

Fundamentals of Arthroscopic Surgery Training (FAST) Curriculum

Description

Arthroscopy is a very common orthopedic procedure; however, it remains challenging from technical and psychomotor perspectives. One of the main challenges is that arthroscopy requires ambidextrous triangulation in three dimensions, while the surgeon is guided by a two-dimensional video display. The Fundamentals of Arthroscopic Surgery Training (FAST) Program was initiated in 2011 as a collaborative effort of AANA, AAOS, and ABOS. The FAST program is based on the principle that basic surgical skills are best developed sequentially. It assumes that advanced proficiency should be based on successful completion of a basic skills curriculum. The FAST Program consists of six modules, each providing different knowledge and skills that should be obtained sequentially:

Module 1- Basic Principles of Arthroscopy

Module 2- Basic Triangulation Skills

Module 3- Basic Interventional Arthroscopy

Module 4- Suture Anchors

Module 5- Passing Suture through Tissue

Module 6- Arthroscopic Knot Tying

Objectives

- ◆ To become familiar with the basic set-up and function of the arthroscopic 'tower', basic hand tools, operating room set-up, draping techniques and basic arthroscopic portals.
- ◆ To develop basic ambidextrous triangulation skills that are required for clinical performance of arthroscopic surgical procedures.
- ◆ To become familiar with principles of interventional arthroscopy, such as avoiding unnecessary contact with the walls of a closed space and maintaining a stable view of a targeted area while using an instrument in the opposite hand to remove or resect a tissue.
- ◆ To understand the surgical techniques involved with the placement of suture anchors into a bone.
- ◆ To understand the various techniques and steps sequence for the passage of suture through tissue, and become familiar with the related tools.
- ◆ To learn the steps sequence required for tying different basic knots, which are used to tie sutures arthroscopically.

Target Audience

- ◆ Orthopedic surgery residents from PGY1 through PGY3
- ◆ Practicing orthopedic surgeons with limited experience performing arthroscopic surgery
- ◆ Beginning arthroscopists

Assumptions

- ◆ Little or no prior knowledge or experience with arthroscopy.
- ◆ No prior arthroscopic motor skills practice.
- ◆ Basic anatomical knowledge of the knee and shoulder joints and of the arthroscopic portals

Suggested Time Length

Completion of the entire course should take between 4-6 hours.

Authors

3D Systems - Symbionix Products, based on the FAST program that was initiated collaboratively by:

- Arthroscopy Association of North America (AANA)
- American Academy of Orthopaedic Surgeons (AAOS)
- American Board of Orthopaedic Surgery (ABOS)

The original course may be found here:

https://www.abos.org/media/7061/module_14_basic_arthroscopy_skills_edit.pdf

Curriculum Steps and Tasks Description

The training program was designed to enable learners to obtain the required skills in a gradual and structured manner. Therefore, the trainee is required to follow the curriculum steps according to the following manner. In order to optimize the training, an experienced operator is required to provide a demonstration of each hands-on task according to the following instructions.

FAST module 1- Basic Principles of Arthroscopy

Objectives

The learner will become familiar with the basic set-up and function of the arthroscopic 'tower', basic hand tools, operating room set-up, draping techniques and basic arthroscopic portals.

Didactic Chapter



Review the videos and slides to gain familiarity and understanding of the following subjects:

- ◆ Basic arthroscopy tools and equipment
- ◆ Relevant anatomy and portals for safe access to joints
- ◆ OR setup, patient positioning and draping techniques

FAST module 2- Basic Triangulation Skills

Objective

The learner will develop basic ambidextrous triangulation skills that are required for clinical performance of arthroscopic surgical procedures.

Didactic Chapter



Watch videos that demonstrate the basic motor skill elements, such as:

- ◆ Image centering
- ◆ Telescoping
- ◆ Periscoping
- ◆ Probe of a stationary target
- ◆ Simultaneous image tracking and probing of a moving target

Hands-on Tasks

Perform the following 22 tasks- the first 11 are to be performed with the camera held in the right hand and the probe in the left hand; the latter 11 To be performed with the camera held in the left hand and the probe in the right hand. The learner is expected to develop the skills required for maintaining a stable, properly oriented view of a targeted area with one hand, while using an instrument in the other hand.

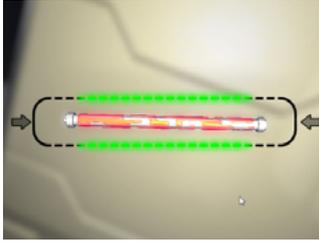


Task 1: Steadiness of the Camera and Arthroscope

Task Description:

Hold the camera steady over the target until it disappears.

- Camera: 0°
- Task repetition: 1 time
- Required demonstration: 2 targets

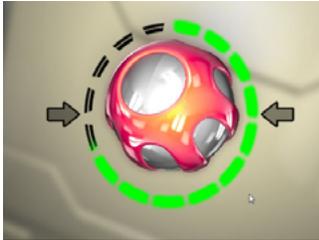


Task 2: Image Orientation

Task Description:

Rotate the camera until the rectangular frame fits around the target. Hold the camera steady until the target disappears.

- Camera: 0°
- Task repetition: 3 times
- Required demonstration: 3 targets

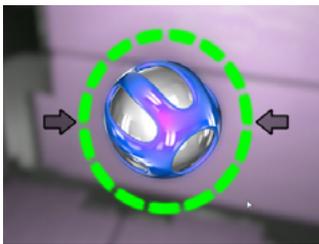


Task 3: Image Centering

Task Description:

Move the camera until the circle is aligned with the target. Hold the camera steady until the target disappears.

- Camera: 0°
- Task repetition: 2 times
- Required demonstration: 2 targets

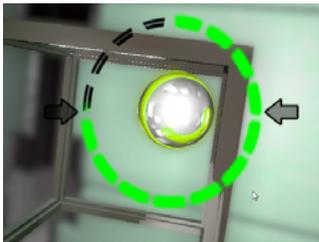


Task 4: Telescoping (Pistoning)

Task Description:

Follow the moving target by pushing the camera in and pulling it out.

- Camera: 0°
- Task repetition: 2 times
- Required demonstration: 3 iterations

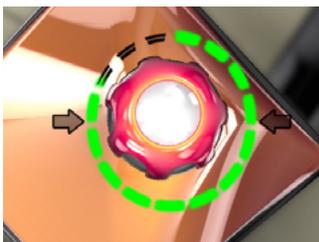


Task 5: Deliberate Linear Scope Motion

Task Description:

Move the camera linearly in a two-dimensional plane until the circle is aligned with the target.

- Camera: 0°
- Task repetition: 1 time
- Required demonstration: 3 targets

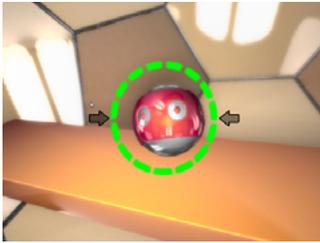


Task 6: Periscoping

Task Description:

Move the camera until the circle is aligned with the target outside the box. Hold the camera steady until the target disappears; then rotate the light source only until the circle is aligned with the target in the box.

- Camera: 30°
- Task repetition: 3 times
- Required demonstration: 3 targets



Task 7: Tracking a Moving Target with the Scope

Task Description:

Move the camera until the circle is aligned with the stationary target. While the target moves, keep the camera continuously focused on it until it reaches the end of its path.

- Camera: 0°
- Task repetition: 3 times
- Required demonstration: full task



Task 8: Basic Probe Triangulation

Task Description:

Move the camera until the circle is aligned with the target. While the camera is steady over the target, touch the target with the tip of the probe until the target disappears.

- Camera: 0°
- Task repetition: 2 times
- Required demonstration: 2 targets

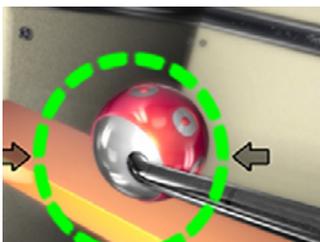


Task 9: Touch and Probe of a Stationary Target

Task Description:

Touch the target with the tip of the probe until the target disappears.

- Camera: 0°
- Task repetition: 1 time
- Required demonstration: 2 targets



Task 10: Simultaneous Image Tracking and Probing of a Moving Target

Task Description:

Move the camera until the circle is aligned with the target. While the camera is steady over the target, touch the target with the tip of the probe until the countdown starts. When the target moves, follow it with the camera and probe until it reaches the end of its path.

- Camera: 0°
- Task repetition: 3 times
- Required demonstration: full task



Task 11: Measurement of Articular Dimensions with the Tip of the Probe

Task Description:

Measure the length of the orange stripe by placing the tip of the probe along it from edge to edge and use the probe like a ruler:



- Camera: 0°
- Task repetition: 3 times
- Required demonstration: full task

After completing the 11 tasks with the camera in the right hand, please remember to switch the camera to the left hand and complete the next 11 tasks.

FAST module 3- Basic Interventional Arthroscopy

Objective

The learner will become familiar with principles of interventional arthroscopy, such as avoiding unnecessary contact on the walls of a closed space and maintaining a stable view of a targeted area while using an instrument in the opposite hand to remove or resect a tissue.

Didactic Chapter



Watch the videos that demonstrate the application of interventional arthroscopic skills in procedures such as resection of tissue and removal of loose bodies.

FAST module 4- Suture Anchors

Objective

The learner will understand the surgical techniques involved with the placement of suture anchors into a bone.

Didactic Chapter



Watch video that demonstrates suture anchors placement techniques and provides tips for a safe and efficient procedure.
Review slide that presents common errors and prevention strategies.

FAST module 5- Passing Suture Through Tissue

Objective

The learner will become familiar with tools used in the passage of suture through tissue; understand the various techniques and the sequence of steps for the passage of suture through tissue.

Didactic Chapter



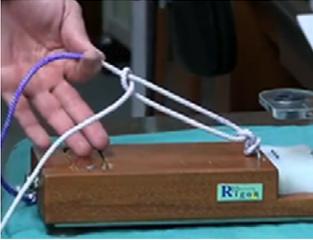
Watch videos that demonstrate different techniques for passing a suture through tissues, application of several tools, common errors and prevention strategies.

FAST module 6- Arthroscopic Knot Tying

Objective

The learner will understand the steps sequence required for tying different basic knots, which are used to tie sutures arthroscopically.

Didactic Chapter



Watch videos that provide step-by-step instructions for tying different basic knots which are used to tie sutures arthroscopically.

Review slide that comprehensively presents common errors and prevention strategies.