



# DEVELOPING ACTIVITY BASED NON-TECHICAL SKILLS EDUCATION MODULE FOR SURGEONS: UROLOGY SAMPLE

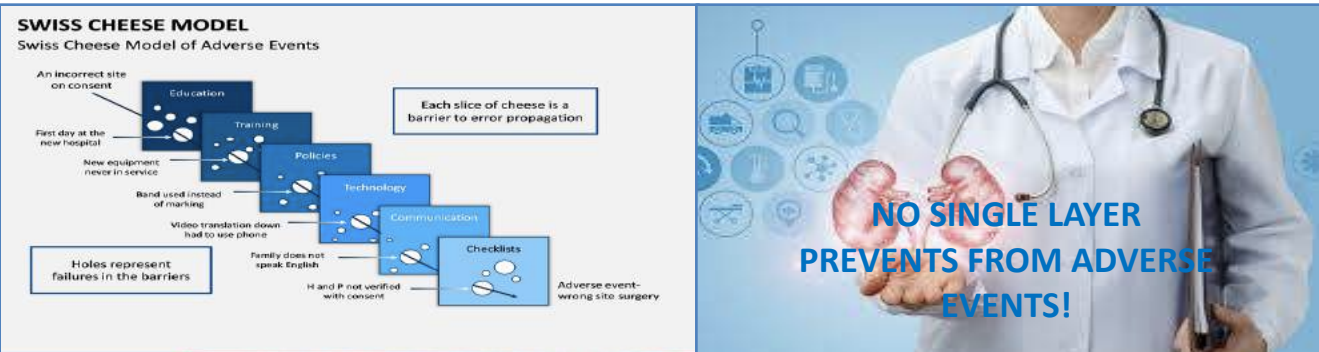


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## Introduction

The success of urologic surgeries may be related to the success of the surgeon's **technical skills** as well as **non-technical skills** such as managing the team, interpersonal skills, cognitive skills and the environment of the urologist. **Limited use of non-technical skills** can be the underlying cause of **adverse events** in urologic surgeries.

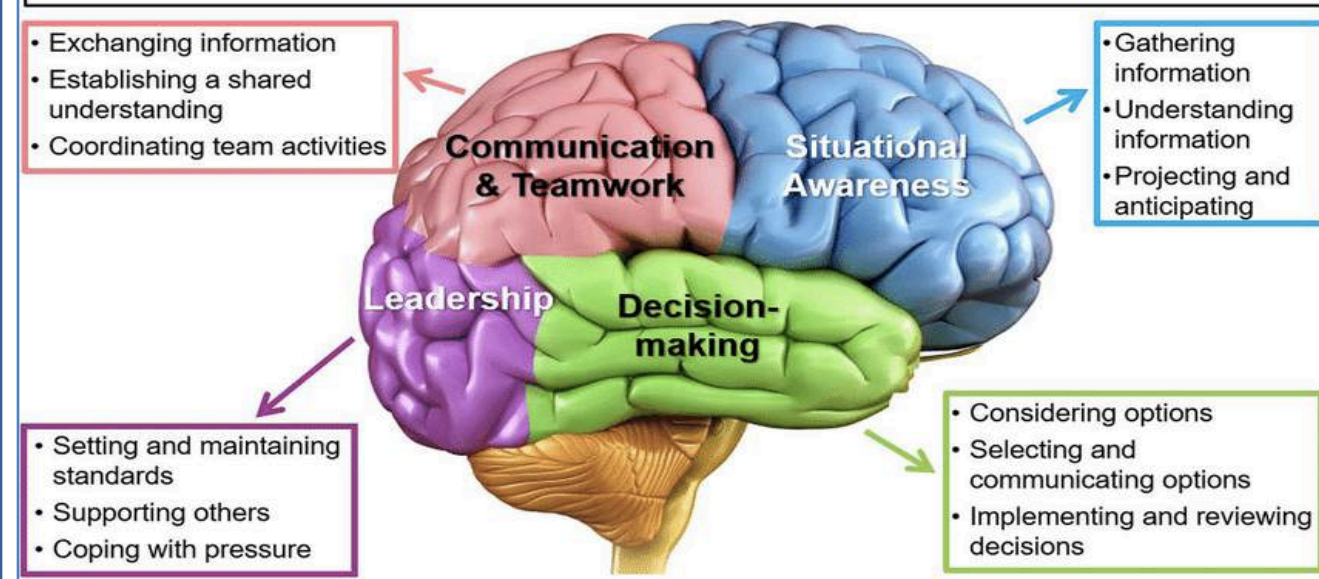


The **Swiss Cheese Model** of accident causation is a model used in **risk analysis** and **risk management** including aviation, safety, engineering and **healthcare**. Hazards are prevented from causing human losses by a series of barriers. Each barrier has unintended weaknesses, or holes like Swiss Cheese. **Non-technical skills** are one of the prevention layers for **human factors**. **Increasing non-technical skills** of surgeons may help to **decrease the adverse events** during surgery.

## Objectives

Urologists need to control their level of **stress, organization and management skills** during the surgery. But limited number of urology residents or urologists interested in these kind of non-technical skills which can increase the **patient safety, quality of the operation and technical skills proficiency** during surgery. Non-technical skills framework for surgeons has four principal categories: **situation awareness, decision-making, communication and teamwork, and leadership**

### The Non-Technical Skills for Surgeons (NOTSS) framework



The aim of our study is to **develop a new activity based non-technical skills education module for urologists** including theoretical and practical education for urologists and to **assess its effectiveness**.

## Materials and Methods

Content of the education module was designed for **simulation-based functional urologic surgery programme with 3D printing models under umbrella of EuroSOMT ERASMUS Project ([www.eurosomt.com](http://www.eurosomt.com))**



Figure 1: EuroSOMT 3D printed physical urologic surgery stimulators

## Activity Based Non-Technical Skills Education

The **course syllabus** was based on results of need analysis and activity-based mental health and management skills education additionally to **taxonomy of surgeons' non-technical skills**. For each category additional to **theoretical education group activities** were designed (Table 1).

Table 1: Examples of group activities

<b>Situation Awareness</b>	Perception, Comprehension and Projection with a rope
<b>Decision Making</b>	Who Is the Boss
<b>Task Management</b>	Task Has Done
<b>Teamwork/Communication</b>	Put the Hula Hoop Up
<b>Leadership</b>	Who is the Leader /Secret Leader

Totally **45 urology residents and urologists** attended **2-day training course** developed by an interdisciplinary team including psychologist, occupational therapist, physical therapist and drama therapist educated on mental health to **rise surgeons' awareness and use of non-technical skills during surgery on 3D printed physical urology stimulators**. The participants were assessed four times during various 3D printed physical urologic surgery stimulators by raters with **Non-Technical Skills for Surgeons Tool** before and after education to analyze the utility/validity and the reliability of the education. Participants **'satisfaction level, opinions and suggestions** were taken for continuous improvement.



## Results

All the participants declared that the education **improved their awareness on non-technical skills and their satisfaction from the education were high**. The **content of the discussions and the activity-based exercises were enjoyable**. **Majority of the participants** reported that they want to make some **behavioral changes during surgery**(Table 2).The **validity** coefficient value (0.81) and the **reliability** coefficient value (0.87) for the education were **good**.

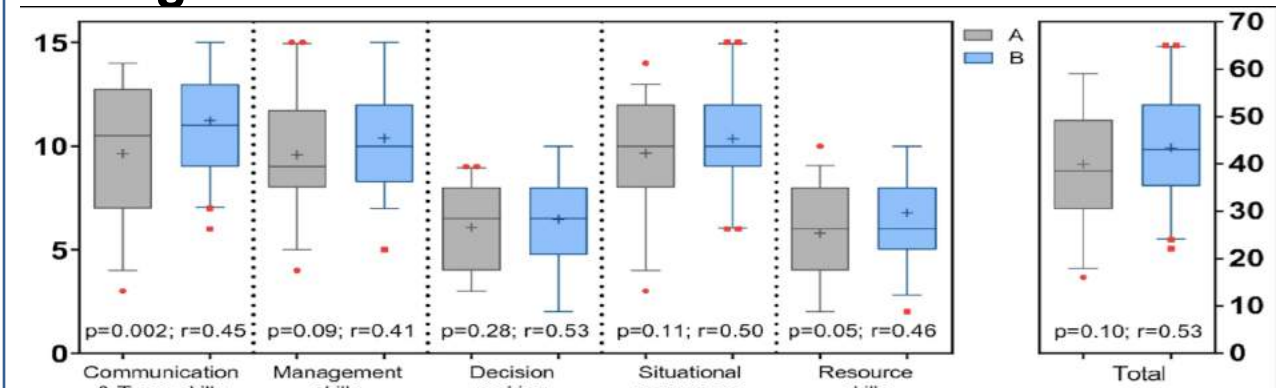


Table 2. Change in non-technical skills of the participants

## Discussion

When compared to previous educations **adding activity trainings** to non-technical skills education **increased the effectiveness of the education** in urologists and urology residents. The **heterogeneous participants** in terms of experience was our **limitation**.

## Conclusions

**Activity based non-technical skills education could increase the success of urologic surgery trainings and can be used to enhance the behavioral change and management skills of urology residents and urologists during surgery.**

### References

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