DSSH Dutch Society for Simulation in Heatlhcare

Medical Simulation

- Building foundations for patient safety-

9th Congress Dutch Society for Simulation in Healthcare 15 March 2017, UMC, Groningen, the Netherlands





DSSH 9th Congress Building foundations for patient safety

Dear colleagues and friends,

The 9th Annual Congress of the Dutch Society for Simulation and Healthcare will take place at the University Medical Centre Groningen (UMCG).

The UMCG was established in 2005 as a joint activity of the University of Groningen and the Academic Hospital Groningen (AZG). At present, the UMCG is one of the largest hospitals in the Netherlands and the largest employer in the Northern Netherlands. More than 10,000 employees provide patient care, are involved in medical education and perform cutting-edge scientific research focused on 'healthy and active ageing'.

Groningen is not only renowned for its successful modernization of academic education, but also its innovative approach to nursing studies, in-service training, courses and training programs for (para) medics and nursing staff. This is underlined by the presence of the hypermodern Wenckebach Skills Centre. This mini-hospital has its own operating theatre, an Intensive Care Unit and patient rooms. This allows caregivers with a variety of educational backgrounds and from various disciplines to learn and practice the latest operating techniques and treatment methods in a lifelike virtual environment. The Skill Centre facilitates team training as well.

Together this makes the UMCG certainly a suitable host of the 9th annual DSSH conference.

This year's theme of the conference is "Building Foundations for Patient Safety"

New theories and scientific research about simulation-based education, serious gaming and CRM training have been developed, evaluated and implemented in training programs in the last decades. Now, the time has come to translate all these efforts into sustainable improvement of patient safety- building widely accessible foundations for the future.

Therefore, we would like to invite professionals involved in healthcare to present their research and visions, to network and to become actively involved: nurses, midwives, engineers, psychologists, designers, developers, physicians, human factor managers, healthcare managers, insurances, government and the industry.

The exhibition hall allows attendees to interact with developers, the industry, experts in the field and friends. In the afternoon, a meet and greet has been organized to ask questions to key opinion leaders about research, scientific writing, simulation and serious gaming in daily practice. The congress is in Dutch; however all presentations and workshops will be supported by English slides but some international presenters may present in English.

So, are you actively involved in building foundations for patient safety? Do you evaluate the impact of fidelity of simulators or serious games on skills acquisition and patient outcomes? What about issues such as team performances, curriculum design, quality outcomes, costs and implementation of simulation or serious gaming in daily training programs? Do you train, assess or debrief using any type of simulation or serious games? Are you active in E-health? Then, do not miss the DSSH congress in Groningen, March 15th 2017.

We hope to meet you soon in Groningen and increase our network!

Joya M. Smit & Esther Barsom, congress presidents In cooperation with Albert-Jan Klein-Ikkink, UMCG

Isabelle Van Herzeele, MD, PhD, president DSSH



President

I. (Isabelle) Van Herzeele. MD PhD Vascular Surgeon | Ghent University Hospital, Ghent, Belgium isabelle.vanherzeele@ugent.be

Treasurer

W.M. (Willem) Brinkman. MD PhD Urologist in training | Erasmus University Medical Centre, the Netherlands wmbrinkman@gmail.com

Secretarv

C. (Carla) de Jong Secretary of the Medical Board | St. Anna Hospital Geldrop, the Netherlands secretariaat@dssh.nl

Board Members

F.Z. (Esther) Barsom, MD PhD-candidate dep. of Surgery | Academic Medical Centre, the Netherlands e.z.barsom@amc.nl

M.E.W. (Marv) Dankbaar. PhD Program manager e-learning | Erasmus University Medical Centre, the Netherlands m.dankbaar@erasmusmc.nl

L.M (Lex) van Loon Teacher Technical Medicine | University Twente, PhD candidate, Radboud University Medical Centre l.m.vanloon@utwente.nl

J.M. (Joya) Smit, MSc Lecturer and Researcher | Research Group Nursing Diagnostics School of Nursing Hanze University of Applied Sciences, Groningen, the Netherlands j.m.smit@pl.hanze.nl

U. (Uli) Strauch. MD PhD Anesthesioloog-intensivist | Maastricht UMC Directeur simulatiecentrum Maastricht UMC u.strauch@mumc.nl

G.J.M. (Gabrielle) Tuijthof, PhD Lector Smart Devices | Zuyd Hogeschool, the Netherlands aimtuiithof@amail.com



The Dutch Society for Simulation in Healthcare

The Dutch Society for Simulation in Healthcare - DSSH- was founded in June 2007 and aims to:

Support the development and implementation of Simulation and 'Serious Gaming' in Healthcare: and improve evidence-based education, team training, guality in healthcare and ultimately patient safety.

The Society aims to achieve this goal by:

- Facilitating, exchanging and improving the use of simulation technology and its appropriate application in Belgium and the Netherlands and with the affiliated foreign Societies (networking function).
- Development and promotion of standards for evidence-based simulation training in healthcare and its associated research trough the Society's Commission activities, newsletters and annual Congress.
- Supporting a global Dutch network for, by and trough all professionals involved with Simulation and 'Serious Gaming' in Healthcare.



@DutchSimulation



Dutch Society for Simulation in Healthcare



Dutch Society for Simulation in Healthcare



www.dssh.nl/en

DSSH DSSH Committees

DSSH Quality Label

To accomplish this goal, the DSSH has four committees:

Committee on Serious Gaming:

To promote and facilitate initiatives contributing to a thoughtful and safe implementation of Serious Gaming in Healthcare. We facilitate collaboration between game developers, ICT professionals, educationalists and medical professionals by implementing the 'Quality Label for serious games' in the medical domain. With this label, we want to stimulate transparency in the design process and the efficacy of games. For more information on how to apply for the quality label, please visit the DSSH Website www.dssh.nl/qualitylabel.

Chair: Dr. M.E.W. (Mary) Dankbaar; m.dankbaar@erasmusmc.nl

Committee on Education and Accreditation:

To promote and facilitate the quality of medical teaching and education within the DSSH, and to offer a platform for educational activities and improve the collaboration between various professionals and professions involved in educational activities including any type of simulation-based education.

In addition, to promote and facilitate (inter-) disciplinary standards for accreditation, standardization and certification for professionals in Healthcare. To stimulate scientific activities and establish collaboration between various professionals and professions involved in accreditation and standardization for medical simulation

Chair: Dr. U. (Uli) Strauch; u.strauch@mumc.nl

Committee on Scientific Research:

To promote and facilitate research activities within DSSH. To establish a network between various professionals and professions active in research focusing on the use and implementation of medical simulation in daily practice.

Chair: Dr. ir. G.J.M. (Gabrielle) Tuijthof; gjmtuijthof@gmail.com

Financial committee:

The commission examines the balance of income and expenses and reports the findings during the General Assembly at the annual congress of the DSSH.

Chair: Dr. A. (Anique) Bellos-Grob; a.t.m.bellos-grob@utwente.nl

Quality Label for Serious Games in Medicine

We have seen a rapid surge in newly developed serious games in medicine. Although we wholeheartedly encourage this development, we fear the risk of loosing overview on the quality and safety of the individual games. This threatens their implementation in medical training and patient care programs and will ultimately threaten future investments and funding. Therefore, the DSSH has instigated the Quality Label for Serious Games in Medicine, through which owners / developers of serious games can show the world that their serious game is a valid and responsible product, according to current scientific and legal standards. The extent to which these requirements are met, is judged using a scientifically based framework.



The framework for Quality Label has been described in : Graafland M, Dankbaar M, Mert A, Lagro J, De Wit-Zuurendonk L, Schuit S, Schaafstal A, Schijven M. How to Systematically Assess Serious Games Applied to Health Care. JMIR Serious Games 2014;2(2):e11 DOI: 10.2196/games.3825

The DSSH welcomes and encourages new input!

Not only physicians or medical students but all healthcare professionals (e.g. nurse practitioners, physician assistants, obstetricians, anesthesiology assistants and OR as- sistants...) are cordially and actively invited to join and participate within our Society. We are also looking for motivated soft- and hardware developers, game designers, ICT professionals who would like to work in close collaboration with medical professionals.

Are you interested to join the activities of one of these Committees? Please send an email to the DSSH board via secretariaat@dssh.nl





Session 2: Serious Gaming

Kiki Spanjers

11.45-11.55

Rode zaal

Moderator A. Schaafstal & L. van Loon A serious game for medical students, the effect on skills, attitude

and motivaton to learn; a student-blinded 3-arm RCT

The conference program consists of a main program which takes place in the 'Rode zaal'. During some main sessions, a parallel program is available consisting of workshops or tours to the Skills lab. These parallel sessions can be found after the main program. Notice that you need to sign up to participate.

Registration & Congress opening Registration & coffee

09.00-09.30 Entry hall	Registration & coffee	11.55-12.05 Rode zaal	BLS training for high school students using an immersive real-life 360 degree VR scenario game
09.30-09.35 Rode zaal	Congress opening Joya Smit & Esther Barsom, Congress presidents	12.05-12.15	Ruben Duijm Eye tracking, a new technique for research in simulation
09.35-09.50 Rode zaal	Welcome in Groningen Prof. Dr. J. Tulleken	Rode zaal	Ellen Kok, Anneke van der Niet
	Session 1: Crew Resource Management Moderators E. de Loos & U. Strauch	12.15-12.45 Rode zaal	Ceremony quality label Moderator M. Dankbaar
09.50-10:00 Rode zaal	Cor Kalkman	12.45-13.45	Lunch & visiting expo
10.00-10.10	Closed-loop communication in the emergency department: from	13.15-13.45	General Assembly
Rode zaal	CRM-scenario training to daily practice <i>Majoline van den Broeke-Vos</i>		Keynote speaker Moderator II. Strauch
10.10-10.20 Rode zaal	Introduction of objective skill assessments in the surgical selection process <i>Bart Doven</i>	13.45-14.30 Rode zaal	Safety II Aproach Dr. P. Dieckman
10.20-10.30 Rode zaal	Company pitches Moderator W. Brinkman Keynote speaker Moderator E. Barsom	14.30-14.40 Rode zaal	Session 3: Simulation Moderator G. Tuijthof Does a PROficiency-based StePwise Endovascular Curricular Training (PROSPECT) program enhance performance in real life: a randomized controlled trial <i>Bart Doyen</i>
10.30-11.15 Rode zaal	The Surgical Black Box; you can only see it, when you get it Prof. dr. M. Schijven	14.40-14.50 Rode zaal	Navigational Forces in Elbow Arthroscopy: Assessment of Expert Thresholds Nick Hilgersom
11.15-11.45	Time to visit Expo and posters	14.50-15.00 Rode zaal	Objectifying Laparoscopic skills acquisition on the forcesense compared to OSATS and goals <i>Sem Hardon</i>

DSSH Congress Program



15.00-15.30 Rode zaal	Meet & Greet the experts Moderators I. van Herzeele & W. Brinkman Prof. D. Jaarsma, Prof. J. Van Looy, A. Schaafstal, Dr. H. Schreuder, Des d. J. Tullekoo	09.50-10.30 Lokaal 4	Workshop 1 Serious Games Moderator A. Mert E. Hoogendoorn
15.30-16.00	Coffee Break Time to visit Expo and posters	09.50-10.30 Skills lab	Workshop 2 CRM Moderator A. Klein-Ikkink Simulation training: from skills center to daily practice Drs. H. Delwig and Prof. Dr. J. Tulleken
16.00-16.45 Rode zaal	Keynote speaker Moderator M. Dankbaar Serious gaming: Is there proof in the pudding? How to assess the effectiveness of game-based interventions? <i>Prof. J. van Looy</i>	11.45-12.45 Lokaal 4	Workshop 3 CRM Moderators U. Strauch Reflection in debriefings, how to measure and influence it Dr. P. Dieckman
16.45-17.00 Rode zaal	Award session and closing remarks Joya Smit & Esther Barsom, Congress presidents	11.45-12.45 Skills lab	Interactive guided tour Skills Lab UMCG Q and A patient simulation skillslab tour AJ. Klein-Ikkink
17.00-18.00	Drinks and visiting expo	14.30-15.30 Lokaal 4	Workshop 4 Simulation/CRM Moderator Fit to be a Scenario Trainer, why do you think so?! Dr. P. Boendermaker
		14.30-15.30 Skills lab	Workshop 5 CRM Moderator Recognise CRM-aspects within Simulation Scenario Training <i>R. Sitepu-Clevering and M. Mulder</i>

Registration for the workshops and interactive guided tour will only be possible on site.

DSSH Keynote Speakers

DSSH Keynote Speakers



Jan Van Looy is assistant professor at the research group for media, innovation and communication technology (imec-mict), Ghent University, Belgium. There he and his team conduct user research into immersive media and digital gaming with a focus on quality of experience and (performance) outcomes. One major research track deals with the assessment of effectiveness of digital game-based learning (DGBL) in various contexts including formal and informal education, industry and health care. Current interests include brain correlates of flow experience, antecedents of DGBL effectiveness, player persistence and augmented reality in industry (www.mict.be/gaming).

Peter Dieckmann is work and organizational psychologist working with the Copenhagen Academy for Medical Education and Simulation (CAMES). Peter is working with simulation-based education since 1999 and since 2001 within health care. Peter is doing research on simulation and with simulation. His publications are covering simulation based training, patient safety and human error. Senior Editor of Advances in Simulation. Peter has developed and is running faculty development programmes. Peter is one of 12 invited inaugural fellows of the Academy of the Society for Simulation in Healthcare.





Marlies Schijven is a professor of surgery and holds the Chair on Simulation, Serious Gaming and Applied Mobile Healthcare and is a GI- surgeon at the Academic Medical Center, Amsterdam, the Netherlands. She is the program Leader e-Health of the Netherlands Federation of University Medical Centres (NFU) and president of the International Society for Wearable Technology in Healthcare - WATCH- Immediate Past-President of the Dutch Society for Simulation in Healthcare.

Professor Schijven researches the field of mHealth, Simulation and Serious Gaming. On 28th October 2013; she was the first surgeon livestreaming an abdominal operation to YouTube directly using GoogleGlass. She is program leader and EU lead researcher of the OR Black Box™ system.

Professor Schijven is known for her publications in the area of surgery (achalasia and reflux disease), m-health, e-health, wearable technology, medical education and simulation technology. She is an expert in the area of virtual reality medical simulation, serious gaming, validation studies and validation processes; processes; and guides many PhD residents on these topics.



WORKSHOP 1

E. Hoogendoorn

WORKSHOP 2 Simulation training: from skills center to daily practice Drs. Hans Delwig/ Prof. Dr. Jaap Tulleken

With our multidisciplinary simulation training we try to copy the daily intensive care practice as much as possible. The video assisted debriefing is mainly focused on CRM principles. We discuss the similarities with the work floor. But how do we achieve a transfer of this learning to the daily practice of the workplace?

WORKSHOP 3

Reflection in debriefings, how to measure and influence it. *Dr. P. Dieckman*

Interactive guided tour Skills Lab UMCG Q and A patient simulation skillslab tour.

Albert Jan Klein Ikkink, Trainer Interprofessional Care teams

Visit our fully equipped intensive care and anesthesia simulation rooms and get acquainted with simulation capabilities from low cost simulation till high fidelity simulators. Get in touch with our trainers and get familiar with the way they integrate simulation into educational curricula. Share your experiences, questions and answers with colleagues from throughout the country.



WORKSHOP 4 Fit to be a Scenario Trainer, why do you think so?! Dr. P. Boendermaker

Some people are very enthusiastic about Simulation Scenario Training (SST), with reason, and cannot wait to start. This eagerness is justified and engenders great initiatives with the best intentions.. sometimes notably successful and ground-breaking. However, sometimes someone, being a brilliant initiator, is not a talented SST-trainer! What are the characteristics of a good SST trainer and how do you identify the 'potential'..'? That's the 'work' we do in this 'work'shop!

WORKSHOP 5

Recognise CRM-Aspects within Simulation Scenario Training Roelie Sitepu-Clevering, intensive care nurse, trainer patient simulation Mark Mulder, teacher subsequent nurse education intensive care

During this workshop we will search for CRM-aspects during a simulation scenario training through the use of a video demonstration.





Introduction of objective skill assessments in the surgical selection process

B. Doyen, H. Maertens, A. Vanlander, H. Schreuder, P. Pattyn, I. Van Herzeele

Background: Currently, candidates applying for a training post in surgical disciplines are mainly selected on criteria focusing on knowledge and personality. These may not objectively evaluate aptitude nor predict future performance, which is important to select the most promising candidates and reduce trainee drop-outs. A prospective study (EC B670201628799) has been initiated to evaluate the addition of a modern, more objective selection process, which may identify candidates who will become proficient surgeons and reduce the number of trainee drop-outs.

Methods: All applicants for a surgical discipline at Ghent University Hospital were invited to participate and had the opportunity to independently practice with box-trainers at the local skills lab prior to the selection. Participant demographics and experience were collected using a questionnaire. Cognitive skills assessment (10 pts.) was based on 10 MCQ questions after a comprehensive reading exercise of a scientific article. Open technical skills were scored during suturing- and one-hand knot tying exercises by two examiners using an OSATS-derived rating scale (20 pts.). Participants also completed three exercises on the Simendo VR simulator. Their minimally-invasive technical skills were assessed (40 pts.) with validated simulator-generated metrics. A combined score for knowledge and technical skills on 15 points was merged with the traditional scores for portfolio (social and scientific achievements), med school grades and internships (20pts. each) and faculty interview (25pts.) to obtain a total ranking score on 100 points. Statistical analysis was performed using non-parametric testing.

Results: In October 2016, 51 out of 54 candidates applying for at least one surgical discipline (Number of applications: General surgery: 25 - Orthopedics: 15 - Urology: 12 - Plastic surgery:ti 14) signed informed consent and were evaluated on the same day. Combined assessment scores ranged from 5,5 - 12,7/15 (median 9,2; IQR: 8,3 – 10,8). Assessment scores were not significantly affected by gender, previous practice on box-trainers or playing an instrument and/or videogames. Candidates with experience with VR laparoscopy simulators obtained significantly higher minimally invasive - and combined scores (Median: 25,5 Vs. 17,5, P= 0,010 and median: 10,9 Vs 9,25, P=0,025 respectively).



DSSH Abstracts

Conclusions: A modern, objective evaluation of cognitive and technical skills has been designed and included in the current surgical selection system. This pilot study has shown that it is feasible to modernize the selection process, which is regarded as an objective and valuable assessment tool. A prospective registry has been initiated to study the impact of this selection process on trainees' drop-out rates and the predictive value of this assessment for future surgeon proficiency.





Does a PROficiency-based StePwise Endovascular Curricular Training (PROSPECT) program

B. Doyen, H. Maertens, F. Vermassen, N. Moreels, I. Van Herzeele

Background: Evolution in vascular surgery requires optimization of skills training to provide effective and safe patient care. The aim of this study (EC: B670201318542) is to evaluate the impact of a Proficiency-based Stepwise endovascular Curricular training (PROSPECT) program to learn basic endovascular skills and to assess transferability of these skills to real life interventions in a hybrid angiosuite.

Methods: After performing baseline knowledge and technical skills tests 32 surgical trainees were randomized into three groups stratified according to level of experience. The first group (N=11) received e-learning and simulation training according to the PROSPECT program. The second group (N=10 only had access to e-learning, whilst the controls (N=11) did not receive any additional training. Subsequently, all subjects performed two endovascular interventions treating symptomatic iliac and/or superficial femoral artery stenosis on real patients under supervision. Assessments were carried out using OSATS derived Global Rating Score (GRS) and Examiner Checklist. Operative metrics, performances and patient outcomes were compared between all groups; adjusted for case difficulty and trainees' clinical experience. Secondary outcomes included improved knowledge and technical performance in the intervention groups 6 weeks and 3 months after completing training, assessed by pre-post- test design.

Results: Fifty-eight endovascular procedures were performed on fifty-five patients. No differences in trainees' baseline variables were found between the three groups. The trainees required on average 517mins (range 280-830, SD 156) completing e-learning and 256mins (range 118- 900, SD 252) performing simulation sessions to achieve competency.

Trainees who completed PROSPECT showed superior technical performance with significantly less supervisor takeovers during life procedures compared to trainees receiving only e-learning or traditional education. The supervisor felt significantly more confident in allowing trainees to perform both non-complex and complex endovascular procedures after simulation training (P=0.006).



Procedural parameters, intraoperative (dissections, perforations) and postoperative complications (haemorrhage, infection, restenosis, amputation, bypass surgery) were not significantly different at 30 days. Although the acquired technical skills decrease over time, expert levels seem to be maintained up to 3 months after program completion.

Conclusion: Trainees who had access to PROSPECT performed better during non-complex endovascular interventions in the hybrid angiosuite in comparison to trainees who received only e-learning or solely traditional education. Significantly more supervisor takeovers in the non-simulation groups were noted to avoid complications. Based on this study every trainee should have the opportunity to learn knowledge and technical endovascular skills at their own pace prior to treat real patients to provide safe and high quality surgical care.



Een greep uit ons high-end assortiment: de laparoscopie-simulator LapSim, de Heartworks Simulator voor TTE/TEE, de Scantrainer voor het aanleren van echoscopie vaardigheden en het SimCapture Video Recording- en Debriefing Systeem.

Meer informatie over Skills Meducation en ons assortiment vindt u op www.skills-meducation. Neem voor een vrijblijvende demonstratie contact met ons op via info@skills-meducation.nl



BLS training for high school students using an immersive real-life 360 degree VR scenario game

R. Duijm, E. Barsom, L. Dusseljee-Peute, E. Landman-van der Boom, E. van Lieshout, M. Jaspers, M. Schijven

Background: In Europe, 275.000 out of hospital cardiac arrests are treated annually, therefore it is important that basic life support is performed by competent persons. With this in mind, an immersive real-life 360 degree video scenario game was developed in order to train people how to perform BLS.

Objective: The aim of the pilot study was to identify and explain differences in BLS competence between student users of a standard course with a regular 2D video embedded in the online BLS course and student users of the same online BLS course with the immersive real-life 360 degree video scenario game embedded.

Method: A randomized controlled trial with a pretest-posttest design was conducted among 40 students between the ages of 15 and 17. After the pretest, a learning course was started. For the control group (group 1) the learning course was the standard BLS course with embedded 2D video. For the intervention group (group 2) the learning course was the standard BLS course with estandard BLS course with embedded 2D video. For the intervention group (group 2) the learning course was the standard BLS course without the 2D video, but with an immersive real-life 360 degree video BLS-scenario game. A posttest was given to both groups to evaluate the differences in competences. Lastly, a questionnaire was given to map the participants' opinions on the usability, content and overall quality of the learning course.

Results: The pretest and posttest scores significantly differed with higher scores in intervention group (8.61% higher P = 0.02) compared to the control group . On the assignment of : Put the steps of the BLS protocol in the correct order, the score gain on the posttest was 29.29% higher than group 1. The results of the questionnaire show that the immersive real-life 360 degree video scenario game was experienced as less time consuming compared to the 2D videos. In addition, the questionnaire shows that the immersive real-life 360 degree video scenario game was more effective in explaining the steps and order of the BLS protocol compared to the videos.

Conclusions: To our knowledge, this is the first study evaluating educational impact of 360 video in the medical domain. The use of an immersive real-life 360 degree video scenario games for BLS training has been proven to be a highly effective learning method for students between the ages of 15 and 17 years old. These results strengthen the legitimacy of using immersive real-life 360 degree video scenario games in educational settings.



Objectifying Laparoscopic skills acquisition on the forcesense compared to OSATS and goals.

S. Hardon

Background: A good way to reduce costs is to allow students to train efficiently in their own time. To ensure training is conducted efficient outside the influence of their tutor, alternative measurement and assessment systems should be integrated in the training boxes to track performance.

Objective: To validate a new objectively measurement tool (ForceSense, MediShield B.V., Delft, the Netherlands) within the ASC course by comparing the ForceSense outcomes with outcomes of the Objective Structured Assessment for Technical Skills (OSATS) and Global Operative Assessment for Laparoscopic Skills (GOALS).

Methods: Performances of 43 surgical residents were recorded with the Force-Sense system and compared with OSATS and GOALS. We investigated whether the ForceSense output has the potential to replace subjective assessment of surgeons. Participants were asked to take a pre-test at the beginning and a post-test at the end of the first training day. After six week of training at home, they performed follow-up test at the second training day. Within this study OSATS components representative for instrument handling, were compared by path length values from the ForceSense measurements. The OSATS components representative for tissue handling were compared by force parameter outcomes. ANOVA was used to compare the outcomes of pre-, post- and follow up-measurement for the force, path length (left and right), tissue handling and instrument handling outcomes.

Results: The pre- and posttest measurement results show a significant improvement in all parameter outcomes for the ForceSense and OSATS. Performances based on force penalties, path length and time increased significantly (p < 0,05) during the first training day. No further significant developments were observed after 6 weeks, except for deterioration in path length measurement (p = 0,005). No significant development of performances was detected either by analyzing OSATS outcomes for force and motion components.

Conclusion: The outcome of the experiment conducted during the ASC indicate that the ForceSense has the potential to score the technical skills of trainees during a laparoscopic course. Based on the outcomes of this study we investigate how the ForceSense system can be integrated in our new home training program.

Abstracts

Navigational Forces in Elbow Arthroscopy: Assessment of Expert Thresholds

N. Hilgersom

Background: With the rising number of elbow arthroscopies being performed nowadays a rise in complications is foreseen. To facilitate effective and efficient elbow arthroscopy training and ultimately prevent complications objective measures are a necessity. Elbow arthroscopy is a difficult surgical technique to master because of completely mirrored instrument handling when compared to other forms of arthroscopy. The purpose of this study was to determine expert threshold levels in magnitude and direction of navigational forces during elbow arthroscopy that can be used to provide objective feedback during training.

Methods: Two cadaveric elbows were mounted to a force measurement table that allowed 3-dimensional force measurements. Five experts in elbow arthroscopy participated. All performed inspection of the posterior, anterolateral and anterior compartment in both specimens, with visualization of three to four anatomic landmarks per compartment, representing a complete elbow inspection. The magnitude (Fabs) and direction of the force were recorded, with the direction defined as a being the angle in the horizontal plane and β being the angle in the vertical plane. For Fabs, g and B median, minimum and maximum were determined per compartment and per cadaver.

Results: The median Fabs ranged between 24N-29N for all three compartments. The median alfa was 4°. -23° and -29° for the anterior, posterolateral and posterior compartment, respectively. The median B ranged between -71° and -76° for all three compartments.

Conlusion: Expert thresholds for force magnitude and force direction in elbow arthroscopy were determined. The median force magnitude is a six- to tenfold greater than that in knee or wrist arthroscopy. The defined maximum allowable navigation force of 30-33N (90th percentile) and the force direction area defined by the 10th-90th percentiles of expert thresholds for α and β can be used to provide objective feedback on instrument handling during elbow arthroscopy training.



Abstracts

E. Kok. A. van der Niet

In medicine, a lot of information is provided visually. Visual information plays a crucial role in, for example, monitoring a patient, interpreting a radiograph or executing an endoscopy. However, there is limited knowledge on how this visual information is used by clinicians and how we could thus teach this to novices. Thus, research is needed to understand how visual aspects of learning in medicine should be taught. In this presentation we discuss the possibilities and limitations of eve tracking.

Eve tracking is a technique to investigate visual perception. It measures the movements of the eyes to see what a person is looking at, for how long and in which order. This allows us to investigate visual processes, which are often difficult to verbalize or to observe otherwise. In medical education research, two types of eve trackers are commonly used: Remote eve-trackers measure viewing behavior on a screen, for example to investigate serious games or chest radiograph interpretation. Mobile eve trackers look like glasses that can be worn during work in daily practice, so viewing behavior in dynamic environments can be tracked. In this presentation we provide examples of using eye tracking in a simulation environment. In addition, we discuss limitations and the use of eve tracking in combination with other research methods. Together, this gives an overview of how eye tracking can contribute to understanding the complexity of simulation-based education.



The effect of a serious game as educational tool for medicine students on their skills, attitude and motivation to learn. *K. Spanjers*

Yearly 100,000 patients in Dutch hospitals experience delirium, an acute state of confusion. Good diagnostics followed by adjusted acting are crucial for the treatment. Delirium is often detected late and treated inadequately. The Delirium Experience, a simulation-based serious game, is developed to educate healthcare professionals in caring for delirious patients. This research aims at the effects of the Delirium Experience on the skills, attitude and motivation to learn.

3rd year Bachelor medicine students could, after attending the lecture and patient interview, register voluntarily for the delirium practical and be included in this study. A randomisation list was created with SPSS, that divided students in one of the three research groups: (1) control group: video of Aubrey Grey about ageing, (2) intervention I group: video with explanation on delirium and patient experience, (3) intervention II group: serious game Delirium Experience.

After 20 minutes of control or intervention condition, a patient interview of a delirious patient with corresponding assignments was used to measure skills. Students were asked to give three recommendations for effective delirium care for the interviewed patient and fill in the Delirium Observation Screening Scale and Delirium Rating Scale. Attitude was measured with the Delirium Attitude Scale. Motivation to learn was measured with the Motivation and Evaluation questionnaire. Results were analyzed with the use of a one-way ANOVA, and in the case of significant results a pairwise post hoc comparison was conducted.

Data is already collected and the results will be presented during the congress.



Closed-loop communication in the emergency department: from CRM-scenario training to daily practice M. van den Broeke-Vos

Background: Most preventable errors in health care (70%) are due to human errors in communication including communication errors during application of medication. An important aspect of effective communication is closed-loop communication (CLC): the message is received, understood and feedback is given. The emergency department (ED) staff (nurses and doctors) of our hospital is being trained according to the Critical Resource Management (CRM) principles on a frequent basis for several years. During these training the importance of good communication including CLC is emphasized. Although CRM training improves overall team performance, it is not known if this improves communication in clinical practice.

Study objective: To register the effect of the CRM-scenario training concerning communication in the application of medication in the ED.

Methods: A prospective observational pilot study in the ED of a tertiary hospital. In a 3 month period, medication orders of non-trauma patients were observed by a single observer. The four steps of CLC were registered on an observational checklist. Communication was divided in good or bad communication determined by the use of CLC. Possible influential factors on the communication were reported.

Results: 201 medication orders were scored. In only 12 (6%) the closed loop circle was completed. In 122 (61%) there was bad communication resulting in suboptimal care in 13 patients (11%) (8 orders with time delay and 5 orders where administration was omitted). With increasing numbers of checks, medication orders were more often administered correctly (p = 0.001).

Limitations: This study was a single center pilot study with one observer. The sample size is relatively small so other confounders may have been missed or statistical significance may not have been reached.

Conlusion: Despite frequent CRM team training this study shows that communication in medication administration was suboptimal in the majority of patients leading to suboptimal care and a potential source of error. The question how we can actually change behavior in clinical practice after a Simulation CRM remains to be elucidated. provide objective feedback on instrument handling during elbow arthroscopy training.







DSSH Expostion & Innovation Center



Innovation area and Exposition Center

Come and experience the latest developments. The DSSH offers young innovators / startups the opportunity to showcase and re ect on their ideas at the Innovation Center. The large Exposition provides a selection of simulation companies, serious and applied gaming companies and institutes / initiatives focusing on training the medical professional.

Sponsors













3D SYSTEMS

Congress information

Accreditation: Accreditation has been requested for medical practitioners with a Continuing Professional Development (CPD) obligation at ADAP (Accreditatie Bureau Algemene Nascholing), LVO. 6 Points have been appointed for ABAN and V&VN.

Registration: DSSH membership is not required to register. Only DSSH members who have paid their DSSH membership dues are eligible for registering at member rates for the Congress. You may register online* for the Congress via: http://www.dssh.nl/en/congress/congres-2017/

The Congress registration desk will be open 15th of March 2017 at 08:30 CET+1 for on-site registration and Congress badge pick-up.

Congress Registration Fees (catering included):

- € 15.- DSSH Student Members -must be able to show Student-ID at registration desk
- € 95.- DSSH Members Category Medical Residents and Paramedics
- € 155.- DSSH Members

DSSH

- $\in 40.$ non-DSSH Students -must be able to show Student-ID at registration desk
- € 185.- non-DSSH Members Category Medical Residents and Paramedics
- € 245.- non-DSSH Members

Not a DSSH Member? Something worth considering! Enjoy a substantial reduction on the registration fee, and many other bene ts for only \in 50.- per year (standard membership). Students may join the DSSH for only \in 20.- ! Visit our website htp://www.dssh.nl/en for more information

Congress Venue: University Medical Centre Groningen (UMCG), the Netherlands. Address: Hanzeplein 1 (9713 GZ) Groningen. You may visit the hospital website for directions: <u>http://www.dssh.nl/en/congress/congres-2017/</u>

Congress Agency: Congress & Meeting Services Holland Postal Box 957 5600 AZ Eindhoven NL Tel: +31 40 2132222 Email: info@congresservice.nl