

The Manual Skills testing component is intended to measure your technical skills and eye-hand coordination during basic laparoscopic surgical maneuvers. These tasks, designed by Dr. Gerald Fried and customized for the FLS Program, are based on the MISTELS program developed at McGill University and have been extensively tested to ensure that they reflect those technical skills that are fundamental to the performance of laparoscopic surgery.

Task One: Peg Transfer

Equipment: Two graspers, pegboard, 6 objects

Approximate Time Limit: 300 seconds

Proficiency Time: 48 seconds

Center the pegboard on the Velcro provided in the center of the marked square on the floor of the trainer box. Make sure the pegboard is centered in the camera's field of view. Six pegs are placed on the left side of the pegboard. The peg transfer exercise requires you to lift the six objects with a grasper first in your non-dominant (i.e. left) hand and transfer the object midair to your dominant hand. Then, place each object on a peg on the right side of the board. There is no importance placed on the color of the objects or the order in which they are placed. Once all six pegs have been transferred, the process is reversed. Each peg is lifted using the dominant (i.e. right) hand from the right side of the pegboard, transferred midair to the left hand and placed on the pegs on the left side of the board.



Timing for this task begins when you grasp the first peg and ends upon release of the last peg. This exercise is timed and a penalty is assessed for any peg dropped out of the field of view. This exercise tests eye-hand coordination, ambidexterity and depth perception.

Task Two: Precision Cutting

Equipment: One Maryland grasper, one scissors, large clip, 4X4 gauze piece

Approximate Time Limit: 300 seconds

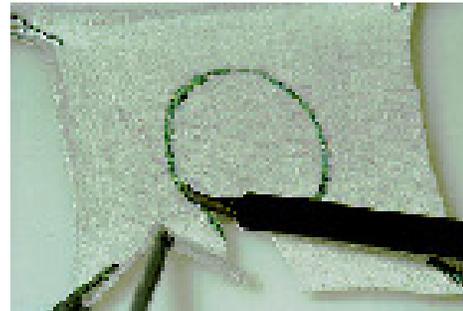
Proficiency Time: 1 minute 38 seconds

Place the large white clip on the Velcro strip at the top of marked square on the floor of the trainer box. Place the 4X4 gauze piece with the circle pattern face up so that the open edge of the gauze is secured in the clip. Use the small roped alligator clips to secure the bottom two corners of the gauze to keep the gauze taught and slightly suspended. This cutting exercise requires you to cut out a circle from a square piece of gauze suspended between clips. One hand should be used to provide traction



on the gauze using the grasper and to place the gauze at the best possible angle to the cutting hand. If you wish, you may exchange instruments at any time during this task.

Timing starts when the gauze is grasped and ends upon completion of cutting the marked circle. This exercise is timed and a penalty is assessed for any deviation from the line demarcating the circle. There are 2 layers of gauze, but the error scoring is based on the marked, top layer only. This exercise requires you to use both hands in a complimentary manner, using one hand to resent the other hand in the best possible way for the other hand to cut.



Task Three: Placement and Securing of Ligating Loop

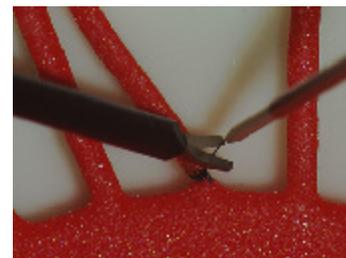
Equipment: Two graspers (choice of Maryland grasper or grasper with locked/ratcheted handle), one scissors, one large clip, one pre-tied ligating loop or endoloop, one foam appendage.

Approximate Time Limit: 180 seconds

Proficiency Time: 53 seconds

Place the clip on the Velcro strip in the center of the squared marked on the floor of the box ensuing it's in the center of the camera's field of view.

Place the foam appendage in the clip so that the appendages are free. In this task you are required to place a pre-tied ligating loop or endoloop around a tubular foam appendage on the provided mark. Once you have positioned the endoloop properly, break off the end of the plastic pusher at the scored mark on the outside of the box. Then secure the knot on the mark near the base of the foam appendage by sliding the pusher rod down. A penalty will be assessed if the knot is not secure and for any distance that the tie misses the mark.



Timing begins when instruments are visible on the monitor and ends when the ligating loop thread is cut. This task tests familiarity with the endoloop and requires bimanual skills. This skill can be used in the operating room for ligation of the appendix at its base or for securing a dilated cystic duct, for example.

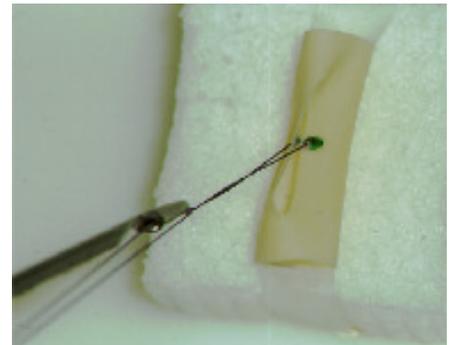
Task Four: Simple Suture with Extracorporeal Knot

Equipment: Two needle drivers (or choice of one needle drive and one grasper), one knot pusher, one suture of 120cm length, one scissors, one penrose drain

Approximate Time Limit: 420 seconds

Proficiency Time: 2 minutes 16 seconds

This suturing task requires you to place a simple stitch through two marks in a longitudinally slit Penrose drain. You are then required to tie the suture extra corporeally, using a knot-pushing device to slide the knot down. You must tie the knot tightly enough to close the slit in the drain. Be careful not to avulse the drain off the foam block. At least three square throws are required to ensure that the knot will not slip under tension. Please watch the FLS CD-ROM disc No. 2 for an illustration of how to properly tie these knots.



Timing begins when instruments visible on monitor and ends when suture material and needle are cut. This task tests accuracy of placement of the suture and knot tying skills. It requires ambidexterity and depth perception.

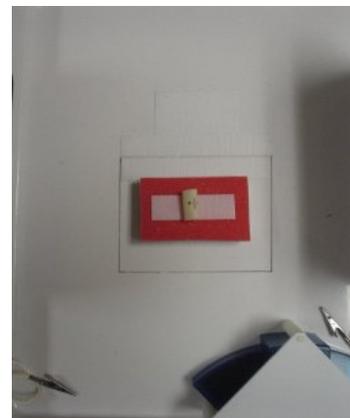
Task Five: Simple Suture with Intracorporeal Knot

Equipment: Two needle drivers (or choice of one needle drive and one grasper), one suture of 12 cm length, one scissors, one foam dexterity block, one penrose drain

Approximate Time Limit: 600 seconds

Proficiency Time: 1 minute 52 seconds

This suturing task requires you to place a suture precisely through two marks on a Penrose drain, that has been slit along its long axis. You are then required to tie the knot using an intracorporeal knot. You must place at least three throws that must include one double throw and two single throws on the suture. You must also ensure the knots are square and won't slip. Please watch the FLS CD-ROM disc two for an illustration of how to properly tie these knots.



Skills required include proper placement of the needle in the needle-holder, needle transferring, suturing skills and knot tying. A penalty is applied for any deviation of the needle from the marks, for any gap in the longitudinal slit in the drain and for a knot that slips when tension is applied to it. If the drain is avulsed from the block to which it is secured by double-sided adhesive tape, a score of zero will be applied.

Timing begins when the instruments are visible on the monitor and ends when the suture material and needle are cut. This is a more complex task incorporating several skills including depth perception, eye-hand coordination, ambidexterity, and transferring skills.

