

**The Sports Medicine Unit of the Philippine Orthopedic Center:
A Formative Evaluation Report**

Final Project

in partial fulfillment of the requirements for
HP 231 Evaluation in Health Professions Education
under

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The Sports Medicine Unit of the Philippine Orthopedic Center: A Formative Evaluation Report

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Chapter 1 Executive Summary

This Evaluation Report focuses on a formative evaluation for the Sports Medicine Unit of The Philippine Orthopedic Center. Although having been operational for more than 15 years, the Unit, which caters to the young patients afflicted with orthopedic sports related injuries, has been formally established only 7 months ago. The Unit now has a more efficient fixed schedule and a better structured curriculum plan and instructional design.

Using a Management-Oriented Evaluation Model or the Context-Input-Process-Product Model exemplified by Stufflebeam, the utilization, significance and timeliness of the Unit was looked into by attempting to ask pertinent and relevant questions related to the evaluative objectives, collecting and analyzing the information from the available resources and subsequently interpreting these data based on a predetermined set of standards.

The initial findings reveal that the Unit is appropriately addressing the healthcare needs of the hospital's clientele. Although beset with problems of equipment and facility resources, the Unit has good human resources and a strong ratio for training, having a low consultant faculty to resident trainee ratio of practically 2:1 at any one time and a high physician-patient ration with the resident handling about 370 patients and averaging about 20 arthroscopic surgeries in his 3-month rotation.

The training program so far has produced Residents who have passed the standards set by the national specialty boards and is deemed at par with ASEAN standards.

Interviews, Questionnaires and Surveys done on key informants, including the major stakeholders – decision-makers and implementers as well as the recipients, the training residents – were done as well as a one-time focus group discussion for the first two. The results showed a favorable outcome which indicates that the program should continue with minimal modifications.

A. Purpose of the Evaluation Report

The Sports Medicine and Arthroscopy Unit on The Philippine Orthopedic Center, currently under the Section of Adult Reconstructive Orthopedics, though operational for the last decade or so, has only been formally established last year, November 2014. The curriculum has recently been drafted and the clinic set-up and surgical scheduling has been functional since then.

These past six (6) months, the Head of the Section and the Unit itself decided to have a formative evaluation to see the interim progress of the Unit and the trainees as a whole. The Evaluation was done with a few objectives in mind and was started off with the hope of answering these questions:

1. The utilization of the Unit - Are the initial results influential enough to warrant a modification and continuation of the training program?
2. The significance of the Unit – Is the Unit really necessary and relevant to the healthcare needs of the Institution’s clientele / patients?
3. The timeliness of the evaluation of the Unit – What data is currently available to answer some key evaluative questions to make modification decisions?

This formative evaluation report hopes to primarily focus on the first objective of seeing whether the current program is doing well or some changes will have to be made in its implementation to make the program more cost-effective and cost-beneficial.

B. The Audiences of the Evaluation Report

The audiences include all stakeholders of the training program. Although this is an initial formative evaluation report, the audiences have been defined and include the following:

1. The Decision-Makers: Chief of Hospital, Chief of Clinics and the Administrative Officer and Budget Officer;
2. The Implementers: The Sports Medicine Unit Consultants, the Head of the Section of Adult Reconstructive Orthopedics, the

Training Committee, Nurses and Nursing Attendants in the Outpatient Clinic and the Operating Room, Surgical Technicians and Administrative Officers in the OPD and OR, Rehabilitation Medicine Consultants (Physiatrist) and Residents, physical therapists and occupational therapists;

3. Recipients: Training Residents, specifically those who are rotating and will rotate in the Unit;

4. Benefactors: Arthroscopy and Implant Companies who are considered potential donors and funding agencies to the educational programs of the Unit;

5. Consumers: Patients afflicted with orthopedic sports-related injuries.

In this formative report, the focus is primarily on the implementers, the ones running the Unit, and the recipients, the Training Residents, who will be the eventual “products” of the training program. At this point, the eventual consumers and beneficiaries of the services of the Unit and the program, the patients themselves are already evaluated since the early functional outcome of the results of medical and surgical services rendered may already be seen as early as 6-12 weeks post-management.

C. Limitations and Explanation of Disclaimers

This evaluative report is fairly limited by the available data from the different sources.

This evaluative report describes the procedures and results of a formative evaluation only. The client, The Sports Medicine Unit of the Section of Adult Reconstructive Orthopedics of The Philippine Orthopedic Center, reserves all rights to this information. The purpose of this evaluation was to state on how the Unit can further improve itself in its curricular planning, instructional design and program implementation. Any other use of this report may be subject to serious errors since the information was collected with the above purpose as focus. Information relevant to other purposes was either not collected or not reported.

D. Overview of Report Contents

This overview of contents hopes to give a general “reader’s guide” on the different

chapters of the evaluative report.

In Chapter 2 - The Introduction - the report includes the purpose of the report, which is a formative evaluation of the Sports Medicine Unit to see how it can make changes and modifications for further improvement. The audiences, for the moment, deals with the internal major stakeholders primarily of whom are the decision-makers, implementers, recipients and benefactors, the patients themselves. The limits are discussed and the disclaimer is stated.

Chapter 3 involves the Focus deals with the following items:

1. Description of the Sports Medicine training program, its rationale, goals and objectives, its subject matter focus;
2. Resident trainees and other participants to be benefitted, including the patients;
3. The program's instructional design, including its teaching and learning strategies;
4. The program's resources, including its staff and facilities and equipment;
5. The evaluative questions, objectives and
6. The needed information the evaluation collected analyzed and reported.

Chapter 4 consists of the Evaluation Plan and Procedures and the Evaluator provided the methodology and technical information. A critical balance is made so that the methodology is both understandable and comprehensible to the stakeholders yet providing adequacy of technical information for other evaluative bodies.

Chapter 5 presents the evaluation results in summary form and readily includes the tabulations which serves as the source of the subsequent findings. The references are likewise included in the supporting Appendix which includes all the other instruments tools used.

Chapter 6 presents the conclusions and recommendations of the entire Evaluation Report. A listing of the standards and criteria used are presented as well as our best judgment on the evaluation of the program. A listing of the program's strengths and weakness are included and our recommendations based on these set of judgments. The recommendations given herewith are the Evaluator's and need not necessarily be adopted.

A. Description of the Sports Medicine Unit

The Sports Medicine Unit is a 3-month module that is part of the Adult Reconstructive Orthopedics program. The entire orthopedic residency training program is 4-years, which consists of one (1) year in Orthopedic Trauma, covering fractures and joint injuries, one (1) year in Adult Reconstructive Orthopedics, with the scope of arthritides, systemic and endo-metabolic musculo-skeletal conditions, shoulder and elbow problems, hip and knee problems, foot and ankle problems, neglected or chronic trauma including its complications like malunion and healing problems, musculo-skeletal infections, musculo-skeletal tumors and sports medicine. The remaining two years of the orthopedic residency program consists of six (6) months in pediatric orthopedics, hand surgery, peripheral nerve surgery and microsurgery and spine surgery; the remaining six (6) months is supposedly devoted to the residents' electives or self-directed learning but is more often not, delegated to orthopedic trauma.

Sports Medicine in particular, covers sports-related orthopedic injuries in any region of the body but is usually confined to the shoulder and knee. The focus is primarily clinical diagnosis and surgical management by arthroscopic surgery or minimally invasive musculo-ligamentous and tendinous reconstructive techniques. Sports Medicine is now part of the quarter module for Adult Orthopedics. Although being in practice for at least ten years, the Sports Medicine Unit has been only established last year with a more structured set of intended learning outcomes and objectives.

The Sports Medicine Unit is headed by a Sports Medicine Fellowship-trained orthopedic surgeon considered to be the most senior in position and experience. Usually this is handled by a Medical Specialist III and he directly reports to the Head of the Adult Orthopedics Section, an MS IV orthopedic surgeon consultant. There are currently 2 other fellowship-trained Sports Medicine consultants and a fourth one coming before the end of the third quarter of 2015.

There are 7-12 Residents in training that rotate in the Adult Orthopedics Section but only two (2) rotate in this Unit at any one time, for three (3) months. The Residents that come into the Unit are Third Year Residents (occasionally one Second Year Resident) and they already possess the basic knowhow and technical skills of a novice orthopedic surgeon. The Residents are believed to have

a fairly uniform set of stable and unstable similarities and differences in terms of the learners' characteristics and work in the same learning environment. The instructional design of this Residency Program consists of teaching and learning strategies of lectures, conferences employing a small group learning method, reflection on experiences, feedback, demonstration and return demonstration, role modeling, coaching and mentoring to cover all the KSA domains of learning. A subsequent student assessment is done through written examinations, oral presentations and observation and rating of performance. The Residents' assessment is done quarterly at the end of the Unit rotation. His grade is part of the greater whole of the one year Adult Orthopedics rotation.

B. Evaluative Questions

As stated in Chapter 2 - The Introduction, specifically in the purpose of the report, the main objective of the report is to make a formative evaluation of the Sports Medicine Unit to see how it is performing these past months. In as much as the Unit will be one year old in a few months, the report aimed on the utilization of the Unit so find out if the initial results of the evaluation report are influential enough to warrant a modification and continuation of the training program.

Since the evaluation object is primarily part of an educational program (Sports Medicine as a part of the Orthopedic Residency training program of the Philippine Orthopedic Center), the Evaluator followed a management-oriented approach and formulated the following questions in mind:

1. What needs to be done? – Context Evaluation

- a. Is the POC Sports Medicine Unit under the Adult Orthopedics Residency Training Program relevant and appropriate to the immediate intended outcome of attaining a competent general orthopedic surgeon well versed in management of sports injuries?
- b. For the eventual long term intended outcome of improving the quality of life of patients afflicted with an orthopedic sports injury?
- c. Who are the stakeholders in this SM program? How are they involved in the program planning? How relevant is this program to them?

2. How should it be done? – Input Evaluation
 - a. Are the inputs and resources appropriate to the requirements and needs of the Sports Medicine Unit?
 - b. Are the resources appropriately allocated?
3. Is it being done? – Process Evaluation
 - a. What is the current recruitment and selection process of the Resident Trainees?
 - b. What are the criteria for promotion to the next year level?
 - c. What are the instructional design's teaching and learning strategies of the SM Unit?
 - d. What is the current assessment of the Resident trainees?
4. Did the Sports Medicine Unit project succeed? – Product Evaluation
 - a. What is the current status of Residents who have rotated in the SM Unit?
 - b. What is the eventual functional outcome and quality of life (QoL) of the patients managed by the SM unit?

The report aims to focus on the first three general questions (“What needs to be done?”, “How should it be done?” and “Is it being done?”) only as the Evaluator believes that the some answers may be provided after a year of operations. The information may be enough to make initial formative evaluation decisions whereas only the first sub-question the major fourth question may only be initially answered and evaluated (“Did the Sports Medicine Unit succeed?”). Technically, the first three refer to the Context, Input and Processes and the fourth question refers to the Product.

C. Information Need to Complete the Evaluation

In order to answer and complete each evaluation question, the following information were collected and analyzed:

1. Context Evaluation:

- a. Frequency/Incidence of orthopedic injuries in general and the occurrence and overall impact of sports-related injuries in particular, especially its effect on the functional outcome of the affected population in the big cities of the country
- b. Benefits of the Unit and training program especially the end consumers – the patients

2. Input Evaluation:

a. Human Resources:

1. Faculty/Sports Medicine Fellowship trained Consultants, including CV or Resume, CMEs, Researches done, Faculty education seminars
2. Orthopedic Residents rotating in the Sports Medicine Unit
3. Number of Patients seen and treated
4. Personnel assigned to the Unit – Clinic and OR Nurses, Attendants and Office Secretary

b. Infrastructure:

1. Clinic space
2. Clinic Equipment and Supplies

c. Operating Room Instruments and Equipment:

1. Arthroscopy tower sets
2. Arthroscopy instrument tools and equipment
3. Medical supplies
4. OR Imaging equipment – Xrays and Fluoroscopy

d. Teaching Resources:

1. Bioskills lab which includes a lab space/room, simulation models and teaching scope and camera plus monitor

2. Instructional videos and reference materials

3. PC/laptop and CD

e. Training policies and criteria set by the POC Training Committee and Specialty Board (Philippine Board of Orthopedics – PBO) plus standards set abroad (ASEAN and North America)

f. Budget allocation for equipment and clinical services and teaching-learning resources

3. Process Evaluation:

Criteria set by the POC Training Committee (TC) for recruitment and selection as well as eventual promotion to the next level of training:

1. Medical Boards rating and Class Standing, Personal Interview, Written exam, Pre-Residency Performance Rating based on Consultants' Evaluation

2. Curriculum and Instructional Design programs

3. Exam performance and Consultants' Evaluation

4. Research output

5. Comparison with the previous year-level performance and a comparison with the other training institutions

4. Product Evaluation:

a. Cognitive Output of the Sports Medicine Residents:

1. Passing score in the exams given by the POC TC

2. Passing score (Excelling including Top Ten) in the PBO In-Service Training Exams

3. Proficiency in obtaining salient points in Clinical History and Physical Examination

4. Interpretation of lab tests and imaging studies

5. Formulation of Management plan

6. Presentation skills for Grand Rounds

7. Research output

b. Psychomotor Output of the SM Residents:

1. Observation of return demonstration
2. Observation of proficiency of motor skills

c. Affective Output of the SM Residents:

1. Observation of internalized values of altruism and professionalism
2. Observation of cost-effective management & stewardship
3. Observation of collaborative behavior
4. Observation of scholarly attitude and desire for improvement
5. Observation of being a good and fluent communicator

d. Patients exhibiting good functional results with return to work pain free

e. Patient satisfied with the services rendered

These information were collected from the different sources, analyzed, interpreted using a set of criteria and subsequently is being reported to all the stakeholders. The details of the methodology are detailed in the next Chapter.

Chapter 4 Evaluation Plan and Procedures

A. Information Collection Plan – Design of the Study

To achieve the objectives of the evaluation study, the evaluation framework of a Management-Oriented approach as proposed by Stufflebeam was used. Although the Kirkpatrick Four Levels Evaluation Model was considered initially, the Stufflebeam Management-Oriented Evaluation Model was considered because of the request of the POC Training Committee’s point of view was considered primarily, being the primary stakeholders and decision-makers of the entire program. The model chosen involves the following educational evaluation decisions:

1. Context evaluation – to serve in planning decisions by determining what needs to be addressed;
2. Input evaluation – to serve structuring decisions by determining what resources are available and what alternative strategies or plans should be considered;
3. Process evaluation – to serve implementing decisions by determining the efficiency of the implementation and identifying the barriers and necessary revisions to be made;
4. Product evaluation – to serve recycling decisions to eventual make judgments on the program.

The evaluation report attempted to identify the POC Sports Medicine Unit’s strengths and weaknesses but also attempted to formulate recommendations based on the findings. The Evaluation Report is both a qualitative and quantitative study using descriptive statistics and some inferential statistics to substantiate its results and findings.

1. Evaluating the Context:

First, the information needed to answer the Context Evaluation Questions (“What needs to be done?”) were collected by getting from the different sources. These information sources include health statistics on sports injuries – its frequency and occurrence and magnitude as well as the demographics of the patient population

affected, the Trauma Registry of The Philippine Orthopedic Association.

Finally, the statistics of the hospital – The Philippine Orthopedic Center - on the sports injured patients serviced is an important data as it gives as information as to the relevance and justification of the Unit. The patients' medical records of the hospital and the database of the Research Committee, not only gives us such information but also the quality of the information regarding the services rendered. It tells us since there is patient volume in the rendering of clinical services; it also provides opportunity for providing research and new knowledge. The most important data that can be garnered from the medical records include the initial clinical functional scoring and the post-treatment/post-op scoring system. The scoring system is an objective criterion for the eventual functional outcome of the patient.

Interviews were done to and Questionnaires were handed to all of the major stakeholders particularly the Decision Makers and Implementers were done and a one-time Focus Group Discussion was also done to further discuss as a whole the different viewpoints. An Evaluation Form consisting of structured questions are included in the Appendix.

All of these data will be reviewed and descriptive statistics looking at the central tendency by determining the mean, median and mode as well as the dispersion and location to maximize the data that can be derived. Subsequent coding can be done to see the frequency of each sports injury or disease and to determine if there is a statistical significance in the improving the patients quality of life (QoL), a paired t test was done.

2. Evaluating the Input:

Secondly, to answer the Input Evaluation Questions (“How should it be done?”), the information was collected from the available resources – both human resource and equipment as well as financial resources. The profile of all the Sports Medicine Consultants as the teaching faculty were looked at as well as the demographics of the learners – the Third Year Orthopedic Residents. The Consultants qualifications and continuous orthopedic education including faculty education and development seminars attended were looked into to see not only what the Faculty can teach, through his education and experience, but also his capacity to teach the knowledge, skills and affective values properly. The Operating Room facilities are also looked into especially the arthroscopy instrumentation and equipment so that state-of-the-art minimally invasive surgical management can be performed to these patients. Likewise, the Clinic facilities are looked at to determine if appropriate

outpatient management can be performed on a regular basis. These include as well the technical support and administrative staff like the Nurses, Technicians and administrative personnel.

The operational workflow is analyzed as to the time allocation and spent by each stakeholder – the medical and hospital staff and the patients – to determine the efficiency of the entire Unit and to eventually see if its a cost-effective and income generating unit. Pertaining to the teaching and learning, the curriculum and instructional design is analyzed; it is looked into the extent of coverage, its relevance and applicability, its training guidelines and policies and how it compares to the ASEAN neighbors in the light of the ASEAN economic integration. From these data, the ratios of teaching faculty to the trainees and the patients as well as the surgical procedures were determined to see the effectivity of learning.

Likewise, the current mode of training surgery now involves simulation exercises, thus the effects of the new Bioskills Laboratory and its other instructional resources are evaluated through a survey of the feedback from both the Faculty and the trainees using feedback forms, focus group discussions done periodically each quarter as well as evaluation forms using the OSATS, OSCE and the Residents Performance Rating Scale set by the Hospital's Training Committee. These instrument tools are included in the Appendix.

Interviews were done to and Questionnaires were handed to all of the major stakeholders particularly the Decision Makers and Implementers were done and a one-time Focus Group Discussion was also done to further discuss as a whole the different viewpoints. An Evaluation Form consisting of structured questions are included in the Appendix. The same set of survey forms were handed to the recipients – the Training Residents of the Unit but no FGDs were done to prevent any intimidation.

3. Evaluating the Process:

The information needed to answer the Process Evaluation Questions (“Is it being done?”), the sources were obtained from reviewing the different processes and teaching and learning strategies/activities. The teaching strategies are reviewed quarterly and annually and the selection process annually as well. The database of the Residents' performance using the criteria set by the POC Training Committee and by the PBO is reviewed annually likewise.

Interviews were done to and Questionnaires were handed to all of the major stakeholders particularly the Decision Makers and Implementers were done and a one-time Focus Group Discussion was also done to further discuss as a whole the

different viewpoints. An Evaluation Form consisting of structured questions are included in the Appendix. The same set of survey forms were handed to the recipients – the Training Residents of the Unit but no FGDs were done to prevent any intimidation.

The survey forms for the Input and Process evaluation is included in the Appendix.

4. Evaluating the Product

This formative evaluation report is deemed too early to look into the Product – the Training Resident and the eventual functional outcome and quality of life of the patients serviced. However, the performance assessment of each Resident that have rotated into the Sports Medicine Unit are being done quarterly and after a year, the performance maybe compared to the performance of those who have not rotated formally into the Unit.

Through the initial findings of the last nine (9) months, some recommendations were made based on the initial findings.

Thus, all of the data collection methodology involved review of the information collected. The data was analyzed based on the objectives set and the analysis was done mostly by descriptive statistics. The evaluation collection arrangement period was done quarterly at the end of the Sports Medicine Residents' rotation.

B. Overview of the Evaluation Instruments

The evaluation instruments used are the following:

1. The Residents' Performance Rating Scale devised and adopted from another evaluation instrument by the Evaluator when he was with the POC Training Committee. The rating scale looks at the following domains:
 - a. Clinical Competence
 - i.) Obtaining Database (History and PE skills)
 - ii.) Use and Interpretation of Diagnostic Tests
 - iii.) Diagnosis and Judgments
 - iv.) Patient Treatment and Management

v.) Oral Presentation and Reports

vi.) Record-keeping Ability

b. Attitudinal Competence

i.) Intellectual Integrity

ii.) Ethical Values

iii.) Reliability/Dependability/Responsibility/Initiative

iv.) Bedside Manners and Decorum

v.) Study and Work Habits

vi.) Relationship with Peers and Co-workers

vii.) Emotional Maturity/Reaction to Stress

viii.) Social Responsibility

c. Technical Skills

i.) Patient Preparation

ii.) Preparation of Equipment and OR Needs

iii.) General Conduct of the Procedure

iv.) Observance of Basic Surgical Principles (Patient positioning, Aseptic preparation, Draping, Hemostasis, Gentle handling of tissues, Avoidance of tension and dead space, dressing and Casting techniques)

v.) Technical dexterity

vi.) Intra-operative Judgment and Decision-Making

vii.) Post-op Care (Recovery Room Care, Drains and Wound dressing and Post-op Rehabilitation Management)

Further blank lines are left for additional remarks, comments and feedback. There are no open-ended questions mentioned which may somehow be deemed leading questions.

As can be noted, although there is an overlapping and cross-over of

the domains in some aspects, Section 1 Clinical Competence deals with the Cognitive Domain, Section 2 pertains to Attitude and Section 3 is the Psychomotor Domain evaluation. Though more than 20+ years old, this scale is still deemed relevant, applicable and comprehensive however. Additional checklists are now being used primarily as an addendum to this Evaluation Performance Scale. This includes a Performance Based Assessment (PBA) as devised by British Orthopedic Association through the Orthopedic Competence Assessment Project (BOA-OCAP). This is currently under review by the Training Committee for possible adoption and upgrading. This is for the moment, not part of the Evaluation Report as this is purely an internal decision matter.

2. Written Examination given to the Sports Medicine Residents for Cognitive domain evaluation

This is given every quarter and is constructed by the Sports Medicine Consultant. The scope involves comprehensive and analytical questions on clinical cases that were encountered during the Residents' rotation and the commonly encountered cases in clinical practice; what is deemed to be a "must know" in orthopedic sports medicine. The written examination is constructed by the Consultant who has very minimal knowledge on test construction.

3. Presentation and Discussion Skills Evaluation through Conferences through a Small Group Discussion/Focus Group Discussion Format

These conferences are conducted at least twice a week through an interactive discussion as a teaching and learning strategy. The conferences include a Pre-Operative Conference as well as a Post-Operative Conference wherein the clinical problems of the patient are discussed through a problem-based approach. The evaluation is primarily gauging the Residents' analytical, critical and reflective thinking processes. The tool being used is also the Residents' Performance Rating Scale.

4. Observation using the OSATS and OSCE as well as functional scoring systems

The Resident's psychomotor skills and other clinical examination skills are evaluated primarily using the Objective Structured Assessment for Technical Skills and the Objective Structured Clinical Examination for the Musculoskeletal System module. The details of these evaluation tools are included in the Appendix.

The functional outcomes of the patients' pre- and post-op are determined using a reference devised by the different training institutions in North America and are just hereby adapted and adopted. These scoring systems will indirectly reflect on the quality and superiority of service rendered to the patients who are the eventual beneficiaries of the Sports Medicine Unit. The commonly used functional scoring systems are the Lysholm Knee Scale and the IKDC Scoring System. The Lysholm Score was the first one that ever came out, hence because of its originality and "global range" of use, is still widely used today. The IKDC (International Knee Documentation Committee) scoring was devised last 2000 and is more international and universal as it involves all the orthopedic sports medicine specialty societies of the world including the American, European and Asia-Pacific organizations.

5. Survey Forms and Interviews using a Structured Questionnaire were formulated and sent to the major stakeholders primarily the Decision-Makers, Implementers and Recipients of the Program of the Sports Medicine Unit. Focus Group Discussions were also done on the Decision-makers and Implementers but not the Residents to avoid bias and intimidation.

Qualitative analyses using descriptive statistics were subsequently made to analyze the results of these data collection method.

Chapter 5 Presentation of Evaluation Results

A. Summary of Evaluation Findings:

The findings are hereby tabulated in accordance with the specific evaluations.

Context Evaluation: Data for January - December 2013, statistics as of December 31, 2103								
Total Number of Orthopedic Injuries reported by DOH	Total Number of Sports-related Injuries(SRI)	Total Number of Orthopedic Injuries reported by POA Trauma Registry	Total Number of SRI reported in POA Trauma registry	Total number of Orthopedic Injuries seen at POC	Total Number of SRI patients seen at POC	Total Number of SRI patients admitted		
24,256	Not specified	36,586	8,634	29,865	3,002	865		
Input Evaluation: Data for January - December 2014								
Consultants	Residents	Arthroscopy Equipment	SRI Patients seen at Sports Clinic					
			Consults only	Dxtic procedure done	Surgical procedure done Outpatient	Surgical procedure done Admitted	Rehab (PT) only	Total
4	8 /yr /2/Q	1 set	2938	64	40	125	1998	3,002
Ratio of Faculty to Residents per annum/per quarter 1:2 / 2:1			Ratio of Residents: Patients Seen 1:375 Ratio of Residents: Surgery done 1:20.6					
Process Evaluation: Data for January - December 2014								
Conferences done per week: 85 in 42 weeks or roughly 2/wk - Pre-op and Post-Op and 1 Problem Conference Journal Clubs: 9; moratorium conferences during May-June (Review Lectures for ITE) Grand Rounds Presentation: 4 or 1 every quarter, each Resident presents a problem or interesting sports case								
Product Evaluation: Data for January – December 2014								
Fifteen (15) Residents in Third Year level have all passed the PBO In-Service Training Exam – 100% All Residents can perform arthroscopic diagnostic procedures of the knee and meniscectomy and ACL reconstruction Fifteen (15) Residents have completed Research requirements – 100% Nine (9) Residents in the Top Ten – 60% in Top Ten								

The overall results of the survey forms and FGDs were favorable showing an average of 4-4.5 in most of the questions asked. The details of the results are included in the Appendices.

B. Interpretation of Findings

The findings confirm that sports-related injuries are a common feature in orthopedic trauma problems encountered all over the world. DOH has not focused on this feature but based on the POA Trauma Registry, which documents all trauma cases in the 20 PBO training institutions all over the country, sports account for nearly 41% of all trauma cases. Definitely, these conditions are under-

reported as already 82% of orthopedic trauma cases that are reported are seen at the POC alone.

Therefore, based on the review of the DOH, POA Trauma Registry and the POC Statistics, sports-related injuries are now becoming a major healthcare concern. Further reviews of the medical records have shown that it involves the young sector of the society mostly males ages 15-35 years of age who are workers and mostly income-generating.

Based on the teaching and learning strategies, it has been shown that the Faculty: Student or Consultants: Residents ratio is low being practically 2:1 at any one time, thus highly promoting 1:1 in-depth discussions. The Resident: Patient ratio is very high with each resident seeing about 375 patients in his 3 months of rotation and the ability to perform about 20 scope surgeries during his period of learning. This is way and above the prescribed ratio given by the Philippine Board of Orthopedics of 1:10 arthroscopy surgeries performed. As a matter of fact, this is already about half to 2/3 of the requirements set by the training programs and guidelines and policies set by the United States and Singapore, which have allocated at least doing 30-40 scopes per year.

Currently, the resources might not be properly allocated. The Sports Unit only has one arthroscopy set for the whole hospital although the Unit occasionally outsources the use of another one through another implant company. The clinic time of two hours twice a week is not enough as the Unit sees about 30 patients per clinic day or 15 patients per Resident allocating about 7 minutes patient-physician contact. There is neither a reported morbidity nor mortality in these cases for the past year although the percentage of surgical follow-up is relatively inconsistent and averages only about 60%.

The Residents who have rotated in the Sports Medicine Unit have all done well in their academic performance. The target of having them all pass the examinations given by the POC Training Committee and the annual In-Service Training Exams given by the PBO has been 100% and even hitting the target of having 60% of them in the Top Ten for their specific year-level. Although not all have completed a sports-related research output, all of the training residents have completed a research paper and at least 75% of them have presented it in a recognized orthopedic forum.

The overall present response of the Decision-Makers, Implementers and even the Recipients of the SM Unit training program has been very positive and is illustrative of the decision that minor improvement scan be done to further upgrade the quality of the Unit's program.

Chapter 7. Appendices

Appendix A. The Performance Evaluation Rating Scale (POC Training Committee)

**Department of Health
PHILIPPINE ORTHOPEDIC CENTER
Medical Training Committee
RESIDENT'S EVALUATION / PERFORMANCE RATING SCALE SHEET**

Name of Resident: _____
Year Level: _____ Service Rotation: _____
Evaluation Period: ____/____/____ to ____/____/____

GENERAL INSTRUCTION: Please evaluate the resident's performance for each general criteria of competence (Clinical Competence or Performance, Attitudinal Competence or Character and Professional and Technical Skills). Please ENCIRCLE the rating that best describes the resident trainee's skills and abilities commensurate to his level of training. Please identify the strengths and weaknesses you have observed by underlining the relevant phrases and / or providing separate comments and remarks at the last page. Please be specific as possible. Indicating a rating of "0 (Not Observed)" two (2) times or more in each general criteria may invalidate your rating evaluation.

I. CLINICAL COMPETENCE

A. DATA BASE (HISTORY TAKING & PE SKILLS)

- 1 Not Observed
- 2 History & PE are incomplete & inaccurate; important information & findings are missing; irrelevant findings are emphasized
- 3 History & PE are fairly complete & accurate but some important information & findings are missing.
- 4 History & PE are complete & accurate; pertinent positives & negatives and important information are included.
- 5 History & PE is obtained thoroughly & precisely even in complex & difficult cases; detailed follow-up information is obtained.

Quantity

- 1 No patient
- 2 Few patients
- 3 Some patient
- 4 Most patients
- 5 All patients

Timeliness

- 1 never
- 2 few times
- 3 sometimes
- 4 most of the time
- 5 all the time

B. USE & INTERPRETATION OF DIAGNOSTIC TEST

- 1 Not Observed
- 2 Requested diagnostic test are grossly incomplete or irrelevant; has difficulty interpreting simple basic lab test or x-rays.
- 3 Some important diagnostic tests are over looked; has occasional difficulty interpreting basic lab tests or x-rays.
- 4 Diagnostics tests are complete; important tests are included & interpreted correctly.
- 5 Diagnostic tests are exhaustive but cost effective; difficult lab tests or imaging. studies are correctly interpreted ; alternative test are well planned

Quantity and Timeliness

C. DIAGNOSIS AND JUDGMENTS

- 1 Not Observed
- 2 Has difficulty making correct diagnosis or decisions even in simple clinical situations; decision are irrational & haphazard
- 3 Has some difficulty making correct diagnosis or decisions in common clinical situation
- 4 Establishes correct diagnosis; make clear & rational decisions in common clinical situations.
- 5 Diagnosis & decisions are consistently correct, well founded & comprehensive, even in complex clinical situations.

Quantity and Timeliness

D. PATIENT TREATMENT & MANAGEMENT (PRE & POST-OP)

- 1 Not Observed
- 2 Common problems are managed poorly & haphazardly, rarely contributes constructively to management of difficult problems.
- 3 Common problems are managed satisfactorily but has difficulty in managing complex problems in a rational & independent manner.
- 4 Common problems are managed appropriately & efficiently, contributes well to the management of complex & difficult problems.
- 5 Consistently creative, innovative, constructive & self-reliant in the approach to management to common and even difficult problems.

Quantity and Timeliness

E. ORAL PRESENTATION AND REPORTS

- 1 Not Observed
- 2 Reports are disorganized, poorly integrated and difficult to follow.
- 3 Reports are fairly accurate & understandable; occasionally disorganized or misses some important details.
- 4 Reports are communicated clearly and accurately.
- 5 Is able to report precisely, concisely & comprehensively, includes additional information from collateral readings crucial to patient management.

Quantity and Timeliness

F. RECORD - KEEPING ABILITY

- 1 Not Observed
- 2 Written Records / reports / chart are incomplete, inaccurate, disorganized & difficult to follow.
- 3 Written records / reports / charts are fairly complete with occasional inaccuracies; important items are sometimes omitted.
- 4 Major & important items are recorded accurately, completely and legibly.
- 5 Written records / reports / charts are thorough, comprehensive & concise; problems are explained in detail and updated based on the progress & changes in the patient's condition.

Quantity and Timeliness

II. ATTITUDINAL COMPETENCE

A. INTELLECTUAL INTEGRITY

- 1 Not Observed
- 2 Intellectually dishonest; provides misleading information meant to deceive & protect himself, does not accept his limitations nor constructive criticism.
- 3 Intellectually honest in most situations; occasionally withholds information when confronted; occasionally fails to accept limitations.
- 4 Demonstrates intellectual integrity & honesty, accepts limitations and takes constructive criticism well.
- 5 Demonstrates intellectual honesty even in difficult situations; takes constructive criticism very well; accepts limitations without hesitation and makes a conscious effort to improve them.

Quantity and Timeliness

B. ETHICAL VALUES

- 1 Not Observed
- 2 Known to engage in unethical practices inconsistent with accepted norms & practices.
- 3 Demonstrates occasional lapses in maintaining ethical & moral uprightness.
- 4 Practices are ethically and morally consistent with accepted norms.
- 5 Highly ethical & morally upright; provides an excellent example to peers & subordinates.

Quantity and Timeliness

C. RELIABILITY / DEPENDABILITY / RESPONSIBILITY / INITIATIVE

- 1 Not Observed
- 2 Irresponsible, unreliable; needs repeated reminders of assignments; does less prescribed work.
- 3 Usually prompt with work & assignments but does just enough to get by; usually dependable but sometimes needs to be reminded.
- 4 Performs duties promptly and efficiently without being reminded.
- 5 Performs duties promptly and efficiently without being reminded; is resourceful and innovative; takes the initiative to spend additional time; is not readily hampered by limited resources.

Quantity and Timeliness

D. BEDSIDE MANNERS & DECORUM

- 1 Not Observed
- 2 Common problems are managed poorly & haphazardly, rarely contributes constructively to management of difficult problems.
- 3 Common problems are managed satisfactorily but has difficulty in managing complex problems in a rational & independent manner.
- 4 Common problems are managed appropriately & efficiently, contributes well to the management of complex & difficult problems.
- 5 Consistently creative, innovative, constructive & self-reliant in the approach to management to common and even difficult problems.

E. STUDY & WORK HABITS

- 1 Not Observed
- 2 Fails to demonstrate knowledge of required reading or accomplishments of assigned work; fails to attend rounds and conferences.
- 3 Demonstrates adequate knowledge of required reading; occasionally fails to accomplish assigned work, sometimes absent from rounds & conferences.
- 4 Demonstrates good knowledge of required & supplemental readings; accomplishes assigned work efficiently & promptly; regularly attends rounds & conferences.
- 5 Extensively knowledgeable of required & supplemental & collateral readings; takes initiative to learn more about the patient's condition; never absent from rounds & conferences without a valid excuse.

Quantity and Timeliness

F. RELATIONSHIP WITH PEERS & CO-WORKERS

- 1 Not Observed
- 2 Uncooperative, disrespectful or disobedient to superiors; actions often thoughtless & causes unnecessary stress to others in the service.
- 3 Usually cooperative, generally does own work that neither helps nor hinders the work of others.
- 4 Cooperative, respectful and works well with the other members of the service.
- 5 Highly motivated & professional; elicit cooperation from the other members of the service; team player, highly admired by co-workers & superiors.

Quantity and Timeliness

G. EMOTIONAL MATURITY / REACTION TO STRESS

- 1 Not Observed
- 2 Emotionally unstable; reactions are inappropriate to situation; cannot cope with stress even in ordinary situations.
- 3 Generally stable personality with occasional lapses of confidence in his ability to handle common situations.
- 4 Emotionally stable but has difficulty coping with the stresses of extraordinary, complex or highly stressful situations.
- 5 Stable & confident even in the most demanding or stressful situation.

Quantity and Timeliness

H. SOCIAL RESPONSIBILITY

- 1 Not Observed
- 2 Unaware & uncaring of his role in the service & society.
- 3 Generally aware of his role in the service & society but takes no action about it.
- 4 Highly aware of his role in the service, society & community, occasionally participates in social & civic activities.
- 5 Imbued with high sense of social consciousness; takes the initiative to actively participate in social & civic activities of the hospital without compromising present work duties & responsibilities.

Quantity and Timeliness

III. TECHNICAL SKILLS

A. PATIENT PREPARATION

- 1 Not Observed
- 2 Grossly inadequate patient preparation; important steps are overlooked or omitted.
- 3 Some minor but important steps in patient preparation for procedure were overlooked or omitted.
- 4 Important, major steps in preparation of patient were performed. 5
Patient well prepared for procedure; preparation is comprehensive & includes attention to minor details.

Quantity and Timeliness

B. PREPARATION OF EQUIPMENT & O.R. NEEDS

- 1 Not Observed
- 2 Fails to recognize needed equipment, instruments, implants & supplies & other OR needs essential to the procedure.
- 3 Fails to prepare some minor but essential equipment, instruments, supplies & other OR needs.
- 4 Organizes & prepares equipment, instruments, implants, supplies & all other OR needs essential to the procedure.
- 5 Equipment, supplies, instruments & all implants and other OR needs prepared comprehensively, includes alternative instruments & implants & other equipment for unexpected findings.

Quantity and Timeliness

C. GENERAL CONDUCT OF PROCEDURE

- 1 Not Observed
- 2 Frequently omits major steps in performing surgical procedure; disorganized; sequence frequently incorrect.
- 3 Occasionally missed some minor but important steps in the procedure somewhat disorganized; some minor inaccuracies in sequence.
- 4 Performed major steps of surgical procedure correctly & in the proper sequence.
- 5 All the major & minor steps of the procedure were performed precisely, thoroughly & in clockwork fashion.

Quantity and Timeliness

**D. OBSERVANCE OF BASIC SURGICAL PRINCIPLES
(POSITIONING, ASEPSIS & ANTISEPSIS, DRAPING, HEMOSTASIS, GENTLE HANDLING OF TISSUES, AVOIDANCE OF TENSION, & DEAD SPACE, DRESSING & CASTING TECHNIQUE)**

- 1 Not Observed
- 2 Failed to observed basic surgical principles throughout the procedure
- 3 Has Occasional lapses in observance of basis surgical principles.
- 4 Observed basic surgical principles throughout the procedure.
- 5 Paid strict & meticulous attention to basic surgical principles throughout the procedure.

Quantity and Timeliness

E. TECHNICAL DEXTERITY

- 1 Not Observed
- 2 Instrument are often incorrectly chosen or used; movements are grossly imprecise & poorly coordinated.
- 3 Occasionally chooses & utilizes wrong instruments; movements occasionally imprecise or not well coordinated.
- 4 Instruments correctly chosen and utilized; movements are accurate & well-coordinated.
- 5 All instruments well chosen & utilized; movements highly precise & well-coordinated even in the difficult phases of the surgical procedure.

Quantity and Timeliness

F. INTRA-OPERATIVE JUDGMENT & DECISION - MAKING

- 1 Not Observed
- 2 Finds difficult making appropriate judgment or decisions even in simple procedures or findings.
- 3 Has occasional difficulty making appropriate judgments or decisions as the procedure progresses.
- 4 Is able to make appropriate decisions or judgments based on intra-operative findings, has some difficulty in complex situations.
- 5 Able to make sound, precise & confident judgements or decisions based on the operative finding seven in complex, difficult situations; anticipates problems that may arise

Quantity and Timeliness

**G. POST – OPERATIVE CARE
(INCLUDING RECOVERY ROOM CARE, DRAINS & WOUND DRESSING AND POST-OP RAHABILITATION MANAGEMENT)**

- 1 Not Observed
- 2 Grossly neglects the appropriate after care.
- 3 Occasionally neglects appropriate after care or neglects some minor important parts of postop care.
- 4 Provides appropriate & acceptable after care; has some difficulty in complex situations.
- 5 Aftercare is comprehensively & meticulously provided for even in difficult & complex situations.

Quantity and Timeliness

COMMENTS / REMARKS

Conforme:

Evaluator:

_____ M.D.

_____ M.D.

Appendix B. The core content of performance-based assessments (BOA-OCAP)

I Consent

- C1 Demonstrates sound knowledge of (contra) indications
- C2 Demonstrates sound knowledge of complications of surgery
- C3 Demonstrates awareness of specific problems at surgery generated by the disease being treated
- C4 Explains the peri-operative process to the patient and/or relatives and checks understanding
- C5 Explains likely outcome and time to recovery and checks understanding

II Pre-operative planning

- PL1 Demonstrates recognition of anatomical and pathological abnormalities and operative strategy to deal with these
- PL2 Ability to make reasoned choice of appropriate device (if any) using appropriate investigations e.g. x-rays
- PL3 Checks equipment and device requirements with operating room staff
- PL4 Where applicable ensures the limb is marked

III Pre-operative preparation

- PR1 Ensures proper and safe positioning of the patient on the operating table
- PR2 Ensures devices e.g. diathermy and tourniquet are deployed safely
- PR3 Arranges for and deploys supporting equipment e.g. imaging intensifiers effectively
- PR4 Adequately prepares a sterile operating field

IV Exposure and closure

- E1 Demonstrates knowledge of optimum skin incision
- E2 Demonstrates respect for soft tissues including skin
- E3 Achieves an adequate exposure and identifies all structures correctly
- E4 Completes a sound reconstruction
- E5 Protects the wound properly with dressings and splints

V Intra-operative technique

- IT1 Follows a logical sequence or protocol for the procedure
- IT2 Adheres to hospital protocols and policies
- IT3 Anticipates and responds appropriately to variation
- IT4+ See individual performance-based assessments for detail

VI Closing the loop

- CL1 Ensures the patient is transferred from operating table to bed
- CL2 Construct a clear operation note, retaining the equipment documentation and checking x-rays where appropriate
- CL3 Gives documented and sensible post-operative instructions
- CL4+ See individual performance-based assessments for detail

Appendix C. Context Evaluation for the SM Unit

Philippine Orthopedic Center Evaluation Form for the Sports Medicine Unit

Context Evaluation of the SMU to be conducted as a Survey and a Focus Group Discussion:

To be performed for the Stakeholders who are major decision-makers – the Administrators – Medical Director, Chief of Clinics, Section Head of Adult Orthopedics and SM Unit Head

a. Is the Sports Medicine Unit capture the types of duties of a graduate of the POC Residency Training Program can expect to perform in the work environment? Particularly management of sports related injuries and arthroscopic surgery? Please explain.

b. Is the program sufficient to produce in the Third Year resident the required entry-level knowledge and psychomotor skills development in Sports Medicine? Please explain.

c. Do you think that the Resident selection process and admission requirements currently set by the Training Committee ensure that the Residents will have the basic knowledge, skills and/or abilities required to be successful in the program? Do you think that the first two years of training providing enough basics to be successful in attaining the appropriate knowledge and skills in Sports Medicine and Arthroscopic Surgery? Please explain.

d. Is the Mission and Vision of the POC aligned with the PBO? Is the establishment of the SM Unit relevant and timely? Please explain.

e. Is the SM program for a Third Year Residency level appropriate? Are there other pre-requisites or co-requisites necessary? Is the content, sequence and integration of the SM Unit in accordance with the other Units of the Section of the Adult reconstructive Orthopedics? Are there other requisites that have not been identified? Please explain.

f. Is the current allocation of 3-months for Sports Medicine sufficient, excessive or inadequate? Please explain.

g. Do you think that the necessary competencies and learning outcomes properly and adequately enumerated? Are they presently deemed adequate? Relevant?

h. Does the current Curriculum in Sports medicine as well as its Instructional Design need further revision? Do some course content need to be added? Deleted? Please specify and provide the rationale for such.

i. Do you think the Unit is providing enough balance between teaching and learning and actual clinical work and even social activities and personal family time? Please explain. Do you have any suggestions on how this can be properly addressed?

j. What other internal and external networks should be considered for the betterment of the SM program?

Appendix D. Input and Process Evaluation for the SM Unit

Philippine Orthopedic Center Evaluation Form for the Sports Medicine Unit

Input and Process Evaluation of the SMU to be conducted as a Survey and a Focus Group Discussion:

To be performed for the Stakeholders who are major decision-makers – the Administrators and Implementers – Medical Director, Chief of Clinics, Section Head of Adult Orthopedics and SM Unit Head as well as the Consumers of the program – Training Residents.

5 – To a very great extent 4 3 – To a moderate extent 2 1 – Not at all

INPUT EVALUATION	Perceived Acceptability				
	5	4	3	2	1
For the Decision-Makers and Implementers					
1. The learning outcomes of the SM Unit are SMART					
2. The resources are enough to meet the teaching and learning needs as well as the clinical services needs of the Unit					
3. The workload for the Residents are adequate					
4. The Residents actively participate in the Unit's activities?					
5. The Residents actively participate in the Section's activities?					
6. The Residents actively participate in the Hospital's activities?					
7. There is enough evidence that the Unit is working and fulfilling its objectives.					
8. The Residents are well motivated during their rotation in the Unit?					
9. The SM Unit training program meets your expectations					
10. The policies of the Unit are clear					
For the Consultant Staff of the Unit					
1. Staff development programs are available					
2. The teaching and learning activities are organized					
3. The Consultants/Trainers are well qualified					
4. The Consultants/Trainers are committed					
5. The Staff is supportive					
6. The supervision of the trainers are adequate					
7. There is an active 2-way communication					
PROCESS EVALUATION					
1. The teaching and learning activities are implemented 100%					
2. The level of cooperation and coordination between the Consultants and Residents are commendable					
3. The workload is attainable					
4. The SM Unit allows time for me to have further training					
5. The SM unit allows time for me to engage in social activities and personal/family time					
6. The number of cases are adequate					

Appendix E. Objective Structured Assessment for Technical Skills

Surgical Procedure: _____ Proctor Score Sheet
Proctor Name: _____ Actual Start Time: _____
Resident Name: _____ Actual Stop Time: _____
Date: _____ Scheduled Time: _____ Running Time: _____

Checklist

Asepsis and Skin Prep Score: _____

- e Assesses site before skin prep is started
- e Applies chloraprep (30 sec, back forth)
- e Opens instrument tray with sterile technique
- e Opens blade package and sterilely places scalpel blade on tray
- e Selects nylon suture, NOT Vicryl
- e Sterilely places suture on tray

Gowning & Gloving Score: _____

- e Opens gown pack sterilely
- e Opens gloves on gown or next to it sterilely
- e Appropriately gowns using sterile technique
- e Dons gloves over sterile gown cuffs with hands inside the gown sleeves

Excision of Lesion Score: _____

Suturing Score: _____

- e Positions needle in driver appropriately (1/2 to 2/3 distance from tip)
- e Places suture w/needle perpendicular to skin
- e Places suture following curve of needle
- e Passes needle through tissue with supination: pronates wrist to regrasp needle
- e Mattress sutures are made correctly (1st stitch deep, 2nd stitch shallow)
- e Stitches are placed at appropriate distance from wound edge (closest approx. 1 mm of wound edge)
- e Stitches are at same level in epidermis
- e Closes appropriately to evert wound edges
- e Epidermis is apposed without gaps
- e Applies 3-4 sterile drapes around site
- e Assesses axis of resection (Langer's Line)
- e Holds knife perpendicular to tissue plane (incision is perpendicular to skin without flaps or skiving)
- e Creates elliptical incision
- e Incision is perpendicularly completed to the level of the fascia
- e Creates flaps to facilitate wound closure
- e Makes flaps with minimal tissue handling (minimal grasping, regrasping, tissue trauma, etc.)
- e Excision dimensions allow closure without puckering (length 4 width)
The removed tissue:
 - e Has half mm margins
 - e Leaves "lesion" (black dot) in center intact
 - e Contains subcutaneous fat
 - e Is placed in specimen container

Knot Tying* Score: _____

- e Starts instrument tie with square throw
- e Subsequent throws are square to previous
- e Crosses hands with each throw to place (secure) them square
- e Ties knot without tissue strangulation (appropriate skin tension)
- e Throws 6 knots
- e Starts one-handed tie with square throw
- e Subsequent throws are square to previous
- e Crosses hands with each throw to place (secure) them square
- e Ties knot without tissue strangulation (appropriate skin tension)
- e Throws 6 knots
- e Starts two-handed tie with square throw
- e Subsequent throws are square to the previous
- e Crosses hands with each throw to place (secure) them square
- e Ties knot without tissue strangulation (appropriate skin tension)
- e Throws 6 knots

Checklist Score: _____

(*Note: surgeon's knot may be used)

Global Rating Scale of Operative Performance

Please circle the number for each category, irrespective of the trainee's PG level.

Maintaining a Sterile Field

1	2	3	4	5
Many instances where sterile field was compromised		Occasional instances when sterile field was comprised		No instances where the sterile sterile field was field was compromised

Instrument ID and Handling

1	2	3	4	5
Could not name instruments, selected wrong instrument(s); handled instruments inappropriately		Could name some, not all instruments; hesitated or changed mind in selecting instruments; handled them appropriately <i>most</i> of the time		Named all instruments; easily selected correct instruments; used them appropriately <i>all</i> of the time

Quality of Excision

1	2	3	4	5
Poor technique, lesion compromised margins insufficient		Moderately good technique lesion intact acceptable margins		Excellent technique lesion intactexcellent margins

Quality of Suturing

1	2	3	4	5
Poor technique, poor manual dexterity, problems with closure		Moderately good technique, moderate dexterity, acceptable closure		Excellent technique, excellent dexterity, excellent closure

Quality of Knots

1	2	3	4	5
Poor technique, couldn't do all 3 ties, insecure knots		Moderately good technique, some ties were done better than others, mostly secure knots		Excellent technique, excellent execution of all 3 ties, very secure knots

Respect for Tissue

1	2	3	4	5
Frequently used unnecessary force, or caused damage on tissue		Careful handling of tissue but occasionally caused damage		Very careful handling of tissues with minimal or no damage

Appendix F-1: Functional Scoring Systems using Lysholm Scale

LYSHOLM KNEE SCORING SCALE

Instructions: Below are common complaints which people frequently have with their knee problems. Please check the statement which best describes your condition.

I. LIMP:

- I have no limp when I walk. (5)
- I have a slight or periodical limp when I walk. (3)
- I have a severe and constant limp when I walk. (0)

II. USING CANE OR CRUTCHES

- I do not use a cane or crutches. (5)
- I use a cane or crutches with some weight-bearing. (2)
- Putting weight on my hurt leg is impossible. (0)

III. LOCKING SENSATION IN THE KNEE

- I have no locking and no catching sensations in my knee. (15)
- I have catching sensation but no locking sensation in my knee. (10)
- My knee locks occasionally. (6)
- My knee locks frequently. (2)
- My knee feels locked at this moment. (0)

IV. GIVING WAY SENSATION FROM THE KNEE

- My knee never gives way. (25)
- My knee rarely gives way, only during athletics or other vigorous activities. (20)
- My knee frequently gives way during athletics or other vigorous activities, in turn I am unable to participate in these activities. (15)
- My knee occasionally gives way during daily activities. (10)
- My knee often gives way during daily activities. (5)
- My knee gives way every step I take. (0)

V. PAIN:

- I have no pain in my knee. (25)
- I have intermittent or slight pain in my knee during vigorous activities. (20)
- I have marked pain in my knee during vigorous activities. (15)
- I have marked pain in my knee during or after walking more than 1 mile. (10)
- I have marked pain in my knee during or after walking less than 1 mile. (5)
- I have constant pain in my knee. (0)

VI. SWELLING

- I have no swelling in my knee. (10)
- I have swelling in my knee only after vigorous activities. (6)
- I have swelling in my knee after ordinary activities. (2)
- I have swelling constantly in my knee. (0)

VII. CLIMBING STAIRS:

- I have no problems climbing stairs. (10)
- I have slight problems climbing stairs. (6)
- I can climb stairs only one at a time. (2)
- Climbing stairs is impossible for me. (0)

VIII. SQUATTING

- I have no problems squatting. (5)
- I have slight problems squatting. (4)
- I can not squat beyond a 90 degree bend in my knee. (2)
- Squatting is impossible because of my knee. (0)

**Appendix F-2. Functional Scoring
Systems using the IKDC Rating**

INTRODUCTION

The entire IKDC form, which includes a demographic form, current health assessment form, subjective knee evaluation form, knee history form, surgical documentation form, and knee examination form, may be used as separate forms. The knee history form and surgical documentation form are provided for convenience. All researchers are required to complete the subjective knee evaluation and knee examination form. Instructions for scoring the subjective knee evaluation form and the knee examination form are provided on the back of the forms.

IKDC DEMOGRAPHIC FORM

Your Date of Birth _____ / _____ / _____
Day Month Year

Your Social Security Number ____ - ____ - ____ **Your Gender:** Male Female

Occupation

Today's Date _____ / _____ / _____
Day Month Year

The following is a list of common health problems. Please indicate "Yes" or "No" in the first column, and then skip to the next item. If you do have the problem, please indicate in the second column if you receive medications or some other type of treatment for the problem. In the last column, indicate if the problem limits any of your activities.

	Do you have the problem?		Do you receive treatment for it?		Does it limit your activities?	
	Yes	No	Yes	No	Yes	No
Heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High blood pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asthma or pulmonary disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ulcer or stomach disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bowel disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kidney disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liver disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anemia or other blood disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overweight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Osteoarthritis, degenerative arthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rheumatoid arthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lyme disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other medical problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcoholism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Do you smoke cigarettes?

- Yes
- No, I quit in the last six months.
- No, I quit more than six months ago.
- No, I have never smoked.

2. Your height _____ centimeters inches

3. Your weight _____ kilograms pounds

4. Your race (indicate all that apply)

- White
- Black or African-American
- Hispanic
- Asian or Pacific Islander
- Native American Indian
- Other

5. How much school have you completed?

- Less than high school
- Graduated from high school
- Some college
- Graduated from college
- Postgraduate school or degree

6. Activity level

- Are you a high competitive sports person?
- Are you well-trained and frequently sporting?
- Sporting sometimes
- Non-sporting

IKDC CURRENT HEALTH ASSESSMENT FORM *

Your Full Name _____

Your Date of Birth _____ / _____ / _____
Day Month Year

Today's Date _____ / _____ / _____
Day Month Year

1. In general, would you say your health is: Excellent Very Good Good Fair Poor
2. Compared to one year ago, how would you rate your health in general now?
- Much better now than 1 year ago Somewhat better now than 1 year ago About the same as 1 year ago
- Somewhat worse now than 1 year ago Much worse now than 1 year ago

C. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, Limited A Lot	Yes, Limited A Little	No, Not Limited At All
A. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Lifting or carrying groceries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Climbing several flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Climbing one flight of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Bending, kneeling or stooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Walking more than a mile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Walking several blocks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Walking one block	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Bathing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	YES	NO
e Cut down on the amount of time you spent on work or other activities	M	<input type="checkbox"/>
e Accomplished less than you would like	M	<input type="checkbox"/>
e Were limited in the kind of work or other activities	M	<input type="checkbox"/>
e Had difficulty performing the work or other activities (for example, it took extra effort)	M	<input type="checkbox"/>
	M	<input type="checkbox"/>

e. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

YES NO

- a. Cut down on the amount of time you spent on work or other activities YES NO
- b. Accomplished less than you would like YES NO
- c. Didn't do work or other activities as carefully as usual YES NO

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

- Not At All Slightly Moderately Quite a Bit Extremely

7. How much bodily pain have you had during the past 4 weeks?

- None Very Mild Mild Moderate Severe Very Severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

- Not at All A Little Bit Moderately Quite a Bit Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
a. Did you feel full of pep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have you been very nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Have you felt down-hearted and blue?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Did you feel worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Have you been a happy person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Did you feel tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

- All of the time
 Most of the time
 Some of the time
 A little of the time
 None of the time

11. How TRUE or FALSE is each of the following statements for you?

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a. I seem to get sick a little easier than other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I am as healthy as anybody I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I expect my health to get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. My health is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*This form includes questions from the SF-36™ Health Survey. Reproduced with the permission of the Medical Outcomes Trust, Copyright © 1992.

2000 IKDC SUBJECTIVE KNEE EVALUATION FORM

Your Full Name _____

Today's Date: ____/____/____
Day Month Year

Date of Injury: ____/____/____
Day Month Year

SYMPTOMS*:

*Grade symptoms at the highest activity level at which you think you could function without significant symptoms, even if you are not actually performing activities at this level.

1. What is the highest level of activity that you can perform without significant knee pain?

- 4 Very strenuous activities like jumping or pivoting as in basketball or soccer
 3 Strenuous activities like heavy physical work, skiing or tennis 2 Moderate activities like moderate physical work, running or jogging 1 Light activities like walking, housework or yard work
 0 Unable to perform any of the above activities due to knee pain

2. During the past 4 weeks, or since your injury, how often have you had pain?

- 0 1 2 3 4 5 6 7 8 9 10
- Never Constant

3. If you have pain, how severe is it?

- No pain ⁰ ¹ ² ³ ⁴ ⁵ ⁶ ⁷ ⁸ ⁹ ¹⁰ | Worst pain imaginable

4. During the past 4 weeks, or since your injury, how stiff or swollen was your knee?

- 4 Not at all
- 3 Mildly
- 2 Moderately
- 1 Very
- 0 Extremely

5. What is the highest level of activity you can perform without significant swelling in your knee?

- 4 Very strenuous activities like jumping or pivoting as in basketball or soccer
- 3 Strenuous activities like heavy physical work, skiing or tennis
- 2 Moderate activities like moderate physical work, running or jogging
- 1 Light activities like walking, housework, or yard work
- 0 Unable to perform any of the above activities due to knee swelling

6. During the past 4 weeks, or since your injury, did your knee lock or catch?

- 0 Yes
- 1 No

7. What is the highest level of activity you can perform without significant giving way in your knee?

- 4 Very strenuous activities like jumping or pivoting as in basketball or soccer
- 3 Strenuous activities like heavy physical work, skiing or tennis
- 2 Moderate activities like moderate physical work, running or jogging
- 1 Light activities like walking, housework or yard work
- 0 Unable to perform any of the above activities due to giving way of the knee

SPORTS ACTIVITIES:

8. What is the highest level of activity you can participate in on a regular basis?

- 4 Very strenuous activities like jumping or pivoting as in basketball or soccer
- 3 Strenuous activities like heavy physical work, skiing or tennis
- 2 Moderate activities like moderate physical work, running or jogging
- 1 Light activities like walking, housework or yard work
- 0 Unable to perform any of the above activities due to knee

9. How does your knee affect your ability to:

		Not difficult at all	Minimally difficult	Moderately Difficult	Extremely difficult	Unable to do
a.	Go up stairs	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b.	Go down stairs	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c.	Kneel on the front of your knee	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d.	Squat	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e.	Sit with your knee bent	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f.	Rise from a chair	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g.	Run straight ahead	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h.	Jump and land on your involved leg	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i.	Stop and start quickly	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

FUNCTION:

10. How would you rate the function of your knee on a scale of 0 to 10 with 10 being normal, excellent function and 0 being the inability to perform any of your usual daily activities which may include sports?

FUNCTION PRIOR TO YOUR KNEE INJURY:

Couldn't perform daily activities	No limitation in daily activities
--------------------------------------------	--------------------------------------------

CURRENT FUNCTION OF YOUR KNEE:

Can't perform daily activities	No limitation in daily activities
-----------------------------------------	--------------------------------------------

Scoring Instructions for the 2000 IKDC Subjective Knee Evaluation Form

Several methods of scoring the IKDC Subjective Knee Evaluation Form were investigated. The results indicated that summing the scores for each item performed as well as more sophisticated scoring methods.

The responses to each item are scored using an ordinal method such that a score of 0 is given to responses that represent the lowest level of function or highest level of symptoms. For example, item 1, which is related to the highest level of activity without significant pain is scored by assigning a score of 0 to the response "Unable to perform any of the above activities due to knee pain" and a score of 4 to the response "Very strenuous activities like jumping or pivoting as in basketball or soccer". **For item 2, which is related to the frequency of pain over the past 4 weeks, the responses are reverse-scored such that "Constant" is assigned a score of 0 and "Never" is assigned a score of 10. Similarly, for item 3, the responses are reversed-scored such that "Worst pain imaginable" is assigned a score of 0 and "No pain" is assigned a score of 10.** Note: previous versions of the form had a minimum item score of 1 (for example, ranging from 1 to 11). In the most recent version, all items now have a minimum score of 0 (for example, 0 to 10). To score these prior versions, you would need to transform each item to the scaling for the current version.

The IKDC Subjective Knee Evaluation Form is scored by summing the scores for the individual items and then transforming the score to a scale that ranges from 0 to 100. **Note:** The response to item 10a "Function Prior to Knee Injury" is not included in the overall score. To score the current form of the IKDC, simply add the score for each item (the small number by each item checked) and divide by the maximum possible score which is 87:

$$\text{IKDC Score} = \frac{\text{Sum of Items}}{\text{Maximum Possible Score}} \times 100$$

Thus, for the current version, if the sum of scores for the 18 items is 45 and the patient responded to all the items, the IKDC Score would be calculated as follows:

$$\text{IKDC Score} = \frac{45}{87} \times 100$$

$$\text{IKDC Score} = 51.7$$

The transformed score is interpreted as a measure of function such that higher scores represent higher levels of function and lower levels of symptoms. A score of 100 is interpreted to mean no limitation with activities of daily living or sports activities and the absence of symptoms.

The IKDC Subjective Knee Form score can be calculated when there are responses to at least 90% of the items (i.e. when responses have been provided for at least 16 items). In the original scoring instructions for the IKDC Subjective Knee Form, missing values are replaced by the average score of the items that have been answered. However, this method could slightly over- or under-estimate the score depending on the maximum value of the missing item(s) (2, 5 or 11 points) . Therefore, in the revised scoring procedure for the current version of a form with up to two missing values, the IKDC Subjective Knee Form Score is calculated as (sum of the completed items) / (maximum possible sum of the completed items) * 100. This method of scoring the IKDC Subjective Knee Form is more accurate than the original scoring method.

A scoring spreadsheet is also available at: www.sportsmed.org/research/index.asp This spreadsheet uses the current form scores and the revised scoring method for calculating scores with missing values.

2000 IKDC KNEE HISTORY FORM

Patient Name _____ Birthdate ____/____/____
Day Month Year
Date of Injury ____/____/____ Date of Initial Exam ____/____/____ Today's Date ____/____/____
Day Month Year Day Month Year Day Month Year

Involved Knee: Right Left

Contralateral: Normal Nearly Normal Abnormal Severely abnormal

Onset of Symptoms: (date) ____/____/____
Day Month Year

Chief Complaint: _____

Activity at Injury: ADL Sports Traffic Work

Mechanism of Injury:

- Non-traumatic gradual onset Traumatic non-contact onset
Non-traumatic sudden onset Traumatic contact onset

Previous Surgery:

Type of Surgery: (check all that apply)

Meniscal Surgery

Medial meniscectomy Medial meniscal repair Medial meniscal transplant

Lateral meniscectomy Lateral meniscal repair Lateral meniscal transplant

Ligament Surgery

- ACL Repair
- PCL Repair
- Medial collateral ligament repair/reconstruction
- Lateral collateral ligament repair/reconstruction
- Intraarticular ACL reconstruction
- Intraarticular PCL reconstruction
- Extraarticular ACL reconstruction
- Posterolateral corner reconstruction

Type of Graft

- Patella tendon graft
- Single hamstring graft 2
- Bundle hamstring graft 4
- Bundle hamstring graft
- Quadriceps tendon graft
- Allograft
- Other
- Ipsilateral
- Contralateral

Extensor Mechanism Surgery

- Patella tendon repair
- Quadriceps tendon repair

Patellofemoral Surgery

- Extensor Mechanism Realignment
- Soft Tissue Realignment
 - Medial imbrication
 - Lateral release
- Bone Realignment Movement of the tibial tubercle
 - Proximal
 - Distal
 - Medial
 - Lateral
 - Anterior
- Trochleoplasty
- Patellectomy

Osteoarthritis Surgery

- Osteotomy
- Articular Surface Surgery
- Cell therapy
- Shaving
- Osteochondral autograft transfer/mosaic-plasty
- Abrasion
- Drilling
- Other
- Microfracture

Total number of previous surgeries_____

Imaging Studies:

- Structural
- MRI
- CT
- Arthrogram
- Metabolic (Bone Scan)

2000 IKDC SURGICAL DOCUMENTATION FORM

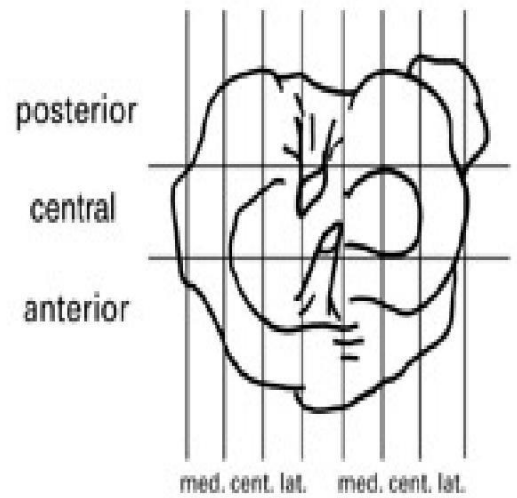
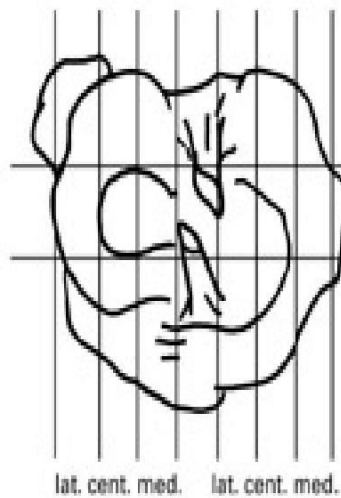
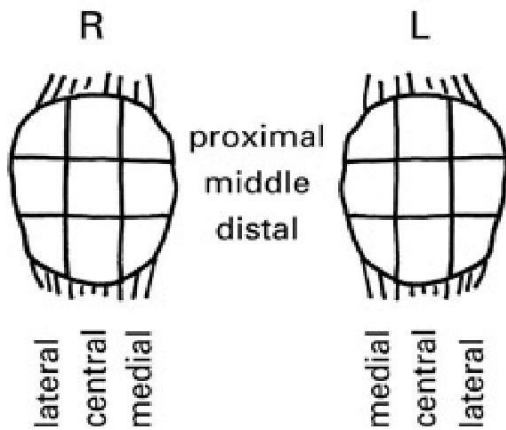
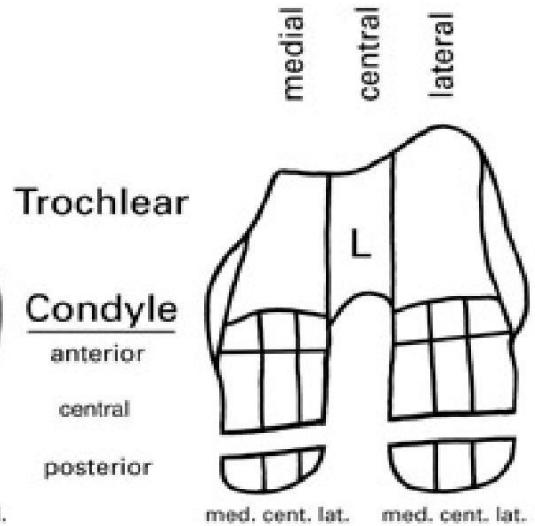
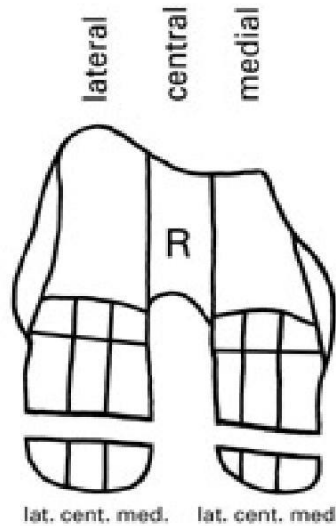
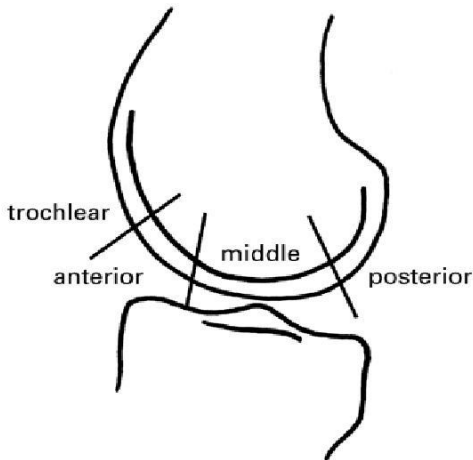
Postoperative Diagnosis:

1. _____
2. _____
3. _____

Status After Procedure:

ARTICULAR CARTILAGE STATUS:

Document the size and location of articular cartilage defects on these figures according to the ICRS mapping system^C.



LIGAMENT STATUS:

Procedure:

- | | | |
|----------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------|
| <input type="checkbox"/> ACL repair | <input type="checkbox"/> Intraarticular ACL reconstruction | <input type="checkbox"/> Extraarticular ACL reconstruction |
| <input type="checkbox"/> PCL repair | <input type="checkbox"/> Intraarticular PCL reconstruction | <input type="checkbox"/> Posterolateral corner repair/reconstruction |
| <input type="checkbox"/> Medial collateral ligament repair/reconstruction | | |
| <input type="checkbox"/> Lateral collateral ligament repair/reconstruction | | |

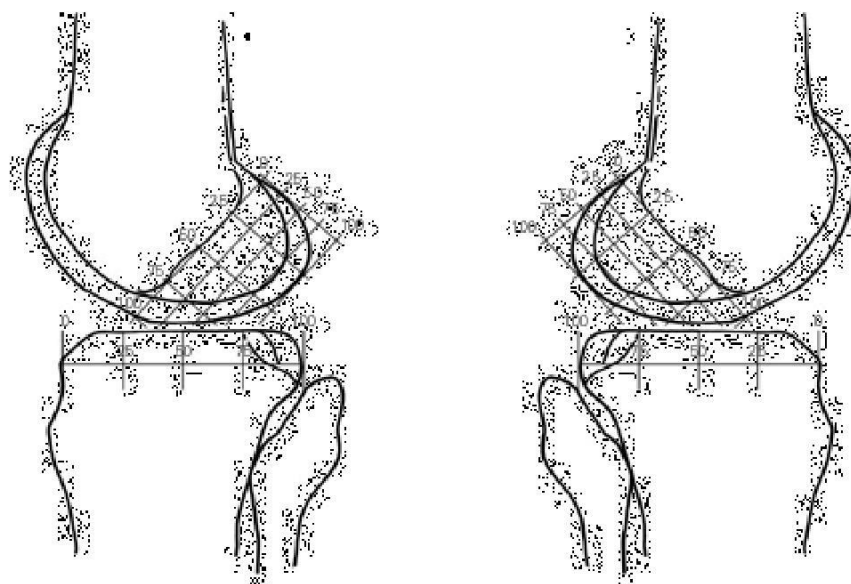
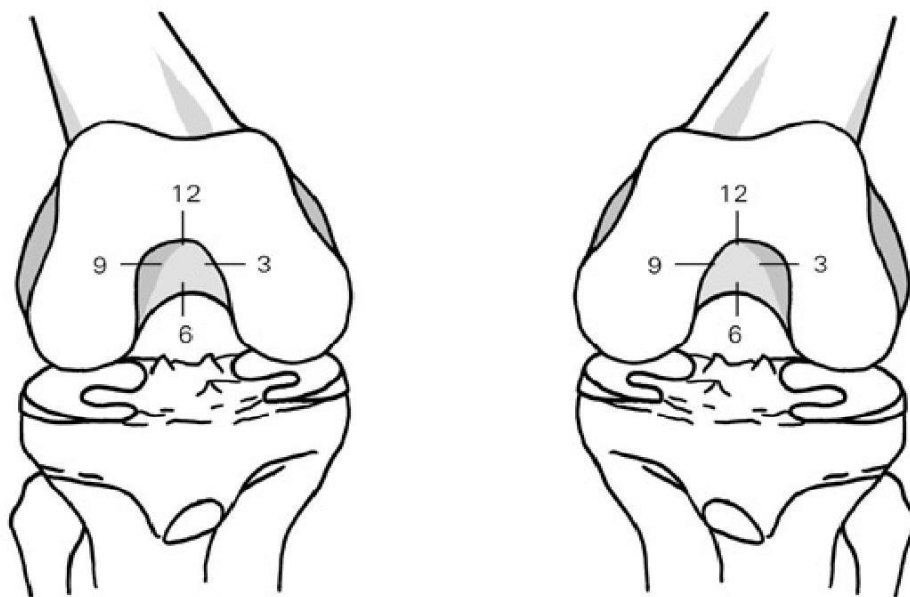
Graft:

- | | | |
|----------------------------------------------------|--------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> Autologous patella tendon | <input type="checkbox"/> Hamstring tendons | <input type="checkbox"/> Quadriceps tendon |
| <input type="checkbox"/> Other _____ | | |

Previous Graft Harvest:

- | | | |
|----------------------------------------------------|--------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> Autologous patella tendon | <input type="checkbox"/> Hamstring tendons | <input type="checkbox"/> Quadriceps tendon |
|----------------------------------------------------|--------------------------------------------|--------------------------------------------|

Document drill hole placement for ligament reconstruction on these figures.



**2000
IKDC KNEE EXAMINATION FORM**

Patient Name: _____

Date of Birth: ____/____/____
Day Month Year

Gender: F M **Age:** _____

Date of Examination: ____/____/____
Day Month Year

Generalized Laxity: tight normal lax

Alignment: obvious varus normal obvious valgus

Patella Position: obvious baja normal obvious alta

Patella Subluxation/Dislocation: centered subluxable subluxed dislocated

Range of Motion (Ext/Flex): Index Side: passive ____/____/____ active ____/____/____
Opposite Side: passive ____/____/____ active ____/____/____

SEVEN GROUPS	FOUR GRADES				*Group Grade		
	A Normal	B Nearly Normal	C Abnormal	D Severely Abnormal	A	B	C
1. Effusion	None	Mild	Moderate	Severe			
2. Passive Motion Deficit							
ΔLack of extension	<3°	3 to 5 °	6 to 10 °	>10°			
ΔLack of flexion	0 to 5 °	6 to 15°	16 to 25 °	>25°			
3. Ligament Examination (manual, instrumented, x-ray)							
ΔLachman (25° flex) (134N)	-1 to 2mm	3 to 5mm(1 ⁺) <-1 to -3	6 to 10mm(2 ⁺) <-3 stiff	>10mm(3 ⁺)			
ΔLachman (25° flex) manual max Anterior endpoint:	-1 to 2mm firm	3 to 5mm	6 to 10mm soft	>10mm			
ΔTotal AP Translation (25° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm			
ΔTotal AP Translation (70° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm			
ΔPosterior Drawer Test (70° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm			
ΔMed Joint Opening (20° flex/valgus rot)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm			
ΔLat Joint Opening (20° flex/varus rot)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm			
ΔExternal Rotation Test (30° flex prone)	<5°	6 to 10 °	11 to 19 °	>20°			
ΔExternal Rotation Test (90° flex prone)	<5°	6 to 10 °	11 to 19 °	>20°			
ΔPivot Shift	equal	+glide	++(clunk)	+++ (gross)			
ΔReverse Pivot Shift	equal	glide	gross	marked			
4. Compartment Findings			<u>crepitation with</u>				
ΔCrepitus Ant. Compartment	none	moderate	mild pain	>mild pain			
ΔCrepitus Med. Compartment	none	moderate	mild pain	>mild pain			
ΔCrepitus Lat. Compartment	none	moderate	mild pain	>mild pain			
5. Harvest Site Pathology	none	mild	moderate	severe			
6. X-ray Findings							
Med. Joint Space	none	mild	moderate	severe			
Lat. Joint Space	none	mild	moderate	severe			
Patellofemoral	none	mild	moderate	severe			
Ant. Joint Space (sagittal)	none	mild	moderate	severe			
Post. Joint Space (sagittal)	none	mild	moderate	severe			
7. Functional Test							
One Leg Hop (% of opposite side)	≥90%	89 to 76%	75 to 50%	<50%			
**Final Evaluation							

- * Group grade: The lowest grade within a group determines the group grade
- ** Final evaluation: the worst group grade determines the final evaluation for acute and subacute patients. For chronic patients compare preoperative and postoperative evaluations. In a final evaluation only the first 3 groups are evaluated but all groups must be documented. Δ Difference in involved knee compared to normal or what is assumed to be normal.

IKDC COMMITTEE AOSSM: Anderson, A., Bergfeld, J., Boland, A. Dye, S., Feagin, J., Harner, C. Mohtadi, N. Richmond, J. Shelbourne, D., Terry, G. ESSKA: Staubli, H., Hefti, F., Hoher, J., Jacob, R., Mueller, W., Neyret, P. APOSSM: Chan, K., Kurosaka, M.

INSTRUCTIONS FOR THE 2000 IKDC KNEE EXAMINATION FORM

The Knee Examination Form contains items that fall into one of seven measurement domains. However, only the first three of these domains are graded. The seven domains assessed by the Knee Examination Form are:

1. Effusion

An effusion is assessed by ballotting the knee. A fluid wave (less than 25 cc) is graded mild, easily ballotteable fluid – moderate (25-60 cc), and a tense knee secondary to effusion (greater than 60 cc) is rated severe.

2. Passive Motion Deficit

Passive range of motion is measured with a goniometer and recorded on the form for the index side and opposite or normal side. Record values for zero point/hyperextension/flexion (e.g. 10 degrees of hyperextension, 150 degrees of flexion = 10/0/150; 10 degrees of flexion to 150 degrees of flexion = 0/10/150). Extension is compared to that of the normal knee.

3. Ligament Examination

The Lachman test, total AP translation at 70 degrees, and medial and lateral joint opening may be assessed with manual, instrumented or stress x-ray examination. Only one should be graded, preferably a “measured displacement”. A force of 134 N (30 lbs) and the maximum manual are recorded in instrumented examination of both knees. Only the measured displacement at the standard force of 134 N is used for grading. The numerical values for the side to side difference are rounded off, and the appropriate box is marked.

The end point is assessed in the Lachman test. The end point affects the grading when the index knee has 3-5 mm more anterior laxity than the normal knee. In this case, a soft end point results in an abnormal grade rather than a nearly normal grade.

The 70-degree posterior sag is estimated by comparing the profile of the injured knee to the normal knee and palpating the medial femoral tibial stepoff. It may be confirmed by noting that contraction of the quadriceps pulls the tibia anteriorly.

The external rotation tests are performed with the patient prone and the knee flexed 30° and 70°. Equal external rotational torque is applied to both feet and the degree of external rotation is recorded.

The pivot shift and reverse pivot shift are performed with the patient supine, with the hip in 10-20 degrees of abduction and the tibia in neutral rotation using either the Losee, Noyes, or Jakob techniques. The greatest subluxation, compared to the normal knee, should be recorded.

4. *Compartment Findings*

Patellofemoral crepitation is elicited by extension against slight resistance. Medial and lateral compartment crepitation is elicited by extending the knee from a flexed position with a varus stress and then a valgus stress (i.e., McMurray test). Grading is based on intensity and pain.

5. *Harvest Site Pathology*

Note tenderness, irritation or numbness at the autograft harvest site.

6. *X-ray Findings*

A bilateral, double leg PA weightbearing roentgenogram at 35-45 degrees of flexion (tunnel view) is used to evaluate narrowing of the medial and lateral joint spaces. The Merchant view at 45 degrees is used to document patellofemoral narrowing. A mild grade indicates minimal changes (i.e., small osteophytes, slight sclerosis or flattening of the femoral condyle) and narrowing of the joint space which is just detectable. A moderate grade may have those changes and joint space narrowing (e.g., a joint space of 2-4 mm side or up to 50% joint space narrowing). Severe changes include a joint space of less than 2 mm or greater than 50% joint space narrowing.

7. *Functional Test*

The patient is asked to perform a one leg hop for distance on the index and normal side. Three trials for each leg are recorded and averaged. A ratio of the index to normal knee is calculated.