportunity to impress upon him/her your clinic's commitment to quality of care, the importance of assessing outcomes, and the need for completeness and accuracy in filling out the forms. You and your staff should look at the patient's questions as an opportunity – an opportunity to insure patient satisfaction and high quality data - and not as a headache.

Patient Log

The Patient Log is used to document how many patients are being given a questionnaire and how many of those patients refuse to complete it. The typical Patient Log consists of six columns (see Appendix 5). The first column is for the date. The next column is for the patient's name or identifier. The third column is for the physician's name. The fourth column is for the type of questionnaire that is given to the patient (e.g., DASH, Spine, Pediatrics, Sports Knee, etc.). The fifth column is to mark whether the patient completed the questionnaire in the office, at home or refused to do so. Finally, the sixth column is used to write-in a brief comment on why the patient refused (e.g., does not want to complete the form under "lawyer's advice") or did not complete the questionnaire (e.g., not eligible; unable to read English; did not have time, etc.).

Keeping an accurate Patient Log is important to facilitate an understanding of whether or not there is a specific bias or problem with data collection. By keeping rates of completion and refusal, an accurate Patient Log can help answer questions like: Are certain questionnaires more problematic to answer than others? Do we need to change our approach with certain patients (e.g., Workers' Compensation patients) as we ask them to complete the questionnaires? Etc.

Frequently Asked Questions by Patients

The following are a sample of the most frequently asked questions that we have compiled from interviews with staff at a variety of practice sites and the suggested ways of answering these questions.

Q: What do I have to do?

"We would like you to complete a questionnaire here at the clinic before you see the doctor. These questionnaires will ask for some background information about you, why you are seeing the doctor today and at subsequent follow-up visits, whether you have been having any physical or emotional problems, and whether you are limited in your daily activities in any way."

Q: How long will it take?

"Each questionnaire will take approximately 15 minutes to complete. Ideally, these questionnaires should be completed while you are here at the clinic and before you see the doctor."

Q: Who developed the questionnaires?

"The American Academy of Orthopaedic Surgeons and a group of Specialty Societies which are the professional organizations to which most orthopaedic surgeons belong."

Q: What patients are being asked to complete these questionnaires?

"We are choosing patients [tell the patient what criterion you are using: at random; because of a particular condition; all patients; etc.]".

Q: I don't understand what this question means; can you explain it to me?

While completing the questionnaire some patients will undoubtedly ask for clarification of specific items so that they can better understand and respond to a question. Assist the patient by re-reading the question for them verbatim. You could say, "Let me see if I can help you understand the question better," and then proceed to reread the question verbatim to the patient. If they ask you what something means, do not rephrase the question; gently, tell them to use their own definition of the situation. It is important to minimize the difference in answers due to different wordings of the questionnaire. We want to make sure that the differences in scores represent differences among patients, not differences among clinicians.

Q: I don't like the response choices; can I add one?

Sometimes patients may have trouble with the response choices. They may say "I don't know" or something different than what is stated on the questionnaire. In these circumstances, it is important to gently guide the patient to respond in one of the pre-set categories by saying something like: "I know that it may be hard for you to think this way, but which of these categories most closely expresses what you are thinking or feeling." If the patient is still unable to respond, accept the survey as incomplete and state the reason on the patient log.

Q: What if a patient does not complete the questionnaire?

Depending on what questions are left unanswered the whole questionnaire may need to be discarded wasting all the time that you put into selecting and approaching the patient and missing the opportunity to add to you're the database. Therefore, it is very important you minimize the number of incomplete questionnaires. You should review every questionnaire handed to you for completion. If a question has been left unanswered, you should ask a patient why he/she did not respond to it. If non-completion is a result of the patient having trouble understanding a particular item, ask the patient to explain why they had difficulty responding to those items. Reread the question for them verbatim, but as stated above, do not rephrase the question. If the patient is still unable to complete the survey, accept the survey as incomplete and indicate the reason on the patient log. If the patient is unable to answer the questionnaire on his/her own, document this on the patient log as well.

Q: Why do I have to complete the questionnaire at the clinic?

"All patients are being asked to complete their questionnaires here at the clinic. This will assure your confidentiality and ensure that everyone completes the questionnaires in the same, standard way. You should have time to fill out the forms while you are here and the office staff will be able to answer your questions about how to complete the forms."

The Importance of Style

Your style and manner of delivery establish an initial impression that can either alienate the patient or encourage cooperation. Your approach should include:

- Introducing yourself in a friendly way;
- Demonstrating a thorough knowledge of the questionnaire; and
- Delivering a courteous, straightforward presentation of the need and advantages of doing outcomes assessment.

Rapport is probably the most important tool you have, and it is achieved through sensitivity to the patient and his/her circumstances. Your ability to predict and respond to a patient's potential concerns will be a key element to avoiding refusals.

An abrasive or aggressive manner is not acceptable. Likewise, a manner that is too passive or unenthusiastic will be unsuccessful as it conveys a lack of confidence or commitment. This approach will not motivate the neutral or uninterested patient. A firm, confident, and enthusiastic but non-aggressive manner is more likely to succeed. In order to come across this way, you and all other staff involved in the process must be thoroughly convinced of the importance of having accurate and complete questionnaires. The best way to sincerely convey to the patient the importance of his/her participation is for you to be convinced of the importance of collecting high quality data.

Potential Refusals

Some patients will refuse to complete the questionnaires. This is their right. This section provides guidance for addressing concerns and minimizing the number of refusals in enrolling patients. There are some simple strategies you may want to use to overcome a tentative patient:

- A friendly, confident and positive manner, assertive but not aggressive, will usually have positive effects in overcoming an initial refusal.
- Listen carefully to the patient's comments and try to determine the basis for his/her objections. Then, target your responses to those objections or concerns.
- A little more detail about the procedures, confidentiality, or time involved may answer the "unasked" question. Sometimes the best technique is to simply ask: "Is there something about your participation in this that is bothering you? May I provide further information?"

Handling Refusals

Below is a list of common reasons given for refusing to participate, as well as possible responses to these reasons. Different reasons need to be countered with a different emphasis in response. It is important to listen to the potential participant's comments and tailor your response to his/her need for information. If you are unable to overcome someone's objections, accept the refusal courteously and thank the patient for his/her time. Do not pressure, argue, or otherwise alienate the individual. Do not allow a refusal to affect your positive approach to your work.

Countering Refusals

Here are some suggestions on how to respond to common reasons given by patients for refusing to complete the questionnaire.

Reason for Refusal

Response

“No time - ever”

Emphasize that participation by all persons selected is important.

“I need to do something else (homework, shopping lists, etc.)”

“Information about the health of everyone eligible is important. I can come back later. Or, I could wait while you finish what you are doing and give you the questionnaire then.”

“Don't like studies; waste of time”

“You will be giving information to your doctor who will be learning more about you.”

“What if I don't want to complete the forms?”

“The questionnaire is voluntary and you may refuse if you wish, but we really need and would be most grateful for your input. To be person selected to participate should do so. Can we get you started and, if you decide later you don't want to continue, you can let me know.”

Questionnaire Administration Dos and Don'ts

The table below summarizes the discussion in the previous sections.

DOs	DON'Ts
<ul style="list-style-type: none">• Do make sure that the patient is eligible to answer the questionnaire.• Do make sure the patient is given	<ul style="list-style-type: none">• Do not select which patients will complete the questionnaire based on appearance or demeanor.• Do not discuss respondents'

- the right questionnaire.
- Do have the respondents fill out the questionnaire before they fill out any other health data forms and before they see their physician.
 - Do stress the importance of their answers and the absolute confidentiality in which their answers will be kept.
 - Do be warm, friendly, and helpful.
 - Do encourage respondents to fill out the questionnaire; stress that it will not take more than 15 minutes.
 - Do read and repeat a question verbatim for the respondent.
 - Do tell respondents to answer a question based on what they think the question means.
 - Do have respondents fill out the questionnaire by themselves.
 - Do encourage respondents to fill out all the questions.
 - Do thank the respondents for filling out the questionnaire.
 - Do inform respondents that they will be asked to fill out the same questionnaire again at other clinic (follow-up) visits.
 - Do keep track of patients who refused to complete the questionnaire.
- health, health data, or emotions with them before or after they fill out the questionnaire.
- Do not minimize the importance of the questionnaire.
 - Do not appear to be in a hurry when explaining why the questionnaire needs to be completed.
 - Do not force or command respondents to fill out the questionnaire.
 - Do not interpret or reword a question.
 - Do not force or command respondents to fill out a particular question.
 - Do not allow spouses or family members to help the respondent fill out the questionnaire.
 - Do not accept an incomplete questionnaire without first encouraging the respondent to fill out unanswered questions.
 - Do not let patients take the questionnaire home.

Choosing the Right Academy Outcomes Questionnaire

The Academy's outcomes questionnaires were designed so that musculoskeletal caregivers could assess the outcomes of most patient populations and conditions. The Academy has developed questionnaires that cover broad areas of orthopaedics: Upper Extremity, Lower Limb, Pediatrics, Spine, and General Musculoskeletal Health. Each of these questionnaires includes a section on demographics, history, general health status, co-morbidities, expectations, and joint-related pain and function data. All of these questionnaires consist of a baseline and a follow-up

version. There is also a set of optional modules. Appendix 1 lists all the available questionnaires.

Following is a brief description of each and every one of the questionnaires.

For Upper Extremity Complaints

The questionnaire for upper extremity conditions is the Disabilities of the Arm, Shoulder, and Hand questionnaire or DASH. This questionnaire has been developed for patients that are 18 years of age or older.

For Pediatric Complaints

For Pediatric conditions, there are three age-specific questionnaires designed to assess most musculoskeletal conditions. There is a questionnaire for children under ten years of age to be completed by a parent or other adult family member/guardian. There are two questionnaires for adolescents; one questionnaire is to be completed by the adolescent and the other by a parent. It is important that the **same** parent or guardian completes **both** the baseline and follow-up questionnaires.

Parent/Child Questionnaire

This questionnaire was designed for use with children from 2 to 10 years old. Since children under ten are not capable of accurately completing the outcomes questionnaire, this questionnaire is designed to be completed by a parent or other adult family member/guardian.

Parent/Adolescent Questionnaire

This questionnaire was designed for use with children between the ages of 11 and 17 years old. Since parents often have a different assessment of an adolescent's condition than the adolescent him/herself, a parent or other adult family member/guardian for comparison should complete this questionnaire with the questionnaire completed by the adolescent.

Adolescent Questionnaire

This questionnaire was designed for use with children between the ages of 11 and 17 years old.

For Spine Complaints

The Academy offers two spine questionnaires. The spine questionnaire have been developed for patients who are 18 years of age or older.

Cervical Spine Questionnaire

The cervical spine questionnaire is designed for use with patients presenting conditions affecting the cervical portion of the spine.

Lumbar Spine Questionnaire

The lumbar spine questionnaire is designed for use with patients presenting conditions affecting the lumbar or thoracic portions of the spine.

Patients presenting with both Lumbar and Cervical conditions should be administered both the Lumbar and Cervical Spine Questionnaires.

For Lower Limb Complaints

For conditions affecting the lower limb, you have several questionnaires to choose from: Lower Limb; Foot and Ankle; Sports Knee; Hip/Knee; and the HK module. These questionnaires have been developed for patients who are 18 years of age or older.

Lower Limb Questionnaire

The Lower Limb Questionnaire is a general lower limb questionnaire designed to assess general lower limb problems. The questions apply to the entire lower limb. This questionnaire is recommended if your practice sees a large number and wide variety of lower limb complaints and you don't have the office staff necessary to keep track of several different lower limb questionnaires.

Foot and Ankle Questionnaire

The Foot and Ankle Questionnaire is a questionnaire designed to be used to specifically assess foot and ankle conditions.

Sports Knee Questionnaire

The Sports Knee Questionnaire is a questionnaire designed specifically for use with the types of knee conditions and injuries seen in athletes and high performance individuals. This questionnaire

is recommended for sports medicine and other practices that see a large number of sports-related knee conditions.

Hip/Knee Questionnaire

The Hip/Knee Questionnaire is a questionnaire designed specifically for use with hip and knee conditions.

Short Form Musculoskeletal Function Assessment (SMFA)

The Short Form Musculoskeletal Function Assessment is designed to assess the general overall musculoskeletal health of your patients. This questionnaire is recommended for the practice that needs to use one questionnaire for all of their patients regardless of diagnosis and treatment.

Using The Optional Modules

The HK Module, the Physician Form, the Patient Satisfaction Questionnaire, and the Employment Module are optional questionnaires that may be used in conjunction with any Academy questionnaire. These questionnaires are designed to provide extra data that may be of interest to some physicians. All these questionnaires have been developed for patients who are 18 years of age or older.

HK Module

The HK Module is a more comprehensive set of questionnaires used to document the outcomes of all patients who undergo hip or knee arthroplasty surgery. The HK Module consists of the same patient-based baseline and follow-up questionnaires as the Hip/Knee Questionnaire; plus five other forms. These forms are: Physical Exam Form, Hip-Operation Form, Knee-Operation Form, Discharge Form, and the Post Discharge Complications Form. These questionnaires can also be used to document the outcomes of patients who may be candidates for hip or knee arthroplasty but undergo other procedures or no procedures at all.

To use HK, forms should be completed preoperatively, at surgery, at discharge, at follow-up (6 months, 1 year, 2 years, annually thereafter), and at the time of any post-discharge complications. Instructions on how to complete these forms are indicated in Appendix 3.

HK Baseline Questionnaire

The patient should complete the Hip/Knee Baseline Assessment Questionnaire no earlier than 6 months prior to surgery.

HK Follow-up

The patient should complete the Hip/Knee Follow-up Questionnaire six months, one year, two years, and each year after initial treatment began. For definitions of the follow-up time frames see the "Baseline and Follow-up Assessment" section below.

Physical Exam Form

The physician or another evaluator should complete the Physical Exam Form no earlier than 6 months prior to surgery, preferably at or around the time the patient completes the Baseline Assessment Questionnaire. The pain assessment question in this questionnaire should be the evaluator's assessment of pain, not simply a documentation of the patient's own pain assessment. Completion of this questionnaire provides joint-related clinical indications, pain, function, and range of motion data.

The physician should complete the Physical Exam Form at the specified follow-up intervals defined in the previous paragraph. The purpose of this form is to provide a physician's assessment of the effectiveness of the treatment.

Hip Operation Form/Knee Operation Form

The physician or another evaluator should complete the Hip Operation Form or Knee Operation Form at the time of surgery. The purpose of this form is to describe specific aspects of the operation. If a bilateral procedure is performed, two Operation Forms should be completed, one for each operated side. All intraoperative complications should be documented. Hip and Knee Complication code sheets are provided for assistance in properly coding many complications.

Discharge Form

The physician or another evaluator should complete the Discharge Form at the time of discharge. The purpose of this form is to provide details of the hospital stay and discharge orders. All

complications occurring prior to discharge, but not at surgery, should be documented on this form. Hip and Knee Complication code sheets are provided for assistance in correctly coding many complications.

Post-Discharge Complications Form

The physician or another evaluator should complete the Post-Discharge Complications Form at any time a complication is known to have occurred after discharge. Hip and Knee Complication code sheets are provided for assistance in properly coding many complications. The purpose of this form is to provide complication details and treatments.

The Physician Form

This form is to be filled out by the physician. This form contains physician assessed severity, pain, and functionality information. This form was designed for physicians who would like to collect physician-assessed outcomes in addition to the patient assessed outcomes data.

Patient Satisfaction Module

The Patient Satisfaction Questionnaire is the short form (9 items) GHAA patient satisfaction questionnaire. Assessing patient satisfaction with this questionnaire consists of administering questionnaires to 200 sequential patients twice a year.

The protocol is the following: You need to administer the questionnaire to 200 consecutive patients twice a year; patients complete the questionnaire anonymously after seeing the doctor.

You may want to have your patients complete a patient satisfaction questionnaire every time they complete an outcomes questionnaire. Linking patient satisfaction to treatment outcomes can be useful, but it requires the patient to be identified and therefore his/her responses may not be as candid as when they respond anonymously. Collecting patient satisfaction data can lead to:

- Increased perception of quality of care;
- Improved patient loyalty and retention;
- Stronger negotiating position with managed care organizations, payers, and malpractice insurance carriers.

The Employment Module

This questionnaire is meant to provide more detailed information about the patient's employment status and functional status while at work. This questionnaire is recommended for use with Workers' Compensation patients and for patients whose work status and/or functionality has been affected by their musculoskeletal condition.

Using the Questionnaires with Trauma Patients

When you are unable to obtain a baseline assessment from a trauma patient you may compare the trauma patient's follow-up assessments with the normative score for the scales and questionnaire the patient is completing. For the best comparison, use the normative score stratified for the patient's gender, age, and sex.

While using the normative score in place of the baseline score when a baseline cannot be obtained for the trauma patient can provide a useful comparison to track the recovery of a trauma patient, it is important to remember that the trauma patient's actual baseline score may vary from the substituted normative score.

Baseline and Follow-up Assessment

Outcomes assessment, by definition, implies documenting changes over time. In order to fully document patient-based outcomes and get a true assessment of patients' post-treatment outcomes, it is necessary to collect both baseline and follow-up data on all patients to be assessed. Collecting baseline and follow-up data on patients provides you with a complete picture of your patients' musculoskeletal health over a given length of time and at given points in time. Armed with these data, you can begin to make valid assessments of your patients' outcomes.

The Academy provides you with both baseline and follow-up outcomes assessment questionnaires to be completed by your patients.

Baseline data are data that are collected prior to administering treatment to patients. Baseline data are the "reference point" to which all data collected during follow-up on the patient will

be compared. Without this reference point, it is not possible to determine if your patients have improved as a result of treatment.

Baseline Administration

A baseline questionnaire should be completed at the patient's initial office visit or just before treatment of the patient begins.

Taking a New Baseline Measurement (Re-zeroing)

When a patient's treatment changes from non-surgical to surgical, it is necessary to re-zero that patient at baseline so that you may follow-up the new course of treatment at the proper points in time. When the change occurs, administer a new baseline questionnaire to the patient and then begin follow-up at the first follow-up time point (guidelines for follow-up periods are given in the section labeled "Follow-up Time Periods").

Follow-up Administration

If the patient will not be in the office for routine follow-up, when it is time to administer the questionnaire, you may administer the follow-up questionnaire by mail. Be sure to include a letter explaining the importance of completing the questionnaire and returning it. Enclose a self-addressed, stamped envelope to increase the response rate of patients being followed up by mail. Only administer the follow-up questionnaire by mail if the patient would not normally be coming into the office for follow-up of his/her condition during the recommended follow-up time frames. Remember, the best response rate will be obtained by administering the follow-up questionnaire during regularly scheduled appointments.

Follow-up Time Periods

Depending on the type of condition, you will need to follow up with the patient for up to 2 years or more after the patient has completed a baseline (pre-intervention) questionnaire. All patients should be followed-up at 3 and/or 6, 12, and 24 months and annually thereafter (optional after the first two years of follow-up). You may want to follow up with your patients at more frequent intervals depending on the patient's condition.

For comparability sake, it is important that the follow-up assessment be done as close as possible to the specified time frame. The following windows of time recommended for each follow-up:

- 3 month follow-up (10-14 weeks)
- 6 month follow-up (5-7 months)
- 12 month follow-up (11-13 months)
- 24 month follow-up (23-25 months)
- Subsequent years are annually, beginning 3 years post initial treatment plus/minus 6 months

Making weekly lists of the patients that need to be followed-up will help you manage the data collection process. Your chosen software data collection system includes an automatic reminder function for tracking follow-ups.

APPENDIX 1: List of Questionnaires

CONDITION / PURPOSE	QUESTIONNAIRE / FORM
	AAOS QUESTIONNAIRES
Upper Extremity Conditions	<ul style="list-style-type: none"> Disabilities of The Arm, Shoulder and Hand (DASH)
Children's Conditions	Pediatric Questionnaires
	<ul style="list-style-type: none"> Pediatric Parent/Child Questionnaire Pediatric Parent/Adolescent Questionnaire Pediatric Adolescent Questionnaire
Neck/Back Conditions	Spine Questionnaires
	<ul style="list-style-type: none"> Cervical Questionnaire Lumbar Questionnaire
General Musculoskeletal Conditions	<ul style="list-style-type: none"> Short Form Musculoskeletal Function Assessment (SMFA)
Lower Limb Conditions	Lower Limb Questionnaires
	<ul style="list-style-type: none"> Lower Limb Questionnaire Foot/Ankle Questionnaire Sports Knee Questionnaire Hip/Knee Questionnaire
	ADDITIONAL MODULES
Surgeon Assessment of Patient Status	Physician Assessment Module
	HK (Hip/Knee) Module
	<ul style="list-style-type: none"> Physical Exam Form Hip Operation Form Knee Operation Form Discharge Form Post-Discharge Complications Form
Patient Satisfaction with Process of Care	<ul style="list-style-type: none"> Patient Satisfaction Module
Employment Status	<ul style="list-style-type: none"> Employment Module

APPENDIX 2: Instructions to complete the "Office Use Only" section

The "Office Use Only" section appears in all the questionnaires and looks like this:

FOR OFFICE USE ONLY

Clinic ID _____ First six letter of patient's last name _____

Physician ID _____ Office Chart # _____

	Diagnosis & ICD-9 Code*	Procedure & CPT Code**	EPT Date	Side of body procedure was performed on:
Primary Dx	Dx _____	Tx _____		<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9 _____	CPT _____		<input type="checkbox"/> Both <input type="checkbox"/> N/A
Secondary Dx	Dx _____	Tx _____		<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9 _____	CPT _____		<input type="checkbox"/> Both <input type="checkbox"/> N/A
Secondary Dx	Dx _____	Tx _____		<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9 _____	CPT _____		<input type="checkbox"/> Both <input type="checkbox"/> N/A
Secondary Dx	Dx _____	Tx _____		<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9 _____	CPT _____		<input type="checkbox"/> Both <input type="checkbox"/> N/A
Secondary Dx	Dx _____	Tx _____		<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9 _____	CPT _____		<input type="checkbox"/> Both <input type="checkbox"/> N/A

* Please fill in the complete diagnosis in the space provided above the dotted line and the corresponding ICD-9 code in the space below the dotted line. (See example below)

** Please fill in the complete procedure in the space provided above the dotted line and the corresponding CPT code in the space below the dotted line. (See example below)

	Diagnosis & ICD-9 Code	Procedure & CPT Code	EPT Date	Side of body procedure was performed on:
Primary Dx	Dx: degenerative spine	Tx: osteotomy of spine, cervical	4/1/97	<input type="checkbox"/> Right <input type="checkbox"/> Left
	ICD-9: 721.80	CPT: 82220		<input type="checkbox"/> Both <input checked="" type="checkbox"/> N/A

The clinic ID space can be used for practices with more than one location or multi-center studies. The first six letters of the patient's last name should be filled in as this information may be used to make up part of the patient's unique identification number.

In most cases, the physician's social security number, SIN (Canadian Social Insurance Number), or UPIN will be used. However, any combination of 9 digits may also be used.

The office chart number is for internal office use only. This number may be used internally to locate and file a patient's medical record.

When filling out a **baseline form**, each patient must have at least a primary diagnosis filled in within the space marked Dx. In addition, the space directly below the primary diagnosis (labeled ICD-9) must have a corresponding diagnosis code (the ICD-9 code may consist of up to 5 digits: 3 to

the left of the decimal, and up to 2 to the right of the decimal). It is also important that the primary procedure being performed be filled in within the first space marked Tx. The space directly below (labeled CPT) must have a corresponding procedure code (a 5 digit CPT code). Space has been provided to allow for up to 4 secondary diagnoses and procedure codes.

It may happen that a given diagnosis has more than one procedure attached to it. If that is the case, the Dx spaces should be filled in by repeating the same diagnosis and each corresponding Tx space filled in with each of the different procedures.

It is important to note that if a procedure is not performed at the time of the baseline visit, then the appropriate “office visit” procedure code from the “99000” series of CPT codes must be used as the primary procedure code.

The diagnosis, ICD-9, Treatment, and CPT code information in this section are mandatory fields and are required to be completed in order to transmit the record to the central database. The failure to complete this section will make the record unusable.

When filling out a follow-up form, if a procedure has been performed since the baseline form was completed, that procedure (the CPT code) now becomes the primary procedure code and should be reflected as such on all subsequently completed follow-up forms. Any secondary diagnoses and/or procedures should be listed in the appropriate space(s) on the follow-up form(s). Please be aware that any time a procedure is listed, its corresponding diagnosis should also be listed.

APPENDIX 3: Instructions to complete the HK additional forms

The following instructions are being defined for answering specific questions within the HK-additional forms that may seem confusing or require further clarification.

Physical Exam Form

Question #13 is being asked in order to measure the patient's leg length. Length will be either equal or short for one limb. If the patient's right or left leg is measured as being short, the measurement should be indicated in centimeters consisting of 1 or 2 digits.

Questions #14.1-14.12 are being asked in order to measure (passive) hip motion for the patient's right and left joints. Each measurement should be indicated in degrees as a - or + integer consisting of 1, 2, or 3 digits. A measurement of neutral should be reflected as zero.

If further clarification is needed in measuring abduction and/or adduction, please refer to figure HK1 below.

If further clarification is needed in measuring extension and/or flexion, please refer to figure HK2 below.

If further clarification is needed in measuring internal rotation and/or external rotation, please refer to figure HK3 below.

Questions #15.1-15.4 are being asked in order to measure (passive) knee motion for the patient's right and left joints. Each measurement should be indicated in degrees as a - or + integer consisting of 1, 2, or 3 digits. A measurement of neutral should be reflected as zero.

If further clarification is needed in measuring flexion, please refer to figure HK3 below.

Questions #16.1-16.4 are being asked in order to measure (active) knee motion for the patient's right and left joints. Each measurement should be indicated in degrees as a - or + integer consisting of 1, 2, or 3 digits. A measurement of neutral should be reflected as zero.

If further clarification is needed in measuring flexion, please refer to figure HK4 below.

Questions #17.1-17.2 are being asked in order to evaluate the strength of the patient's gluteus medius muscle. The Trendelenburg test can be performed by having the examiner stand behind the patient and observe the pelvis as the patient stands on one leg and then the other. A positive result determines muscle weakness on the standing leg side when the pelvis tilts down on the opposite side. The patient should be evaluated on both the right and left joints. A result of negative, positive or cannot test should be indicated.

Questions #18.1-18.2 are being asked in order to measure knee alignment for the patient's right and left joints. A measurement of neutral, varus or valgus should be indicated for each side. Each measurement should be indicated in degrees as a positive integer consisting of 1, 2, or 3 digits. A measurement of neutral should be reflected as zero. A varus measurement will indicate the patient's knee as being bent inward or twisted. A valgus measurement will indicate the patient's knee as being bent outward or twisted.

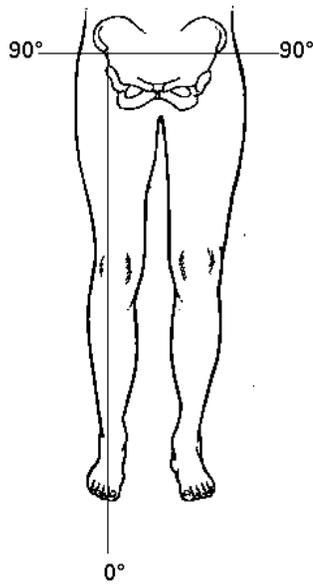


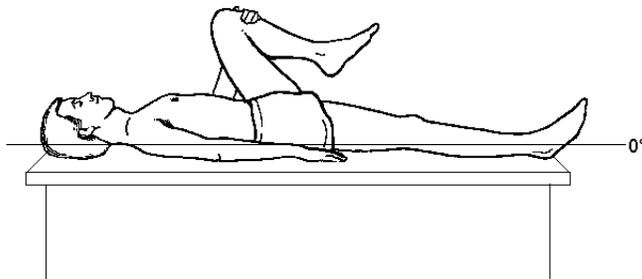
Figure HK1 can be used as a reference in answering question #14 on the Physical Exam

ABDUCTION AND ADDUCTION:
ZERO STARTING POSITION.

The patient lies supine with the legs at right angles to a transverse line across the anterior superior iliac spines of the pelvis.

11.10

Figure HK2 can be used as a reference in answering question #14 on the Physical Exam



EXTENSION AND FLEXION:
ZERO STARTING POSITION OF THE RIGHT HIP.

The patient lies supine on a firm, flat surface with the opposite hip held in enough flexion to flatten the lumbar spine. Flattening the lumbar spine prevents excessive lordosis that can camouflage a hip flexion contracture. On the other hand, positioning the opposite hip in excessive flexion will rock the pelvis into an abnormal degree of posterior inclination, thereby creating a false positive hip flexion deformity. The opposite hip should be flexed to a position where the lumbar spine just starts to flatten or, more precisely, to a position where the inclination of the anterior superior iliac spine (ASIS) is similar to a normal standing posture; i.e., the ASIS is inferior to the PSIS by only two to three degrees.

11.1

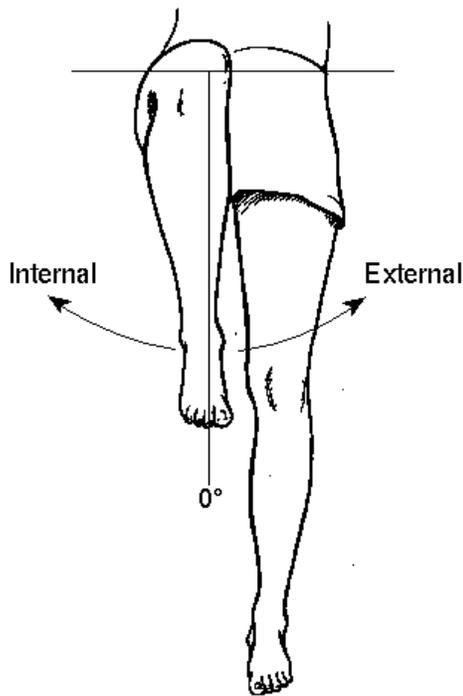


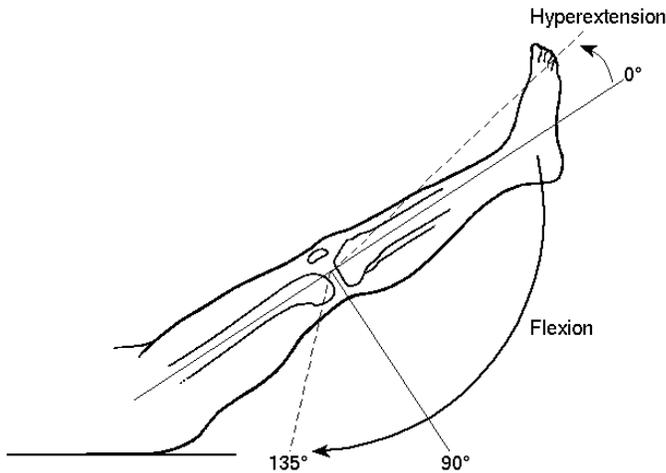
Figure HK3 can be used as a reference in answering question #14 on the Physical Exam Form.

**ROTATION IN FLEXION:
ZERO STARTING POSITION.**

With the patient lying supine, the hip and knee are flexed to 90°. The thigh is perpendicular to the transverse line across the anterior superior iliac spines of the pelvis. Internal rotation is measured by rotating the tibia away from the midline of the trunk, thus producing inward rotation of the hip. External rotation is measured by rotating the tibia toward the midline of the trunk, thus producing external rotation at the hip.

14.9

Figure HK4 can be used as a reference in answering questions #15 and #16 on the Physical Exam Form. This figure can also be used as a reference in answering question #17 on the Post-Discharge Complications Form.



MEASUREMENT OF KNEE MOTION:

Zero Starting Position: knee extended or straight with patient supine.
Flexion is measured in degrees from the Zero Starting Position.
Extension or Hyperextension is measured in degrees opposite to flexion at the Zero Starting Position.

1.5

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Knee-Operation Form

Question #12 is being asked in order to evaluate on which joint the procedure is being performed. A response of left, right, or same day bilateral should be indicated for this question. If the patient's procedure is indicated as being a same day bilateral, further specification of what side (right or left) the form is being completed for must be marked in the space provided.

Question #13 is being asked in order to evaluate which procedure(s) were performed. One procedure may be marked from the procedures listed #1-7. An additional or separate procedure (not listed) may be indicated in the "other" space provided in the form of a CPT code. In addition, a modifier can be listed in the space provided.

Question #18 is being asked in order to evaluate whether or not intraoperative complications occurred. There is space to indicate up to four separate intraoperative complications. If intraoperative complications occurred, specification of complication code(s) should be indicated in the space(s) provided as 3, 4, 5, 6, or 7 digits.

Questions #21-23 are being asked in order to evaluate which prosthetic components (if any) were inserted. Question #21 refers to the use of femoral components. Question #22 refers to the use of tibial components. Question #23 refers to the use of patellar components. There is space to indicate up to five separate components for each question. Specification of manufacturer, model/description, size, and cat# should be listed as text or appropriate number.

Question #26 is being asked in order to evaluate which surgical approach was taken. Antero-medial refers to an approach taken from the front and toward the center. Antero-lateral refers to an approach taken from the front and to one side. Coonse-Adams refers to an approach in which the patellar is turned downward. If a different surgical approach was taken, it should be listed in the "other" space provided.

Hip-Operation Form

Question #12 is being asked in order to evaluate which on joint the procedure is being performed. A response of left, right, or same day bilateral should be indicated for this question. If the patient's procedure is indicated as being a same day bilateral, further specification of what side (right or left) the form is being completed for must be marked in the space provided.

Question #13 is being asked in order to evaluate which procedure(s) were performed. One procedure may be marked from the procedures listed #1-5. An additional or separate procedure (not listed) may be indicated in the "other" space provided in the form of a CPT code. In addition, a modifier can be listed in the space provided.

Question #17 is being asked in order to evaluate whether or not intraoperative complications occurred. There is space to indicate up to four separate intraoperative complications. If intraoperative complications occurred, specification of complication code(s) should be indicated in the space(s) provided as 3, 4, 5, 6, or 7 digits.

Questions #18-19 are being asked in order to evaluate which prosthetic components (if any) were inserted. Question #18 refers to the use of femoral components. Question #19 refers to the use of acetabular components. There is space to indicate up to five separate components for each question. Specification of manufacturer, model/description, size, and cat# should be listed as text or appropriate number.

Question #22 is being asked in order to evaluate which surgical approach was taken. Antero-lateral refers to an approach taken anterior to the greater trochanter without removal of the greater trochanter.

Transtrochanteric refers to an approach, which involves the removal of the greater trochanter. Posterolateral refers to an approach taken from behind the greater trochanter without removal of the greater trochanter. If a different surgical approach was taken, it should be listed in the “other” space provided.

Discharge Form

Question #13 is being asked in order to evaluate whether or not systemic complications occurred while in the hospital. It is important that this question be answered for systemic complications occurring in-hospital, not intraoperatively. There is space to indicate up to five separate systemic complications. If systemic complications occurred, specification of the date of complication should be indicated in the space provided. A text description of the complication should be listed in the space provided. In addition, an ICD-9 code should be indicated in the space provided.

Question #14 is being asked in order to evaluate whether or not local complications occurred while in the hospital. It is important that this question be answered for local complications occurring in-hospital, not intraoperatively. There is space to indicate up to five separate local complications. If local complications occurred, specification of joint should be indicated in the space provided. Further specification of side should be indicated in the space provided. The date of the complication should be indicated. A text description of the complication should be listed in the space provided. In addition, an ICD-9 code should be indicated in the space provided.

Questions #18.1-18.2 are being asked in order to evaluate any antiembolic/anticoagulation therapy prescribed while the patient is hospitalized. If medication is marked as one of the responses to this question, question #18.2 should be answered.

Questions #19.1-19.3 are being asked in order to evaluate any antiembolic/anticoagulation therapy prescribed post-discharge. If external compression device or medication is marked as one of the responses to this question, question #19.2 should be answered. In addition, if medication is marked as one of the responses to this question, question #19.3 should be answered.

Post Discharge Complications Form

Question #17 is being asked in order to measure the patient’s knee flexion obtained during manipulation only. Measurement should be indicated in degrees as a - or + integer consisting of 1, 2, or 3 digits. A measurement of neutral should be reflected as zero. If further clarification is needed in measuring flexion, please refer to figure HK3 above.

Question #18 is being asked in order to evaluate any infection(s) that occurred post-discharge. There is space to indicate up to four separate infections. If an infection did occur, the bacteria code should be specified in the space provided. If the “other organism” bacteria code is specified, a text description should be listed in the space provided. In addition, if an infection did occur, specification of the infection as being “deep” or “superficial” should be indicated in the space provided.

APPENDIX 4: Cost / Benefit Analysis Worksheet

BENEFITS	COMMENTS			\$\$\$
Data Collection Technology				
• Hardware				
• Software				
• Networking				
• Support				
• Training				
• Data Entry Service				
Staff Activities	Patients/ Week	Minutes/ Patient	% of FTE	
• Matching Patients to Questionnaires				
• Meeting/Instructing Patient				
• Answering Questions				
• Entering Data				
• Analysis of Data				
• Follow-up				
Changes to Office Space				
	Total Cost			

BENEFITS	COMMENTS			\$\$\$
MCO Contracts				
• Retain Existing				
• Increase Existing				
• New				
Perception of High Quality of Care				
Improve Analysis & Understanding of Practice Patterns				
Credentialing / Certification				
Continuous Quality Improvement				
Better management of particular condition				
	Total Benefits			

APPENDIX 6: Glossary of Terms

Terms	Definitions
AAOS	American Academy of Orthopaedic Surgeons
Acrobat Reader	Software that allows reading tables and graphs in a PDF format.
Baseline Questionnaire	Questionnaire given to patients at first visit or at the time one wants to use as reference point for comparing the impact of treatment.
Baseline assessment	Reference point in time to compare results of a treatment
Clinical Flow	The series of activities that take place from the moment the patient arrives at the clinic to the moment the patient leaves the clinic.
Co-morbidity	Medical condition(s) that exist in conjunction with the musculoskeletal complaint.
COMSS	Council of Musculoskeletal Specialty Societies
Consent Form	A form that some clinics require patients to sign to get their authorization to complete forms and transmit the data in those forms to a third party.
Construct validity	A process in which validity is evaluated as the extent to which a measure correlates with variables in a manner consistent with theory.
Content validity	The extent to which a measure or battery represents the universe of measurement objects or domains (i.e., adequacy of coverage).
Correlation	Indicates the degree (and direction) of a relationship between variables
COSS	Council of Spine Societies
Cost/Benefit Analysis	Analysis that compares the benefits resulting from having access to the information offered by with the costs of joining the program and implementing the necessary infrastructure to make it work.
DASH	The Disabilities of the Arm, Shoulder, and Hand questionnaire is the questionnaire to collect outcomes data on patients that have an upper-extremity complaint.
Data Collection Protocol	The protocol or method, i.e., series of steps, used at the clinic to collect patient-based outcomes data.
Data Collection System	A system (computerized or not) to collect patient-based outcomes data.
Data entry modes	Different ways of entering data into a system. These modes include patient-based modes (e.g., touch-screen, keyboard) or staff-based modes (e.g., scannable forms).
Data entry service	A service being offered by a certified vendor to enter data for you. This service requires you only to have patients complete the appropriate questionnaires. You then mail the questionnaires to this vendor who proceeds to do the data entry for you.
Data quality	A measure to determine how complete and uncorrupted the data are.
External validity	The extent to which the findings of a study are relevant to subjects and settings beyond those in the study. Another term for generalizability.
Face validity	Logical or conceptual validity; so called because it is a form of validity determined by whether, on the face of it, a measure seems to make sense. In determining face validity, one often asks expert judges whether the measure seems to them to be valid.
Follow-up	Specific time frames at which required subscribers to measure the status of their patients after they underwent medical treatment. The time frames are 3 months (optional), 6 months, 12 months, 24 months and yearly after that (optional).
Functional Outcomes	Results from medical treatment defined in terms of what a patient can do in his/her daily life.
HK Module	A series of modules that make the Hip and Knee Questionnaire more specific.
Hardware	Computers, printers, scanners, and all other equipment needed to collect, transmit, and analyze outcomes data.
Homunculus	Sketch of a human body on which patients report location of pain.

Terms

Definitions

Instruments

Internal consistency

A series of questions to collect data from patients and caregivers.

The extent to which items in a scale are correlated with one another, which is to say, the extent to which they measure the same thing.

Mean

The average score of a sample.

Median

The score on a given variable or scale for which half of the sample is above and half of the sample is below.

Module

A self-contained set of questions used to customize a generic questionnaire to more specific needs.

Norm-based interpretation

Interpretation of scale scores based upon the normative scores for a defined population or sample group.

Norm

An empirical "benchmark," based on the scores obtained for a defined sample.

Normative data

Data used to create a standard or guideline.

Notification of Intent

On-line form that needs to be completed in order to use the AAOS Questionnaires. The AAOS Questionnaires are copyrighted and though there is no charge to use them, there is an obligation to let the Academy know you are using them.

Outcomes

Outcomes Assessment

Results of a medical treatment.

The continuous monitoring of the results of medical care.

Outcomes Research

The assessment of outcomes to determine best practices by means of carefully controlled studies. For example, by means of randomized clinical trials.

Paper and pencil

Completing of questionnaires by patients on paper forms and with a pencil (versus using a computer program)

Patient Group

A category of patients for whom you decide to assess outcomes.

Patient Log

A form that allows practice to track how many patients were given what type of questionnaires on what date, how many refused to complete it in the clinic, how many refused to complete it at all and the reason why.

Patient Satisfaction

Typically a measure of satisfaction of the patient with the process of delivering care to the patient rather than the satisfaction of the patient with the outcomes of care.

Patient-based Outcomes

Outcomes of medical treatment that are evaluated by the patient rather than the caregiver.

PDF format

Portable Document Format is a computerized document format used in Acrobat Reader.

Practice assessment

The process of evaluating the results of treating patients in an every day clinical setting (as opposed to a clinical research study)

Process of care

The steps that a patient goes through in order to get treated

Quartile

Divisions of the total cases or observations in a study into four groups of equal size.

Questionnaire

Series of questions to collect data from patients and caregivers.

Range

A measure of variability, of the spread or the dispersion of values, in a series of values. To get the range, you subtract the lowest value or score from the highest.

Rating

Data obtained from a respondent that are subjective, including an evaluative component. Ratings are based on standards and preferences of the individual patient.

Reliability

The consistency or stability of a measure or test from one use to the next. When repeated measurements of the same thing give identical or very similar results, the measurement questionnaire is said to be reliable. A measure is reliable to the extent that it is free of random error.

Reporting functions

The functions provided by a given data collection system to be able to create reports at the practice level.

Response scale

The response choices (numbers and their definitions) presented to a respondent with which to answer a particular question (e.g., 1=yes, 2=no).

Re-zeroing

The process of re-administering the baseline questionnaire to a patient and restarting the follow-up time frame when a conservative course of treatment is

Terms

Definitions

	discontinued and a surgical course of treatment is begun.
Scales	An item or aggregation of one or more items (questions) to elicit information concerning a variable or domain; or may be used to refer to a graded series of tests. Combined in such a way to satisfy the rules underlying a scale construction method. In health-related measures where data concerning multiple domains are solicited, groups of questions in a domain or in a portion of a domain will be grouped together to create a scale. Scales may then be grouped together to provide an index or indices.
Scale score	The result of the aggregation and manipulation of the responses to the individual items in a scale.
Scoring Algorithm	A set of clearly defined steps for scoring a scale.
Sensitivity	The extent to which a measure detects true differences or changes in the construct being measured.
Service Utilization	A measure of services used in treating patients.
Software	The computer programs that allow you to collect, transmit, and analyze data.
Standard	Something established by authority, custom, or general consent as a model or example; criterion; something set and established for the measure of quantity, weight, extent, value, or quality.
Statistical power	A gauge of the sensitivity of a statistical test, that is, its ability to detect effects of a specific size, given the particular variances and sample sizes of the study.
Stratification	Dividing a population into groups or "strata" before doing research on it.
Sub-scale	A scale within a scale; an analyzable smaller unit of a more inclusive scale or index.
Survey	See instruments; questionnaires.
Validity	The extent to which a measure measures what it is supposed to and does not measure what it is not supposed to; the extent to which a measure is free of systematic error.

APPENDIX 7: Societies Involved in the development of the AAOS Outcomes Questionnaires

These questionnaires have been developed and sponsored by the following organizations:

Pediatrics Outcomes Data Collection Questionnaires

©1996-2000 American Academy of Orthopaedic Surgeons
Pediatric Orthopaedic Society of North America
American Academy of Pediatrics
Shriner's Hospitals

HK Module

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American Association of Hip and Knee Surgeons

Upper Limb - DASH Outcomes Data Collection Questionnaire

©1996-2000 American Academy of Orthopaedic Surgeons
Institute for Work and Health, Toronto
American Association for Hand Surgery
American Society for Surgery of the Hand
American Orthopaedic Society for Sports Medicine
American Shoulder and Elbow Surgeons
Arthroscopy Association of North America
American Society of Plastic and Reconstructive Surgeons

Patient Satisfaction Module

© 1991 Group Health Association of America

Lower Limb Outcomes Data Collection Questionnaires

©1996-2000 American Academy of Orthopaedic Surgeons
American Association of Hip and Knee Surgeons
American Orthopaedic Society for Sports Medicine
Hip Society
Knee Society
Orthopaedic Rehabilitation Association
Orthopaedic Trauma Association
Arthroscopy Association of North America
American Orthopaedic Foot and Ankle Society
Musculoskeletal Tumor Society

Short Form Musculoskeletal Functional Assessment

© 1996 University of Washington

Physician Assessment Module

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Spine Outcomes Data Collection Questionnaires©

1996-2000 American Academy of Orthopaedic Surgeons
North American Spine Society
Scoliosis Research Society
Cervical Spine Research Society
Orthopaedic Rehabilitation Association
American Spinal Injury Association
Council of Spine Societies

Employment Module

© 1997 American Academy of Orthopaedic Surgeons
North American Spine Society