Use of the F.A.S.T. (Fundamentals of Arthroscopic Surgery Training) Program to Improve Arthroscopic Skills

E. Barry McDonough M.D., Kevin Shepet M.D., and George Bal M.D.
Department of Orthopaedics, West Virginia University

INTRODUCTION
Arthroscopy of the knee is one of the most common procedures performed by Orthopaedic surgeons. Learning proper technical and psychomotor skills is paramount in resident education.

A variety of methods, including the use of dry models, cadaveric specimens, and virtual reality simulators have been developed to teach these skills. Each method has its own advantages and disadvantages. These issues, coupled with several other factors, including restricted resident work hours and increased economic constraints, impede safe and efficient arthroscopic skills acquisition. The Fundamentals of Arthroscopic Surgery Training (F.A.S.T.) Program was developed as a collaborative effort of A.A.N.A., A.A.O.S., and A.B.O.S. in 2011 to help orthopaedic residents develop basic arthroscopic skills in a sequential manner.

The F.A.S.T. program requires relatively small space and the low cost compared to some of the expensive virtual reality simulators or the cost of cadaveric specimen utilization.

HYPOTHESIS
Utilization of the F.A.S.T. program will improve the ability of residents to more efficiently perform a diagnostic knee arthroscopy. This project aims to demonstrate that the F.A.S.T. program will provide an effective, efficient and practical training alternative that translates into improved arthroscopic motor skills.

METHODS
• N =12 residents divided into two groups (Control, N=6 and Test Group, N=6)

• The control and test groups both completed a baseline diagnostic knee arthroscopy on a human cadaveric specimen. Their performance was evaluated using Arthroscopic Surgical Skill Evaluation Tool (A.S.S.E.T).

• After completing the baseline cadaver-based arthroscopy, those in the test group then participated in the Fundamentals of Arthroscopic Surgery Training (F.A.S.T) Program. This was a done once a week, lasting for 3 months total.

• After 3 months of participation in the F.A.S.T program, those in the test group were then reevaluated by performing a diagnostic cadaver knee arthroscopy in a similar fashion as the baseline test. One final retest was performed at 6 months following baseline testing.

RESULTS
• No difference between baseline A.S.S.E.T scores between control and test groups (p=0.39)

• Control group had significant improvement in fastest time to completion (baseline vs. 3-month follow-up) in vertical peg transfer (p=0.03), horizontal peg transfer (p=0.04), and probe and touch (p=0.003) F.A.S.T tasks. There was no significant change in the maze task (p=0.48).

• Those in the test group showed significant improvement on follow-up cadaver-based arthroscopy A.S.S.E.T testing (p=0.02) and total time to completion (p=0.04) at 3-month follow-up compared to their baseline performance.

• At 6-month retesting using the cadaver model those in the test group showed sustained improvement with A.S.S.E.T (p=0.04) and time to completion (p=0.05) compared to their baseline testing.

<table>
<thead>
<tr>
<th>Task</th>
<th>Baseline Group Avg. Time (secs)</th>
<th>3 mo. f/u Avg. Time (secs)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Peg</td>
<td>122</td>
<td>90</td>
<td>0.04</td>
</tr>
<tr>
<td>Horizontal Peg</td>
<td>201</td>
<td>11</td>
<td>0.03</td>
</tr>
<tr>
<td>Probe and Touch</td>
<td>98</td>
<td>82</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Table 1: F.A.S.T task results: test group baseline vs. 3-month follow-up testing

CONCLUSION
The utilization of the F.A.S.T. Program, in addition to a traditional Sports Medicine rotation, demonstrated an improvement and retention of the skills necessary to perform a diagnostic knee arthroscopy.

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