11. NORDISKE BANDAGIST KONGRES
KØBENHAVN 6.-8. SEPTEMBER 2018

FORORD

Bestyrelsen i Danske Bandagister er rigtig glade for at kunne byde dig velkommen til den 11. Nordiske Bandagist kongres 2018.

Nordisk Kongres er det største arrangement i bandagist regi. Kongressen samler en stor del af Nordens bandagister, og forud for kongressen ligger et stort stykke forberedende arbejde med mange involverede. Gennem de seneste år er der blevet arbejdet målrettet hen imod at kunne afholde en interessant og inspirerende kongres, hvis indhold afspejler hverdagen og især fremtiden for vores fag i de forskellige nordiske lande.

Det betyder at kongressen igen i år indeholder en stor udstilling, med repræsentation af 33 forskellige leverandører til den ortopædi-tekniske branche. Af disse skal der gå en speciel tak til Össur Nordic og Camp Scandinavia, for at yde sponsorater der har været med til at højne kongressens faglige niveau.

Videnskabelig komite, med repræsentanter fra de nordiske lande, har derfor haft mulighed for at lave et interessant videnskabeligt program med nationale og internationale foredragsholdere.

Takket være dig er der ca. 500 deltagere til den 11. Nordiske Bandagist Kongres. I pauserne, under get together arrangementet og ved festmiddagen fredag aften vil der derfor være rig mulighed for at vedligeholde, og ikke mindst at skabe nye kontakter til udstillere, samarbejdspartnere og kolleger inden for denne branche.

Det er derfor både med glæde og stolthed at vi igen vil byde dig velkommen til nogle fantastiske dage rigt på fagligt og socialt indhold.

Med ønske om en rigtig god kongres

Toke Seir Novak
Formand, Danske Bandagister

PROGRAM

TORSDAG

H = Harlekin/Columbine (sal) T = Tivoli Congress Hall (sal)

8.00-10.00	**Registrering + udstilling åben**
10.00-10.15	**Velkomsttale ved Anders Tange, Formand videnskabelig komité** T
10.15-11.00	**Richard Jones, Professor:** Role of orthotic management in knee osteoarthritis T
11.15-12.00	**Peter Kolbye, PT:** The use of indego Exoskeleton H **Nicholas LeCursi:** Perspectives on stiffness, alignment and outcomes assessment for AFOs treating gait disfunction in individuals with neuromotor impairment T **Carsten Olsen, PT:** Mollii suit for children with CP H
12.00-13.00	**Frokost i udstillingen**
13.00-13.45	**Niels H. Søe, MD:** Den kirurgiske behandling af den fejlstillede hånd H **Ulla Hellstrand Tang, CPO, PhD:** The Diabetic Foot – assessments and assistive devices T
14.00-14.45	**Margareta Persson, OTR:** Functional splinting and proprioception - Theory and clinical praxis H **Jenny Utbult, CPO:** Behandling av fotsår med gångortos i glasfibergips T
14.45-15.30	**Kaffe/te i udstillingen**
15.30-16.15	**Marie Eriksson, CPO, PhD:** Att arbeta som ortopedingenjör och samtidigt forska, hur går det? H **Stefania Fatone, CPO, PhD:** The NU-FlexSIV socket: Development, Research and Dissemination T
16.30-17.15	**Cor Adriaanse, PT.:** Additives – important component in multidisciplinary neurorehabilitation (25 min) H **Anton Johannesonn, CPO, PhD:** Direct Socket for Trans-femoral amputees: for whom, how many are they and what are the requirements? T **Daniel Sabbagh, Dipl. Ing.:** Considering the Patient's Individual Normal Posture when Making the Negative Cast Helps Improve Orthosis Alignment and Symmetry of Gait (20 min) H
17.30-19.30	**Møder for de nordiske foreninger**
19.00	**Get together i udstillingen med et let traktement**

PROGRAM

FREDAG

H = Harlekin/Columbine (sal) T = Tivoli Congress Hall (sal)

9.00-9.45 **Nerrolyn Ramstrand, CPO, PhD & Saffran Möller, PT, MSc:** Can prostheses and orthoses reduce the demand on higher order cognitive processes during walking? T

9.45-10.30 **Kaffe/te i udstillingen**

10.30-11.15 **Stefania Fatone, CPO, PhD:** Informing Decisions about dysvascular partial foot amputation using a shared decision-making approach T
Malin Holmqvist, Supplychef: Digital teknik och Central produktion fördelar, utmaningar och lärdomar (25 min) H
Ane Simone, MD. PhD: Infertility and rate of Cancer in AIS patients, treated 25 years prior (15 min.) H

11.30-12.15 **David Rusaw, CPO, PhD:** Balance & Posture in prosthetic Users H
Martin Mathews, CO, M.Phil.: Dynamic Elastomeric Fabric Orthoses in the treatment of Neurophysiological T
David Rusaw, CPO, PhD: Practice Guidelines in O&P H

12.15-13.15 **Frokost i udstillingen**

13.15-14.00 **Jacob Boender, CPO:** Dynamic new proximal mass knee (PMK) for short-stump TF amputees (20 min) H
Karin Ros, CPO: Ehlers-Danlos Syndrom, behandling med Elements Body (30 min) T
Jan Drakander, CPO: Transtibial amputation och fördröjd sårläkning (25 min.) H
Tina Andersson:, CPO: CPUP formulär för OI (15 min.) T

14.15-15.00 **Nikors Sivarajah, Msc.:** Can 3D printing be used in an effective way to make individual insoles or parts of it with satisfactory properties? (20 min) H
Louise Mattson, CPO & Tina Andersson, CPO: Gånganalys med videovektor – Ett adekvat verktyg vid förskrivning av ortoser för gång. T
Simon Bergqvist, CPO: Korsettbehandling av Pectus Carinatum (20 min) H

15.00-15.45 **Kaffe/te i udstillingen**

15.45-16.30 **Jens Bo Nielsen, Professor:** Adaptation of muscle to inactivity T

19.00 **Festmiddag**

PROGRAM

LØRDAG

H = Harlekin/Columbine (sal) T = Tivoli Congress Hall (sal)

9.00-9.45	**Brian Lousdal, CPO:** Bandagist på Grønlandsekspedition Arctic Challenge T
9.45-10.15	**Kaffe/te i udstillingen**
10.15-11.00	**Nerrolyn Ramstrand, CPO PHD:** Clinical outcome measures to evaluate the effects of lower-limb orthotic management post-stroke H **Anders Sjögren, Assoc. Prof.:** Investigation of void content in composite orthoses by the use of x-ray microtomography (30 min) T **Åsa Maria Edlund, CPO:** Patienters uppfattning om D-Foot, ett webprogram vid fotundersökning av patienter med diabetes (15 min.) T
11.15-12.00	**Bengt Söderberg, CPO:** ISPO & WHO "P&O globally - now and in the future"?? T
12.00-12.15	**Afslutningstale ved Toke Seir Novak, Formand Danske Bandagister** T
12.15-13.15	**Frokost i udstillingen**

ABSTRAKTS

RICHARD JONES
PROF.

Torsdag 10.15-11.00
Tivoli Congress Hall (sal)

ROLE OF ORTHOTIC MANAGEMENT IN KNEE OSTEOARTHRITIS

Knee osteoarthritis (OA) is characterised by cartilage thinning and compositional changes, but also associated with changes in bone and other tissues. Unfortunately, at this current time there is no cure for this degenerative disease and incidence rates are increasing at an alarming rate. End-stage management of knee osteoarthritis is total knee replacement where outcomes vary by centres and countries. However, many individuals are either not suitable or do not want a knee replacement so conservative management is key for these individuals. Whilst physiotherapy is considered the best treatment, recent studies have shown they do not alter any biomechanical risk factors which have been proposed to increase progression of the disease. The primary biomechanical risk factors utilised are the sagittal and coronal plane joint moments and is where orthotic management is targeted towards reducing these. Orthotic management has been shown to have varying effects on these biomechanical risk factors and also clinical and structural factors in knee osteoarthritis. This talk will consider different orthotic management techniques (braces, sleeves, footwear, insoles) and where their role is currently and can be in the future treatment of knee osteoarthritis.

PETER KOLBYE
PT

Torsdag 11.15-12.00
Harlekin/Columbine (sal)

INDEGO EXOSKELETON

Independent-go is an exoskeleton allowing people who have suffered a major spinal cord injury to get up and walk around without the help of others.
Wheelchair users point out that the lacking ability to move around courses, dependency of others and lacking mobility have influenced their bodily function.
It is possible for the user of Indego to manage the exoskeleton independently and get up and walk around and thus counteract the dependency and some of the physical consequences.
Indego relies on the natural movement pattern making it easy to learn to use.
The team at Bandagist Jan Nielsen A / S has worked with Indego for 2½ years and will tell about the experiences they have gained in the work with the exoskeleton.

NICHOLAS LECURSI
CO

Torsdag 11.15-12.00

Tivoli Congress Hall (sal)

THE INFLUENCE OF AFO STIFFNESS AND ALIGNMENT ON GAIT FUNCTION OF INDIVIDUALS WITH NEUROMOTOR IMPAIRMENT

Some advanced orthotic ankle components deliver independently adjustable alignment, range of motion and stiffness. These components control mobilization of the ankle and help support the knee throughout the gait cycle. This program presents the orthotic design, clinical application and biomechanics of these advanced components used to treat patients with neuromotor impairment. Topics include optimization for ambulation over real terrain, and evaluation of the orthotic outcome.

CARSTEN OLSEN
PT

Torsdag 11.15-12.00
Harlekin/Columbine (sal)

MOLLII SUIT FOR CHILDREN WITH CP

Many neurological disorders are accompanied by spasticity. The spasticity and the side effects associated with the treatment of spasticity adversely affect the level of function. Mollii is a new method of reducing spasticity, but without the side effects that accompany the conventional treatment. Molii utilizes the body's own electrical circuitry to reduce spasticity. The principle is called reciprocal inhibition. Briefly it describes that the antagonist of the spastic muscle transmits an electrical pulse corresponding to the natural nerve signal. Reflectively, the antagonist sends a signal to the spastic muscle to relax. Thus, it will be possible voluntarily to activate the spastic muscle and the antagonist and thereby achieve a more natural movement pattern.
In this presentation we will demonstrate/illustrate the effects of Mollii and what experiences Jan Nielsen A/S has acquired with Mollii in the last 3 years.

NIELS SØE
MD

Torsdag 13.00-13.45
Harlekin/Columbine (sal)

DEN KIRURGISKE BEHANDLING AF DEN FEJLSTILLEDE HÅND

- Evaluation
- Occupational therapy (Mirror treatment)
- Botulinum toxin
- Evaluation
- Operation in agreement with the patients and there parents

Procedures:

- Greens transfer – balance the wrist (FCU to ECRL)
- M.pronator to supinator re-routing (supination)
- Proximal carpectomy and arthrodesis of the wrist
- M.extensor pollicis longus to m.abductor pollicis
- M.brachioradialis or m. palmaris longus to m.abductor pollicis – activating
- M. adductor pollicis gliding procedure

About 25 % of the children will respond positive to operative procedures.

ULLA HELLSTRAND TANG
CPO, PHD

Torsdag 13.00-13.45
Tivoli Congress Hall (sal)

THE DIABETIC FOOT– ASSESSMENTS AND ASSISTIVE DEVICES

Diabetic foot ulcers (DFU) are a serious complication in diabetes and the most common factor leading to lower extremity amputation. An annual foot check is recommended. However, there is a need to standardise the foot check routines. For those patients that have been identified as having a foot at risk, assistive devices, podiatry service and access to medical specialists should be offered.

The presentation focuses on health-care providers at departments of prosthetics and orthotics (DPO) and methods that accurately assess the risk of developing DFU are presented. Moreover, the effects of assistive devices (foot orthoses and shoes) have been evaluated.

The patients that were studied (n = 216) were all referred to a DPO. Clinical tests, surveys and in-shoe pressure measurements were used to assess the risk factors that were present in the studied group. Several risk factors were found to be present, e.g. foot deformities, calluses and neuropathy.

A valid and reliable eHealth tool, the D-Foot, which gives a DFU risk classification was constructed. The plantar peak pressure using foot orthoses (prefabricated and custom-made) inserted in normal walking shoes was approximately 200 kPa under the sole of the foot.

In conclusion, the D-Foot is recommended as a clinical tool to assess the risk of developing foot ulcers in diabetes.

MARGARETA PERSSON
OTR

Torsdag 14.00-14.45
Harlekin/Columbine (sal)

FUNCTIONAL SPLINTING AND PROPRIOCEPTION – THEORY AND CLINICAL PRAXIS

To ensure optimal functionality and patient compliance of custom made hand orthoses we ought to make a correct analysis of each patient's specific problems and needs. To counteract e.g. instability, spasticity or pain we need to know not only their present biomechanical condition, we also need to know how their proprioception works. Some ortotists and hand therapists seem to have a "given" feeling for what type of splint, lining, straps, etc. that match their patient. For others, this decision is a true challenge. Understanding of functional anatomy, muscle synergies and proprioception is basic knowledge that every splint maker ought to have for guidance in the choice of material, splint design and regime. Joints, muscles and skin are equipped with mechanoreceptors known to communicate with the muscles. The right type of touch of our splints can have an effect on cutaneous mechanoreceptors and stimulate oxytocin just like tactile massage can, and so help with relaxation, decrees experienced pain etc. High friction materials like silicon, tape and Fabrifoam can also have an effect on the muscles via the mechanoreceptors, but in opposite direction, muscle activity is stimulated.

Some available evidence and tips for the choice of material and design of orthotic devices will be presented.

JENNY UTBULT
CPO

Torsdag 14.00-14.45
Tivoli Congress Hall (sal)

BEHANDLING AV FOTSÅR MED GÅNGORTOS I GLASFIBERGIPS

Svårläkta sår på nedre extremiteten är vardagsmat på ortopedtekniska avdelningen. Patienter med fotsår behandlas traditionellt med gånggips, olika typer av prefabricerade och specialanpassade AFO, behandlingsskor med avlastande inlägg eller totalavlastande ortoser med bygel och PTB-tryck.
Fotsår hos patienter med cirkulationsrubbningar är ofta långvariga och svårläkta och ortoser och skor behöver anpassas till läkningsprocessen. Inte sällan har patienten själv en negativ inställning till behandlingsskor och ortoser, vilket påverkar användningen och därmed effekten negativt.
På Teamolmed SÖS har vi, i samarbete med sårcentrum på SÖS, sedan två år utvecklat en ortos i glasfibergips som tillverkas direkt på patienten och således blir en specialanpassad ortos- som är belastningsbar ca 3 timmar. Ortosen upplevs komfortabel och smidig av patientgruppen har bevisat att svårläkta sår kan läkas med rätt avlastning.
Jenny Utbult är verksamhetschef på SÖS där ortosen utvecklats, Louise Roser är leg. Ortopedingenjör som i sitt utvecklingsprogram på Teamolmed gjort en fördjupad studie på ett antal patienter som rehabiliterats med ortosen.

MARIE ERIKSSON
CPO, PHD

Torsdag 15.30-16.15
Harlekin/Columbine (sal)

ATT ARBETA SOM ORTOPEDINGENJÖR OCH SAMTIDIGT FORSKA, HUR GÅR DET?

Att arbeta som ortopedingenjör och samtidigt forska, hur går det att kombinera? I de nordiska länderna är det få ortopedingenjörer som har valt att ägna sig åt forskning. I en artikel från 2008 betonades vikten av forskning inom ortopedteknik gjorda av ortopedingenjörer istället för att förlita sig på andra professioner[1]. Vad ledde fram till beslutet att jag ville börja med forskning samtidigt som jag ville fortsätta vara kliniskt verksam som ortopedingenjör? Jag kommer att berätta om min tid som doktorand som ledde fram till min avhandling 2016, resultat från avhandlingens fyra delstudier kommer att presenteras[2]. Jag kommer även att presentera mitt nuvarande forskningsprojekt och preliminära resultat från detta. Hur kan vi öka intresset för att fler ortopedingenjörer vill ägna sig åt forskning? Att samtidigt arbeta som ortopedingenjör och ägna sig åt forskning går utmärkt att kombinera, men det finns utmaningar med detta vilket jag kommer att belysa.

1) Ramstrand N & Brodtkorb T-H. Prosth Orth Int 2008; 32(1):93-102.

2) Eriksson M. Walking, orthoses and health-related quality of life in children with arthrogryposis multiplex congenita. Karolinska Institutet 2016.

STEFANIA FATONE
CPO, PHD

Torsdag 15.30-16.15
Tivoli Congress Hall (sal)

THE NU-FLEXSIV SOCKET: DEVELOPMENT, RESEARCH AND DISSEMINATION

This presentation will provide an overview of development, research and dissemination about the Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket: a technique designed to provide a more comfortable socket for persons with transfemoral amputation. The NU-FlexSIV Socket has lower proximal trim lines that do not impinge on the pelvis; is flexible so muscles can move comfortably within the socket as they contract during activity and splay in sitting; and is held securely to the residual limb by vacuum pump suction. Research on the NU-FlexSIV technique began in 2009 and the technique was first taught to prosthetists in 2015, with clinical implementation quickly evident in many countries. Ongoing research and development efforts include a clinical trial to compare comfort and functional performance in the NU-FlexSIV Socket to the Ischial Containment Socket, as well as modifications to the technique to allow for a passive suction version of the socket.

COR ADRIAANSE
PT.

Torsdag 16.30-17.15
Harlekin/Columbine (sal)

ADDITIVES – IMPORTANT COMPONENT IN MULTIDISCIPLINARY NEUROREHABILITATION

In the coming years the number of neurological patients will dramatically increase. In particular in the ambulant neurorehabilitation aftercare a multidisciplinary approach is required, in which technicans, physicians and therapists as a team define the additives and find patient-specifically the best solution. Regional networks with specialists from different professions, can provide here with long-lasting effect for best care quality.
Neurorehabilitation is an extremely important future field of the orthopedics technology. The growing number of regional supply network underlines the need for specified knowledge for additivies in neurorehabilitation. How knowledge transfer and care quality resulting from it can work, is on the one hand known since over 10 years now and proved in theory and practise (Graham et al., 2006), on the other hand the „Evidence Knowledge of Gap shows" the sluggishness of the system (Elliott et al., 2014). Hence, it is absolutely necessary that for a very good medical, therapeutic and orthopedics-technical care the relevant professional guilds work with each other on eye level

Elliott JH, Turner T, Clavisi O, Thomas J, Higgins JPT, Mavergames C, Gruen RL (2014): Living Systematic Reviews: An Emerging Opportunity to Narrow the Evidence-Practice Gap. PLoS Med 11(2): e1001603. doi:10.1371/journal.pmed.1001603

Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, Robinson N. (2006) Lost in knowledge translation: time for a map? J Contin EducHealth Prof.; 26(1):13-24.

ANTON JOHANNESSON
CPO, PHD

Torsdag 16.30-17.15
Tivoli Congress Hall (sal)

DIRECT SOCKET FOR TRANS-FEMORAL AMPUTEES: FOR WHOM, HOW MANY ARE THEY AND WHAT ARE THE REQUIREMENTS?

In Sweden there are currently around 50 workshops. This means that every year we have on average 2-3 new TF patient per workshop and less than 20 more patients that need a socket changes or a new prosthesis.

The government (that pays for our services) have in the past not been interested in the outcome of the TF amputees that we provide with prosthesis. But now, in Scandinavia they are getting much more interested. They ask now; *What do we get, for the tax payers money that we spend on the service we pay for?*

Our previous experience with new lower limb amputees, when we implemented a new systematic treatment program back in 1995, was that improving the process is the key. Then we deliver something that is in line with what the payers like to obtain from our services, as this is the most inexpensive solution for the society, as most of the cost are related to hospital stays.

The background behind the Direct Socket for TF is basically the same: *To improving the process for the TF amputee.*

The criteria for our TF interface was provision of a device that was:

- easier to don and doff
- required only one visit
- gave better comfort and
- less time in manufacturing
- gave option of different suspension possibilities
- is a standardised process

DANIEL SABBAGH
DIPL. ING.

Torsdag 16.30-17.15
Harlekin/Columbine (sal)

CONSIDERING THE PATIENT'S INDIVIDUAL NORMAL POSTURE WHEN MAKING THE NEGATIVE CAST HELPS IMPROVE ORTHOSIS ALIGNMENT AND SYMMETRY OF GAIT

The goal was to find out how the posture during the fabrication of negative casts for lower limb orthoses affects the gait of a patient. Two positions were tested on a patient with hemiplegia. Two different negative casts as basis for ankle-foot orthoses (AFOs) were taken – one in a gait-related (AFO_gait, load is on the affected leg) and one in a stance-related normal posture (AFO_stance, load is equally distributed on both legs). With AFO_stance, the foot-shank-unit tilts medially in mid/terminal stance. The patient drops on the unaffected side resulting in a shortened stance phase and an increased step width. This position is suitable for patients with an increased need for safety. AFO_gait leads to a more symmetric gait with the trunk aligning above the affected leg in mid/terminal stance thereby enabling an almost physiological phase ratio of stance and swing. We assume this position is optimal for actively walking patients.

NERROLYN RAMSTRAND
CPO, PHD

SAFFRAN MÖLLER
PT, MSC.

Fredag 9.00-9.45
Tivoli Congress Hall (sal)

CAN PROSTHESES AND ORTHOSES REDUCE THE DEMAND ON HIGHER ORDER COGNITIVE PROCESSES DURING WALKING?

While there is a large body of literature addressing the relationship between the musculoskeletal system and gait performance, the association between higher-level cognitive processes (executive functions) and gait has received much less attention. An increasingly large body of literature is emerging to demonstrate that individuals with body impairments affecting their mobility have increased demands on executive functions when walking and that this is associated with postural instability and an increased risk of falls (1). In the rehabilitation setting there are examples of motor learning programs (2) and therapeutic interventions which have been used to reduce demands on executive functions when walking (3). This has led some to suggest that assessments of executive functioning should be used to a greater extent in the rehabilitation setting.

The aim of this presentation is to review literature related to executive functioning during gait and to discuss how prosthetic and orthotic devices may be used to reduce the cognitive demands experienced by individuals with mobility related disabilities. Examples of studies conducted at Jönköping University will be presented to demonstrate how design characteristics of prosthetic devices can affect executive functions during gait in individuals using trans-femoral prostheses.

STEFANIA FATONE
CPO, PHD

Fredag 10.30-11.15
Harlekin/Columbine (sal)

INFORMING DECISIONS ABOUT DYSVASCULAR PARTIAL FOOT AMPUTATION USING A SHARED DECISION-MAKING APPROACH

This presentation will describe the development of shared decision-making (SDM) resources for persons facing amputation due to dysvascular disease. Decisions about amputation surgery are difficult, particularly as they often occur at the end of a protracted period of ill health. Despite intense exposure to the healthcare system, interviews with people about their experience of dysvascular partial foot amputation (PFA) illustrate that they are poorly informed. As a result, they describe being blindsided by discussion of amputation surgery. Insights from this lived experience support the adoption of SDM to better inform people about this difficult healthcare decision. SDM is a collaborative process designed to empower patients to take an active role in decisions about their health care and can be supported by resources that present information about different treatment options and facts about the likely outcomes and risks in a way that facilitates understanding. We conducted two systematic reviews that formed the basis for development of SDM resources for persons facing dysvascular PFA.

MALIN HOLMQVIST
SUPPLYCHEF

Fredag 10.30-11.15
Tivoli Congress Hall (sal)

DIGITAL TEKNIK OCH CENTRAL PRODUKTION FÖRDELAR, UTMANINGAR OCH LÄRDOMAR

TeamOlmed är en hopslagning mellan tidigare Team Ortopedteknik och Olmed ortopediska. eam Ortopedteknik satsade tidigt på digital teknik med CAD/CAM, och som en naturlig följd av det, på Centralproduktion. Tillsammans med Össur har vi tagit ytterligare steg i vårt ständiga utvecklingsarbete gällande kunskap och teknik.
TeamOlmed och OCH Ortopedi använder nu denna teknik i ortos och protestillverkning, där vissa kliniker arbetar digitalt till över 80%.
Det finns utmaningar i övergången från lokal produktion med traditionell teknik till att använda scanning och CAD/CAM och lämna ifrån sig arbete till Central produktion.
Hur vi löst detta tillsammans med Klinikerna och hur det fungerar idag, och vilka fördelar för klinikern och patientenen det ger får du höra mer om denna halvtimme!
Malin Holmqvist ansvarig för Centralproduktion föreläser om hur Centralproduktion tillsammans med Klinikerna och Össur har lyckats på denna resa.

ANE SIMONE
MD. PHD

Fredag 10.30-11.15
Harlekin/Columbine (sal)

INFERTILITY AND RATE OF CANCER IN AIS PATIENTS, TREATED 25 YEARS PRIOR

Methods: 215 consecutive Adolescent Idiopathic Scoliosis patients treated between 1983 and 1990 were identified and requested to return for clinical and radiographic examination. The incidence of cancer was determined through chart review and follow-up interviews. Using the original radiographic log file that included patient position, mAs, kV and the total number of x-rays taken, a radiation physicist calculated the total radiation dose during treatment and follow-up adjusted for BMI and sex. Smoking and family history of cancer was recorded at the clinical evaluation of the patients and all CT scans or radiographs performed later in life was included in this study.
Results: From the original cohort of 215 consecutive AIS patients, radiation information was available in 211 of the patients, and medical charts were available in 209 AIS patients.
170 (83%) of the 205 AIS patients participated in the follow up study with questionnaires.
The calculated mean total radiation exposure was 0.8-1.4 mSV per examination, and 2.4-5.6 mSv/year. An average of 16 radiographs was taken during the treatment period. 9 AIS patients developed cancer, mostly breast (3) and endometrial (4). The AIS patients had a Relative Risk of 4.8 (CI: 2.3-5.8, $p<0.000$) for developing cancer compared to the normal Danish population.
Conclusions: The overall cancer rate in this AIS cohort was 4,3 % which is 5 times higher than compared to the age matched Danish population, and endometrial and breast cancer was most frequent. The calculated radiation dose in this study is comparable to modern equipment and the mean number of radiographs was 16 examinations. This is to our knowledge the first study to report, increased rates of endometrial cancers in a cohort of AIS patients, and future attention is needed to reduce the radiation dose distributed to the AIS patients both pre-operatively and during surgery.

DAVID RUSAW
CPO, PHD

Fredag 11.30-12.15
Harlekin/Columbine (sal)

BALANCE & POSTURE IN PROSTHETIC USERS

Postural control is particularly challenging for individuals who use a prosthesis. In order to understand posture and balance in this group it is necessary to have valid methods of investigation. Previous investigations have called into question the validity of standard methods of investigation for transtibial prosthesis users. This presentation will present results looking at methods used within transfemoral prosthesis users in addition to a new novel method of describing balance in prosthesis users.

MARTIN MATHEWS
CO, M.PHIL

Fredag 11.30-12.15

Tivoli Congress Hall (sal)

DYNAMIC ELASTOMERIC FABRIC ORTHOSES IN THE TREATMENT OF NEUROPHYSIOLOGICAL ONSET SCOLIOSIS: AN AUDIT OF CLINICAL PRACTICE.

Clinical guidelines are utilized to assist practitioners, providers and patients in appropriately determining a potential treatment/diagnosis. The quality of these guidelines affects the ability of these different interest groups to benefit from the recommendations included within them. The vast majority of clinical guidelines are published in English. Although this covers a great deal of international provision areas, in regions such as Scandinavia, where the official languages within the healthcare sector still require ability to communicate in the official languages, this may not accurately assess the guidelines available - or utilized - by healthcare professionals. This presentation will cover ongoing work to evaluate the quality of CPGs focused on orthotic management of osteoarthritis of the knee in the Scandinavian countries published in languages other than English.

DAVID RUSAW
CPO, PHD

Fredag 11.30-12.15
Harlekin/Columbine (sal)

PRACTICE GUIDELINES IN O&P

Clinical guidelines are utilized to assist practitioners, providers and patients in appropriately determining a potential treatment/diagnosis. The quality of these guidelines affects the ability of these different interest groups to benefit from the recommendations included within them. The vast majority of clinical guidelines are published in English. Although this covers a great deal of international provision areas, in regions such as Scandinavia, where the official languages within the healthcare sector still require ability to communicate in the official languages, this may not accurately assess the guidelines available - or utilized - by healthcare professionals. This presentation will cover ongoing work to evaluate the quality of CPGs focused on orthotic management of osteoarthritis of the knee in the Scandinavian countries published in languages other than English.

JACOB BOENDER
CPO

Fredag 13.15-14.00
Harlekin/Columbine (sal)

DYNAMIC NEW PROXIMAL MASS KNEE (PMK) FOR SHORT-STUMP TF AMPUTEES

The needs of an opportunity focus group of TF amputees with bone length 12cm or less, were reviewed: they needed a lightweight, high function knee joint.
Problem analysis predicted a requirement of proximal mass knee joint (PMK) for which a functional prototype was developed. Gait analysis was conducted with n=3 amputees, and subjective comments were included to evaluate the specification.
To improve the relevance and scope of the working model, it was peer reviewed by consultants and third party payers.
The unprecedented proximal mass of the working model fluidic knee appears to offer direct medical benefits for the STF. Low inertia reduces stump forces and dynamic tissue deformation, supporting increase of proprioceptive awareness.
STF should be a specific subclass of TF due to the pseudo-articulating nature of the femur socket interface in an inverse proportional fashion to stump length. STF has not been identified before as a class of amputation that needs distinct healthcare provision.

KARIN ROS
CPO

Fredag 13.15-14.00
Tivoli Congress Hall (sal)

EHLERS-DANLOS SYNDROM, BEHANDLING MED ELEMENTS BODY

EDS av hypermobilitets-typ förekommer hos 1/5000 av befolkningen och innebär för de drabbade muskeltrötthet och smärta. Studien avser behandling med hjälp av ortosen Elements Body som främst används för att ge stabilitet och ökad proprioception till patienter med cerebral pares eller stroke.

Studien har genomförts på en patientgrupp bestående av 45 deltagare i Stockholm oc h Jönköpings upptagningsområden.

Samtliga patienter tilldelats en för sig unikt designad ortos och effekten har mätts med hjälp av enkäter som besvarats enskilt både innan och vid tre återbesökstillfällen (vid 1, 6 och 8-12 månader) efter initierad användning.

Samtliga deltagare upplevde vid leveransbesöket svår smärta och angav att hälsotillståndet och smärtan var begränsade och alla deltagare använde flera olika hjälpmedel såsom inlägg, handleds-, knä- och fotledsortoser.

Studien finner stöd för a användning av Elements Body vid behandling av patienter med EDS. Deltagarna i studien upplevde minska smärta, ökad stabilitet och muskelstyrka inom en vecka. Effekten av behandlingen stärks med tiden, och efter ett halvår upplevde nästan samtliga att effekten av ortosen kvarstår även långt efter varje användningstillfälle.

JAN DRAKANDER
CPO

Fredag 13.15-14.00
Harlekin/Columbine (sal)

TRANSTIBIAL AMPUTATION OCH FÖRDRÖJD SÅRLÄKNING

I denna fallstudie presenteras ett alternativ till en revision av amputationssår eller reamputation till högre nivå när det handlar om fördröjd sårläkning efter transtibial amputation på ett patientfall. METOD: Trots att ett stort sår utvecklades några veckor efter en unilateral transtibial amputation så tillverkades en s.k. direkt proteshylsa på patienten (DS). Genom att mobilisera patienten med denna typ av protes tillsammans med vakuumsuspension påbörjades rehabiliteringen. DISKUSSION: Denna metod tillhandahåller ett alternativ till långvarig rehabilitering och/eller reamputation till en högre nivå.

TINA ANDERSSON
CPO.

Fredag kl. 13:15-14:00
Tivoli Congress Hall (sal)

NYA MÖJLIGHETER TILL ÖKAD KUNSKAP INOM ORTOPEDTEKNIK GENOM ORTOSFORMULÄR I UPPFÖLJNINGSPROGRAMMET FÖR CEREBRAL PARES, CPUP

CPUP startades 1994 som ett samarbetsprojekt mellan olika yrkesgrupper inom barnortopedin och habiliteringen. Bakgrunden var att många barn med Cerebral Pares (CP) utvecklade höftluxation, svåra kontrakturer och felställningar. Genom att skapa ett system där alla med CP kunde följas på ett systematiskt sätt ville man förhindra att dessa komplikationer uppstod. CPUP är numera ett uppföljningsprogram och nationellt kvalitetsregister i Sverige och har spridit sig till Danmark, Norge, Island, Skottland och Australien.

Genom att olika yrkesgrupper rapporterar barnets funktioner, funktionsnedsättningar och aktuella behandlingar kan man följa resultatet av både tillväxt och olika behandlingsinsatser. Det ökar kunskapen om CP, effekter av olika interventioner såväl som samarbetet mellan olika yrkeskategorier. Ortoser är en vanlig behandling till individer med CP och idag registreras målsättning med ortos och typ av ortos i CPUP.

Det är dock stora regionala variationer i både ortosanvändning och behandlingsresultat med olika typer av ortoser och orsaken till detta har diskuterats på yrkesmöten inom CPUP under flera år. Formuläret i sin nuvarande form har begränsningar och det saknas detaljerad information om ortosernas funktion såväl som design. Det är väsentlig information i arbetet med att öka kunskapen om ortosers behandlingseffekter inom CP.

Under 2017 väcktes idén om att skapa ett kompletterande formulär för ortopedingenjörerna där mer specifik information om ortoserna kan dokumenteras. En arbetsgrupp inom Svenska CPUP arbetar nu med att ta fram ett förslag men i och med att CPUP är etablerat i våra nordiska grannländer, är detta mer än en nationell angelägenhet.

NIKORS SIVARAJAH
MSC.

Fredag 14.15-15.00
Harlekin/Columbine (sal)

CAN 3D PRINTING BE USED IN AN EFFECTIVE WAY TO MAKE INDIVIDUAL INSOLES OR PARTS OF IT WITH SATISFACTORY PROPERTIES?

The short dated and specific objective of this project is to find solutions for insoles based on 3D printing. This includes the application of 3D-printing for final products, but it can be also interesting for models/moulds. Off-the-shelf insoles, also called generic insoles, are often manufactured in large batches. Therefore, it is most relevant and interesting to focus on 3Dprinting on highly complex and advanced insoles, also known as individual insoles.

LOUISE MATTSON
CPO
&
TINA ANDERSSON
CPO

Fredag 14.15-15.00
Tivoli Congress Hall (sal)

GÅNGANALYS MED VIDEOVEKTOR- ETT ADEKVAT VERKTYG VID FÖRSKRIVNING AV ORTOSER FÖR GÅNG.

Förskrivning av ortoser innebär att utifrån behov välja lämplig specifik produkt. Vid förskrivning av ortoser där målet är att förbättra en persons gångförmåga är det av största vikt att förstå hur ortosen skall verka för att tillgodose personens behov med avseende på gång. För det krävs kunskap om både typisk och kompensatorisk gång, men även förståelse för vad det är som bidrar till personens funktionsnedsättning.
På TeamOlmed i Solna använder vi ett videovektor system med två kameror och en kraftplatta för att analysera rörelsemönster vid förskrivning av gångortoser. Det hjälper oss att på ett effektivt och systematiskt sätt, i klinisk vardag, identifiera behov av specifik ortos och dess inställning i kombination med skor. Systemet är även viktigt för att kunna kommunicera syftet med vald ortoslösning till patient och behandlingsteam.
Kliniskt exempel kommer att ges och det avslutas med en diskussion om analyssystemets plats i den kliniska vardagen.

SIMON BERGQVIST
CPO

Fredag 14.15-15.00
Harlekin/Columbine (sal)

KORSETTBEHANDLING AV PECTUS CARINATUM

Sedan 2005 har man på Skånes Universitetssjukhus i Lund mer och mer börjat behandla bröstväggsdeformiteten Pectus Carinatum med en korsett istället för kirurgi. Behandlingen med korsett är vedertagen i vissa delar av världen och alternativen har länge varit antingen operation eller korsett. Det finns flera faktorer som är avgörande för om korsettbehandlingen lyckas eller inte. Behandlingen är i sig relativt enkel men är tålamodskrävande för de drabbade som befinner sig i en känslig ålder under sin uppväxttid. Med åren har vi utarbetat en rutin som vi följer för varje patient för när och hur vi behandlar och för att säkerställa så bra resultat som möjligt. Att utvärdera är dock en utmaning som vi står inför.
Föreläsningen ger en bakgrund av diagnosen med fokus på den behandlingsrutin vi har och utvärdering av denna.

JENS BO NIELSEN
PROF.

Fredag 15.45-16.30
Tivoli Congress Hall (sal)

NEUROMUSCULAR ADAPTATIONS TO INACTIVITY

Neural and muscular tissues are highly plastic and undergo significant biochemical, structural and functional adaptations in response to changes in their activity. Immobilization in relation to casting or reduced neural activity following nerve injuries or neuromuscular block (botulinum toxin) are examples of this. In both cases muscle fibers undergo atrophy, become weaker and change type from slow contracting, aerobic fibers with high endurance to fast contracting fibers that quickly fatigue. In both cases fat and connective tissue proliferate and infiltrate the muscle tissue, which may – depending on the position of the joint – result in manifest contractures. These muscular changes are accompanied by increased stretch reflex activity due to plastic adaptations in the nervous system. Homeostatic reactions that aim to maintain functional activation of the muscles are hypothesized to be involved. The described muscular and neural adaptations should be taken into consideration before implementing procedures that may lead to muscle inactivity.

BRIAN LOUSDAL
CPO

Lørdag 9.00-9.45
Tivoli Congress Hall (sal)

BANDAGIST PÅ GRØNLANDSEKSPEDITION ARCTIC CHALLANGE

En 400 km lang ekspedition på Nordøst Grønland, hvor 9 skadede krigsveteraner gik 400 km
Foredraget vil handle om hvordan og hvorfor jeg som bandagist endte med at gå 400km i ned til 40 graders kulde på Nord Øst Grønland.
Jeg vil komme ind på hvordan og hvorfor vi skabte foreningen Veterans In Motion, hvordan vi forberedte os til ekspeditionen, og hvilken rolle jeg selv har i foreningen.
Jeg vil fortælle om hvilke forberedelser jeg gjorde, og hvilke tanker jeg gjorde mig omkring fremstilling af udstyr. Herunder proteser, ortoser, specialbyggede sitski osv. Jeg vil komme ind på hvordan vi i den sundhedsfaglige gruppe (læge, fysioterapeut og bandagist) improviserede undervejs, og hvilke udfordringer vi stod over for.
Jeg slutter af med hvordan det gik, og hvad vi har af planer i foreningen fremadrettet.

NERROLYN RAMSTRAND
CPO, PHD

Lørdag 10.15-11.00
Harlekin/Columbine (sal)

CLINICAL OUTCOME MEASURES TO EVALUATE THE EFFECTS OF LOWER-LIMB ORTHOTIC MANAGEMENT POST-STROKE

Outcome measures provide a means by which to capture client progress and the end result of clinical care. The primary goal of using outcome measures is to provide evidence that a treatment has a meaningful effect on how the client feels or functions. Results can be used to support clinical decision-making, compare different interventions and can have financial consequences.

For users of outcome measures, there are some important considerations. Clinicians must determine which variables should be measured to evaluate if the treatment has a meaningful effect and when /how often the measurement should be applied to best demonstrate this effect.

This presentation will discuss results of a systematic review which aimed to determine which outcome measures are appropriate to include when evaluating the effects of lower-limb orthotic management in individuals who have had a stroke. Articles were included in the review on the basis that they studied clinical outcomes in adults who have had a stroke and were fitted with a lower-limb orthotic device. Only outcome measures that were considered relevant in the clinical setting were included for analysis and these included functional measures, patient-reported outcomes and proxy measures.

ANDERS SJÖGREN
ASSOC. PROF.

Lørdag 10.15-11.00
Tivoli Congress Hall (sal)

INVESTIGATION OF VOID CONTENT IN COMPOSITE ORTHOSES BY THE USE OF X-RAY MICROTOMOGRAPHY

This paper presents a study on microstructural characterization of composite materials used in orthoses. The focus of the investigation is on determination of void content in the material, since voids act as defects and will affect the service life of the orthoses. The results show that x-ray microtomography is an accurate and powerful technique to identify defects in composite materials, and the technique can be used to monitor the manufacturing of high quality products.

ÅSA MARIA EDLUND
CPO

Lørdag 10.15-11.00
Tivoli Congress Hall (sal)

PATIENTERS UPPFATTNING OM D-FOOT, ETT WEBPROGRAM VID FOTUNDERSÖKNING AV PATIENTER MED DIABETES

Huvudsyftet med studien var att undersöka om patientens upplevelse av att bli fotundersökt enligt D-Foot metoden skiljer sig jämfört med att bli fotundersökt enligt gängse metoder. Studiens hypotes var att patienter som undersöktes med hjälp av webprogrammet D-Foot rapporterar en bättre upplevelse av besöket på Ortopedteknik jämfört med patienter som undersöks enligt gängse standard. Syftet var även att utforska patienternas självskattade hälsa.

Under hösten 2017 genomförde Ortopedteknik Sahlgrenska Universitetssjukhuset en studie för att i klinisk vardag testa och utvärdera D-Foot avseende resultat och användarbarhet. Kriterier för deltagande i studien var att patienten skulle vara diagnostiserad med diabetes, remitterad till Ortopedteknik med syfte att få ortopedteknisk service för att förhindra och behandla fotkomplikation, vara minst 18 år gammal samt förstå svenska i tal och skrift.

Patienter som deltog i studien randomiserades i två grupper; de som fick fötterna undersökta enligt D-Foot metoden och de som fick fötterna undersökta enligt gängse metod.

BENGT SÖDERBERG
ISPO & WHO

Lørdag 11.15-12.00
Tivoli Congress Hall (sal)

”P&O GLOBALLY – NOW AND IN THE FUTURE”??

The current state of Prosthetics globally is not very encouraging. WHO says in a world report that we only supply 5-15 % of the world need today in P/O.
For Prosthetics it is hopefully better than for Orthotics in terms of global supply but enormous challenges are still there and the variations in Prosthetic Service is as big as there is extreme poverty in the world and extreme wealth for a very small population. 20% of the people use 80% of the global resources and that might be the same for Prosthetics.
We have some factors restricting a more equal Prosthetic service today. Firstly very few people can afford the cost. Secondly we have a shortage of educated staff. Thirdly we are battling with a slow change in attitude towards disability. Fourthly we have a consolidation on the market that very few players control a majority market share.
BUT – There is light in the tunnel and we see very strong signs that Prosthetics and Orthotics is moving into a big positive change.

- WHO have started a flagship project under the name GATE (Global cooperation for assistive Health devices) P/O is a major part of this.
- WHO have a new resolution on the table waiting to be signed and adopted May 2018 promoting P/O “Improving access to assistive technology”
- WHO have a document about 50 essential assistive devices to be suggested.
- This will push the component prices down and make Prosthetics more available for more people.
- P/O Schools are getting better and educate higher number of students. Here ISPO have taken the roll to advice on educational standard.

DELTAGERE

Alexander Holmqvist	Aktiv Ortopedteknik
André Johannesson	Aktiv Ortopedteknik
Andreas Jacobson	Aktiv Ortopedteknik
Ann-Louise Selvö	Aktiv Ortopedteknik
Elin Sahlmark	Aktiv Ortopedteknik
Emil Skoglar	Aktiv Ortopedteknik
Emma Nobin	Aktiv Ortopedteknik
Lars Tunestål	Aktiv Ortopedteknik
Marianne Jonasen	Aktiv Ortopedteknik
Markus Majhag	Aktiv Ortopedteknik
Simon Bergqvist	Aktiv Ortopedteknik
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Pernilla Ekroth	Aktiv Ortopedteknik Eskilstuna
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Douglas Mattisson	Aktiv Ortopedteknik i Skåne Öst AB
Ellinor Karlsson	Aktiv Ortopedteknik i Skåne Öst AB
Erik Svensson	Aktiv Ortopedteknik i Skåne Öst AB
Erik Thomasson	Aktiv Ortopedteknik i Skåne Öst AB
Ferdane Brahimi	Aktiv Ortopedteknik i Skåne Öst AB
Julia Johannesson	Aktiv Ortopedteknik i Skåne Öst AB
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Simon Laggar	Aktiv Ortopedteknik Stockholm AB
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Matts Larsson	Erimed International
Peter Barenhoff	Erimed International
Steinar Knutsen	Erimed International
Daniel Sabbagh	Fior & Gentz GmbH
Jens Bo Nielsen	Helene Elsass
Niels H. Søe	Herlev og Gentofte Hospital
Bengt Soderberg	ISPO
Rickard Bergman	Jönköping University
Thomas Kaiser	Kaiser Respiratory Care
Bjorn Klaveness	Klaveness
Hanna Nyholm	Linds Ortopediska
Lars Lind	Linds Ortopediska
Paulina Tegnér	Linds Ortopediska
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Nanna Ritchie	Norsk Ortopediteknisk Forening, NOTF
Stefania Fatone	NUPOC
Anne Cathrine Lien	OCH Ortopedi as
Aso Youssefi	OCH Ortopedi as
Christopher Greenway	OCH Ortopedi as
Elin Hedquist	OCH Ortopedi as
Emmi Maikola	OCH Ortopedi as
Erja Roivainne	OCH Ortopedi as
Espen Staxrud	OCH Ortopedi as
Eva Marie Mellberg	OCH Ortopedi as
Farzin Ardalan	OCH Ortopedi as
Fredrik Pettersen Bergheim	OCH Ortopedi as
Hanne Kristin Hårstadhaugen	OCH Ortopedi as
Ina Solvin	OCH Ortopedi as
Katarina Solberg	OCH Ortopedi as
Katrine Garder Wennersteeen	OCH Ortopedi as
Kavita Kerai	OCH Ortopedi as
Kristina Tominich	OCH Ortopedi as
Lars Christian Beck	OCH Ortopedi as
Linda Guterud	OCH Ortopedi as
Linn Ottem-Frydenberg	OCH Ortopedi as
Lise Nybo	OCH Ortopedi as
Mads Bjørn Troelsen	OCH Ortopedi as
Mads Truelsen	OCH Ortopedi as
Marie Standal	OCH Ortopedi as
Martin Synnergren	OCH Ortopedi as
Mette Mjelde	OCH Ortopedi as
Nana Lise Broch	OCH Ortopedi as
Nils Botnmark	OCH Ortopedi as
Sondre Rike	OCH Ortopedi as
Torjus Snare	OCH Ortopedi as

Tormod Iuell	OCH Ortopedi as
Trond Einar Edvardsen	OCH Ortopedi as
Vibeke Lindland	OCH Ortopedi as
Atle Bakkevik	OCH Ortopedi as
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Gunvor Petersson	Ortos A/S
Helle Harbo	Ortos A/S
Helle Munk	Ortos A/S
Iben Saaby Andersen	Ortos A/S
Jeannie Mathiasen	Ortos A/S
Jette Skøtt	Ortos A/S
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Michiel Meerbergen	Ottobock Greater Nordic Region
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Stefan Holmbom	Region Norrbotten
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Gert-Uno Larsson	Region Skåne
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Annette Sylvest Nielsen	Sahva A/S
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Brian Melia	Sahva A/S
Brian T. Hansen	Sahva A/S
Caroline Haldrup	Sahva A/S
Carsten Birch Olsen	Sahva A/S
Christian Langhorn	Sahva A/S
Gitte Larsen	Sahva A/S
Henrik Godskesen	Sahva A/S
Iben Rahtkens	Sahva A/S
Kirsten Dyrvig Sørensen	Sahva A/S
Kristina Hansen	Sahva A/S
Line Gudmand Wammen	Sahva A/S
Line Pedersen	Sahva A/S
Lorea Holm	Sahva A/S
Lykke Maansson	Sahva A/S
Marie Pedersen	Sahva A/S
Martin Stisen	Sahva A/S
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Klara Mathiesen	SOIF
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Jørgen Dons	Sophies Minde Ortopedi AS

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Martin Minde	Sophies Minde Ortopedi AS
Peter Strøm	Sophies Minde Ortopedi AS
Søren Bang Engstrøm	Sophies Minde Ortopedi AS
Tonny Abrahamsen	Sophies Minde Ortopedi AS
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Maria Eriksson	Össur Nordic AB
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Arild Martinsen	Østo Ortopedisenter as
Daniel Eldøen	Østo Ortopedisenter as
Eli Haave	Østo Ortopedisenter as
Elisabeth Engen	Østo Ortopedisenter as
Emma Hedsten	Østo Ortopedisenter as
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Øyvind Solem	Østo Ortopedisenter as
Åmund Lie	Østo Ortopedisenter as

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30	AB H Brunner	Sweden
3	AFT INTERNATIONAL N.V.	Belgium
12	Alfimed AS	Norway
21	Anatomic Studios	Sweden
23	Bandagist Jan Nielsen A/S	Denmark
28	Blatchford Norway	Norway
1	CADMed Sweden AB	Sweden
32	Camp Scandinavia AB	Sweden
29	DJO Nordic Filial af DJO Nordic AB Sverige	Sweden
16	Dorset Orthopaedic	United Kingdom
19	Embreis	Sweden
31	ERIMED INTERNATIONAL	Sweden
25	Fillauer Europe	Sweden
6	FIOR & GENTZ GmbH	Germany
26	JHInova AB	Sweden
24	Klaveness	Sweden
34	Lindhe Xtend AB	Sweden

Stand		
27	Material Consult AB	Sweden
15	MinitechAS	Norway
7	nora systems GmbH, shoe components	Germany
20	Nordic Ortopedica AB	Sweden
33	North Sea Plastics Ltd	United Kingdom
18	ORTEO AB	Sweden
17	Ortopro AS	Norway
22	Ortowear	Denmark
11	Ottobock	Sweden
9	Pro Walk GmbH	Germany
4	RS Scan International	Belgium
8	Schein Orthopädie Service KG	Germany
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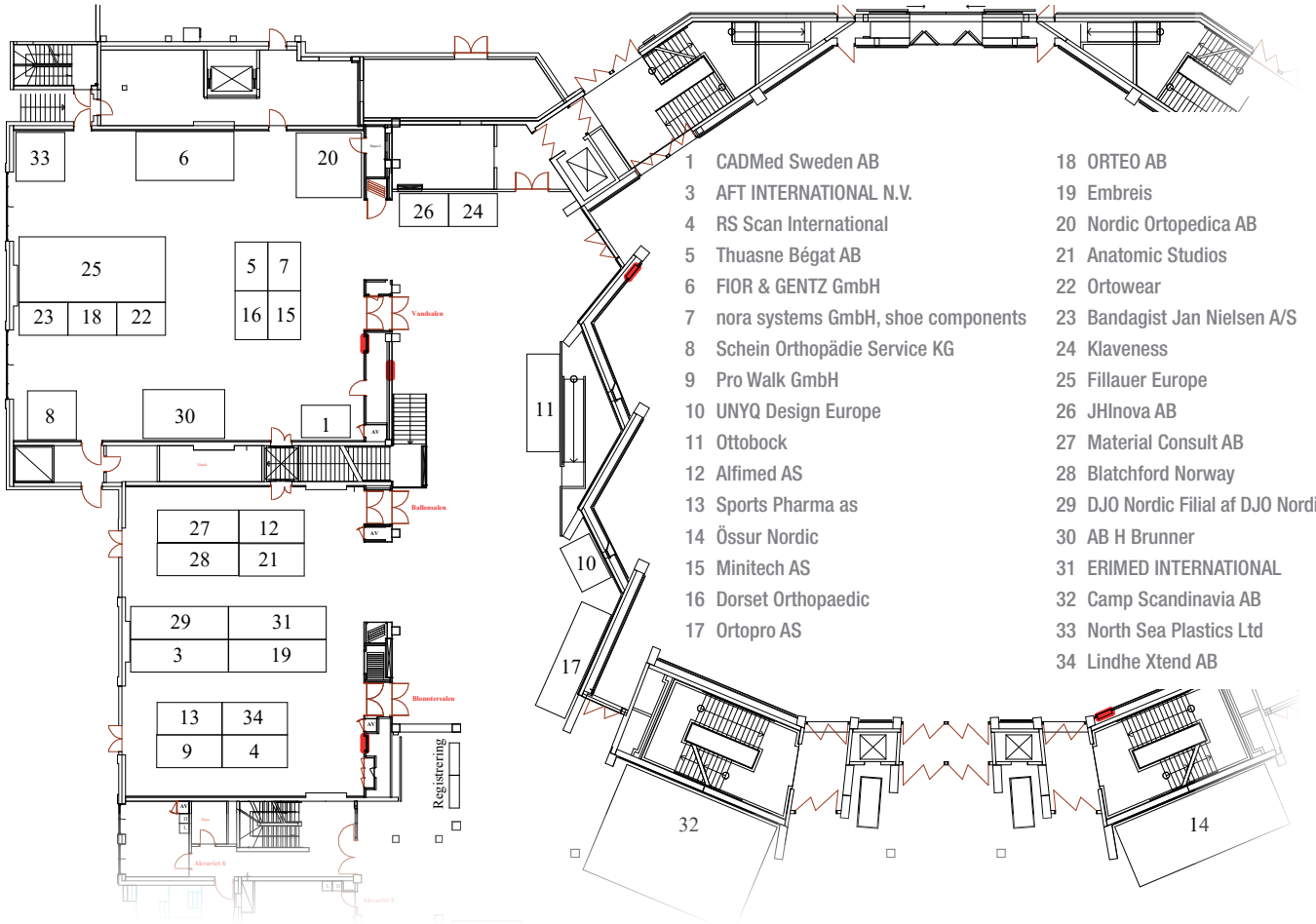

1 CADMed Sweden AB
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