Nordic Ergonomics and Human Factors Society 50th Anniversary Booklet

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Publication date: 2019

Document Version
Publisher's PDF, also known as Version of record

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Nordic Ergonomics
and Human
Factors Society

50th Anniversary
Booklet
# Contents

1 Introduction ................................................. 7
2 Founding of the NES in 1969 .......................... 15
3 The NES Board and changes to the NES ............ 19
4 The NES members .......................................... 23
5 The NES activities ............................................. 27
   The NES conferences ...................................... 27
   The NES networks and committees .................. 32
   NES information and the Journal of Nordic Ergonomics 34
   The NES award and student awards ................. 36
6 Debate on the definition of ergonomics .............. 41
7 The future of the NES ........................................ 45

## Annexes

**Annex 1**  Background and history of the NES ........ 49
The history of ergonomics and international cooperation 49
The concept of ergonomics reaches the Nordic countries 51
Ergonomics, the labour market and legislation ........ 53
Membership in the International Ergonomics Association (IEA) 54

**Annex 2**  Individual contributions and source literature 59

**Annex 3**  Articles from the Journal of Nordic Ergonomics 63

**Annex 4**  Presidents of the NES and board members .... 67

**Annex 5**  Treasurers of the NES ............................. 73
THE Nordic Ergonomics Society (NES) was founded in Stockholm in 1969 and will be 50 years old in 2019. The Society was founded by researchers, educators and practitioners from Sweden, Denmark, Norway and Finland, all with a great interest in ergonomics. For years, they had participated in meetings and conferences held by the International Ergonomics Association (IEA), which encouraged the establishment of national ergonomic associations. Later, each of the Nordic countries established its own association, but ultimately agreed to combine forces to create the NES.

The objective of the NES, however, is the same: “to promote collaboration between member organisations and individuals in the Nordic countries who have an interest in, or are working with, ergonomics and the working environment, and to facilitate Nordic collaboration in international activities. The NES also increases and promotes knowledge about the interactions between humans and the environment in which they live and work and facilitates the use of that knowledge in the design of the working environment, equipment and processes”.

In the anniversary year, the NES has the following member associations:
• Ergonomi Och Human Factors Sällskapet (EHSS) (Ergonomics and Human Factors Society of Sweden), Sweden
• IDA Arbejdsmiljø (SAM), Danish Society of the Working Environment (SAM), Ingeniørforeningen i Danmark (Danish Society of Engineers)
• Norsk forening for ergonomi og human factors (NEHF) (Norwegian Society of Ergonomics and Human Factors), Norway
• Suomen Ergonomiayhdistys/Finska Ergonomiföreningen (ERY) (The Finnish Society of Ergonomics), Finland
• VinnuvistfræðiXifélag Íslands (VINNÍS) (Icelandic Ergonomics Society), Iceland
This anniversary booklet provides a historical account of the 50 years following the establishment of the society. This booklet is written on the basis of various oral sources, from descriptions in the *Journal of Nordic Ergonomics*, and the NES electronic archives. Unfortunately, it has been very difficult to write about the period from 1969 to 1983, as there are few written sources and few members who are able to recall details of activities from that period.

The anniversary booklet shows that Nordic cooperation has been successful over the past 50 years, regardless of cultural and professional differences.

The author of this anniversary booklet, Gitte Holm Rasmussen, was a member of the NES Board from 1985 to 1988 and the editor of the *Journal of Nordic Ergonomics* from 1990 to 1996.

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Nordic cooperation within ergonomics has been successful over the past 50 years regardless of cultural and professional differences.
Announcement of the NES conference 1987 in Elsinore, Denmark.

Conference theme: Women and the working environment.
Announcement of the NES conference 1995 in Stagen, Denmark.
Conference theme: People, work and environment.

Conference theme: People and the environment - in step?
THE NES was founded in connection with an international ergonomic conference in 1969 in Stockholm. Here, Scandinavian participants—-from universities and higher education institutions dealing with work physiology and occupational health—agreed to establish a Nordic ergonomics society. The participants agreed to establish local branches in Sweden, Norway, Denmark and Finland as a basis for the founding of a Nordic ergonomics society.

Erling Asmussen, a Danish work physiologist and one of the founders of the NES, wrote in a letter from 1990 to the editor of the journal Nordic Ergonomics about the founding of NES: “We were too few to start separate societies, but a Scandinavian or Nordic Society could be the solution. We agreed on that and elected Ulf Åberg, who was an engineer doing work studies, e.g. in Göteborg, to prepare a constitutive meeting. Such a meeting was started with a dinner party at Ulf Åberg’s home a few months later. All the Nordic countries were represented. (I don’t remember the names of the persons.)”.

“During the two-day meeting, the name and rules of the society were worked out and agreed. The NES was a reality. The aim was that the NES would be a multidisciplinary community”. (More about the participants in Annex 1)

From the beginning, the participants agreed that the purpose of the Society was to bring together members working on research and members who had experience with practical adaptations in the workplace. They determined that it was important to adhere to the international definitions of ergonomics at the time. Therefore they followed the formulations from the International Ergonomics Association (IEA):

“Ergonomics integrates knowledge derived from the human sciences to match jobs, systems, products and environments to the physical and mental abilities and limitations of people”.

The first statutes determined that membership in the NES would be individual. This meant that local members would join the NES on an individual basis.
According to oral sources (Annex 2), there was limited activity in the national ergonomics associations during the first 10 years. Efforts were invested on establishing the associations and enrolling members. This proved challenging, as the number of researchers, educators and practitioners was quite limited. Moreover, the ergonomics concept was difficult to promote to a larger circle of potential NES members.

Despite the difficulties, this generated an interest in ergonomics, and the NES was able to establish connections between researchers and persons interested in ergonomics in all the Nordic countries. To a limited extent, this succeeded in broadening the knowledge of ergonomics during the 1970s, when considerable attention was being paid to improving the working environment and working conditions. Working environment acts—with a focus on health—were adopted in all the Nordic countries, which generated a greater focus on workplace conditions. This increased the interest in ergonomics and human factors. (Read more about the NES’s background history in Annex 1).

The NES was a reality in 1969. During a two-day meeting, the name and rules of the society were worked out in Stockholm.
The NES Board and changes to the NES

The NES Board was established in 1969, and Sweden was awarded the first presidency. The NES was registered in Sweden, and the treasurers are, therefore, always based in Sweden.

The organisation of the NES was discussed, and the following principles were adopted from the beginning:

- The local ergonomics associations from Norway, Sweden, Finland and Denmark each appoint two members to the NES.
- The role of president is rotated every third year between the four countries (from 1999, five countries) and selected at an annual general meeting in connection with the NES conference.
- The official languages are Swedish, Norwegian and Danish.
- A conference would be held each year, which would be rotated between the member countries in the following order: Sweden, Denmark, Norway and Finland (from 2003, Iceland took part in the rotation).

The NES Board met two times a year. The Board consisted of the president, the treasurer and the eight national members. In the springtime, the meeting was held in the country responsible for the presidency. (The names of the presidents and board members are in Annex 4 and treasurers are in Annex 5). The autumn meeting took place as a part of the NES conference.

The activities in the first 10 years were concentrated on finding individual members for the NES, organising the local NES societies in each country, organising the autumn conference and establishing a relationship with the IEA.

Changes from 1979: When the NES celebrated its 10th anniversary in 1979, it was recognised that the Nordic cross-border cooperation had stalled. Therefore, in the early 80s, the Board initiated activities to persuade more potential members to enrol in the NES. This resulted in the publication of a
Changes from 1989: From 1989 to 1999, several changes took place in relation to the NES's activity level and its original principles. (Read more in Chapter 5, The NES activities).

Changes from 1999: After 30 years, the NES expanded in 1999 to include a new national Nordic association, the Icelandic Ergonomic Society, VINNÍS. This membership and the continuing internationalisation resulted in changes to the principle that the official languages of the NES were Norwegian, Swedish and Danish. English was gradually permitted at conferences and in the Journal of Nordic Ergonomics already in the 1980s. However, in 1999, English was introduced in all communications from the NES.

From the late 90s, a special effort was made to support colleagues from the Baltic countries to enable them to participate in conferences and establish local associations.

Changes from 2011: In 2011, the debate on the definition of ergonomics led to the “Nordic Ergonomics Society” being re-named the “Nordic Ergonomics and Human Factors Society”. The purpose of this was to emphasise that human factors play an important role in the concept of ergonomics. This change was a result of years of discussions on how to define the ergonomics concept.

Changes in 2013: The latest major change took place in the NES in 2013, when it was determined that the NES Board would be reduced. It went from two members from each country to one. All members of the NES Board representing the national societies have a vote. The treasurer and secretary are staff positions, and therefore, do not have a vote. It is possible to have two members from each country on the NES Board, but in that case, the expenses are to be paid by the local associations.

The NES Board still organises spring and autumn meetings, which has been a standard practice throughout the years. Other meetings are replaced by Skype meetings to reduce costs.
The NES members

In the first years of the NES's existence, members were first and foremost recruited from universities and educational institutions. Researchers and educators with a background in professional healthcare training were especially active in the founding of the NES. Over time, practitioners who were employed in private companies, occupational health services, labour inspectorates, private consulting firms and professional organisations also joined as members. The exact membership during the first 10 years is unknown, but we do know that by the end of the 1970s, membership was approximately 500.

Ergonomics attracted many members from various professions, including occupational therapists, engineers, occupational physicians, physiotherapists, technicians and psychologists. Gradually, more consultants specialising in the working environment in employer associations and in trade unions also became members of the NES.

The growing interest in ergonomics and the working environment could also be seen in the membership of the NES. In 1988—shortly before the society’s 20th anniversary—the number of individual and paying members was 610 distributed across 325 Swedish, 130 Finnish, 125 Norwegian and 30 Danish members.

As mentioned, the reason for the low membership in Denmark was that potential members were already members of SAM and, therefore, did not see the benefit of also being members of the NES-DK. However, after the transition to an umbrella organisation, the membership grew in 1993 to 1,409, of which 846 came from Denmark, 90 from Finland, 175 from Norway and 298 from Sweden.

The membership base in 2017 was 1,303, distributed across five countries, as shown below:
- Iceland 35
- Sweden 300
It can be concluded that the membership base of the NES has been on largely the same level for the last 30 years but with a declining tendency.
The NES activities

Over the years, the NES Board has initiated many activities and exchanges of experiences at NES conferences and in committees, networks, journals and in the newsletters. An NES award and a student award have also been created. However, it is first and foremost the annual conferences that have maintained cooperation between the five Nordic countries.

The NES conferences

The annual ergonomics conference is the activity that has had the greatest impact on cross-border cooperation and the exchange of experience in the Nordic countries.

The conferences have attracted researchers and practitioners over time. Many participants have appreciated the Nordic platform, where Nordic values, identity, culture and Nordic methods in the context of working life and society, could be debated. The conferences have provided a forum for dialogue and discussions about Nordic conditions. Also, many participants have been inspired and brought home new knowledge, practical experiences and research.

We know that the first conferences were held in Stockholm in 1969, Lyngby/Copenhagen in 1970, Oslo in 1971, Helsinki 1972 and Luleå in 1973. There is some uncertainty about the conference in 1974. Over the years, the conferences have been organised by the local NES society following the same order as decided 50 years ago.

The conferences have had different themes, which reflected the debates at the time of the conference. We have insufficient knowledge about the themes from 1969–1986, apart from the years 1975 and 1979, but records do exist from 1986 until the present day.
The overview shows the themes that were of interest in the decades before the turn of the millennium. In particular, the major changes resulting from the introduction of new technology and information technology in the workplace resulted in a focus on participation, job and work development, changes, future working life, communication and learning. People and environments are the focus of most presentations at the conferences.

Conference themes changed from 2000 to 2018. There was no longer the same overarching focus on restructuring and changes caused by new technology and information technology, as before the turn of the millennium. The titles suggest that researchers and practitioners had a new agenda with an interest in ergonomics and human factors.

Below is an overview of conference themes in 1975, 1979 and 1986–1999:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONFERENCE THEMES AND CONFERENCE CITIES 1975-1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>Safety in the working environment - social aspects - Aalborg, DK</td>
</tr>
<tr>
<td>1979</td>
<td>Accident insurance, modern man-machine systems, occupational health service, occupational health clinics - Odense, DK</td>
</tr>
<tr>
<td>1986</td>
<td>Ergonomics in construction and production - Visby, S</td>
</tr>
<tr>
<td>1987</td>
<td>Women and the working environment - Helsingør, DK</td>
</tr>
<tr>
<td>1988</td>
<td>Information technology and people - Oslo, N</td>
</tr>
<tr>
<td>1989</td>
<td>Participation: A new element in system ergonomics - Tampere, FI</td>
</tr>
<tr>
<td>1990</td>
<td>New technology, new possibilities, new problems? - Kiruna, S</td>
</tr>
<tr>
<td>1991</td>
<td>Development of work - Ebeltoft, DK</td>
</tr>
<tr>
<td>1992</td>
<td>People and the environment - in step? - Lillehammer, N</td>
</tr>
<tr>
<td>1993</td>
<td>Ergonomics and economics - Nådendal, FI</td>
</tr>
<tr>
<td>1994</td>
<td>The implementation of change - Stenungsbaden, Göteborg, S</td>
</tr>
<tr>
<td>1995</td>
<td>People, work and environment - Skagen, DK</td>
</tr>
<tr>
<td>1996</td>
<td>Working life of the future - development trends, ergonomic challenges - Gol, N</td>
</tr>
<tr>
<td>1997</td>
<td>From experience to innovation, Combined with IEA conference - Tampere, FI</td>
</tr>
<tr>
<td>1998</td>
<td>Communication in working life - Lund, S</td>
</tr>
<tr>
<td>1999</td>
<td>Learning and change - the path to a better working environment - Nyborg, DK</td>
</tr>
</tbody>
</table>

Below is an overview of conference themes in the period 2000–2018:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONFERENCE THEMES AND CONFERENCE CITIES 2000-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>At the gateway to cyberspace - ergonomic thinking in a new millennium - Trondheim, N</td>
</tr>
<tr>
<td>2001</td>
<td>Promotion of health through ergonomic working and living conditions - outcomes and methods of research and practice - Tampere, FI</td>
</tr>
<tr>
<td>2002</td>
<td>Humans in complex environments - Linköping, S</td>
</tr>
<tr>
<td>2003</td>
<td>Mind and body in a technological world - Reykjavik *, IS</td>
</tr>
<tr>
<td>2004</td>
<td>Working life ethics - Kolding, DK</td>
</tr>
<tr>
<td>2005</td>
<td>Ergonomics as a tool in future development and value creation - Oslo, N</td>
</tr>
<tr>
<td>2006</td>
<td>Promotion of well-being in modern society - Hämeenlinna, FI</td>
</tr>
<tr>
<td>2007</td>
<td>Ergonomics for the future - Lysekil, S</td>
</tr>
<tr>
<td>2008</td>
<td>Ergonomics is a lifestyle - Reykjavik, IS</td>
</tr>
</tbody>
</table>
Developments and changes in the conferences: The conferences have gone from being Nordic to international, with presentations held almost exclusively in English. This development has taken place over the past 30 years, and most presentations over those years were held in English. The conferences are now multinational, comprising participants from all continents.

The change of language also resulted in increased opportunities for participation from countries other than the Nordic countries.

Internationalisation and globalisation have contributed towards opening the Nordic conferences to the rest of the world. Fifty years after the first conference was held, the Nordic languages have taken a back seat, but the conferences remain heavily influenced by the Nordic perspective on the interactions between people and the working conditions that apply to the Nordic countries.

Two conferences have been held in cooperation with technical committees in the IEA: Finland in 1997 and Denmark in 2014. (See Annex 1 about the IEA).

Criticisms of the conferences: The conferences have been the subject of criticism for many years, and there have been many discussions on how the quality could be improved. The criticisms are still relevant and some of the recurring ones are:

• that the conference committees have permitted too many presentations without sufficient research or practice-oriented weight, and that too many presentations fall outside the conference’s theme;
• that there are too many presentations on ergonomics for the prevention of musculoskeletal disorders, which lacks a broader ergonomics perspective; and
• that the definition of ergonomics is incorrectly applied and undifferentiated, and, among other things, lacks perspectives on psychological and social conditions in the workplace.

Other criticisms have been that the conferences became more national than Nordic, because most participants are from the country hosting the conference. Since the conferences are now held in English, there is no longer the language barrier that prevented many from participating.
it worked to “promote a broader definition of ergonomics in the Nordic countries, in order for the concept to also encompass system, information and cognitive ergonomics within research and adaptation”.

The Committee contributed its knowledge by way of interviews and articles in the *Journal of Nordic Ergonomics* and held presentations at conferences, including an international “Man-Machine Conference” in Gotland in 1986. For several years, the Committee was active in debates regarding the definition of ergonomics at the end of the 1980s and into the 1990s.

The “Working Group on Ergonomic Education” was formed with the aim of developing a plan for an education in ergonomics. The task of the Working Group was to describe the content of an ergonomic education and how it could be realised, and not least how the education could be linked to existing continuing education programmes in the Nordic countries, e.g. NIVA. It proved too great and difficult a task to develop a curriculum that would include all the existing continuing education programmes in the Nordic countries. The work led to a thematic issue of the *Journal of Nordic Ergonomics*, which demonstrated the variety of ergonomic education programmes in the Nordic countries.

The “Committee on Certification of Ergonomists” was formed to consider a European cooperation for common certification. Under the IEA, a working group had been formed on the “Harmonisation of European Training Programmes for the Ergonomic Profession (HETPEP)”. Observers were sent to the European meetings in 1993, but the Nordic Working Group was sceptical about the requirements set for obtaining certification as a European ergonomist.

The Working Group found it difficult to arrive at a common denominator for the different education schemes in the Nordic countries; therefore, it is up to each individual Nordic country to certify ergonomists. This is formally done through an organisation associated with the NES that certifies ergonomists: Centre for Registration of European Ergonomists (CREE; www.eurerg.eu). CREE harmonises the certification practices of the ergonomic societies within 19 member associations in European countries. The national societies have agreed on the necessary standard of knowledge and practical experience required to become a European ergonomist. The NES AK (auktoriseringskomité) has been working on the mandate from the NES Board since

**Conference committees and the NES Board:** Over the years, the NES Board has guaranteed the establishment of a conference committee in the country responsible for hosting and convening the conference. The NES Board is responsible for ensuring that focal points are established for all the committees. These focal points are tasked with ensuring a greater number of Nordic speakers, the application of broader ergonomics concepts, and adherence to the themes.

The NES Board has a gate-keeping role in relation to the call for papers and ensuring high-quality content. The principle of having at least one keynote speaker presenting on the conference theme has been successfully upheld. An important function for the NES Board has been to monitor the conference finances and ensure budgetary compliance. During the first 20 years, the profits from the conferences went to the NES, which, in turn, would cover a potential deficit. Certain conferences have resulted in deficits, which have been covered by the NES treasury.

In 1989, it was decided that half of the profits should be allocated to the local branch and the other half to the NES.

For several years, the NES Board discussed whether they should leave decisions and responsibility regarding content and finances to the local conference organisers to reduce the workload and risk for the NES Board.

The NES Board has gradually turned over the responsibility of the conferences to the national organiser since 1999. The NES Board also decided that from 2013, the country organising the conference would pay a fee for using the NES name. In return, the NES would provide a guarantee in the event of a deficit and support the conference. This decision leaves the NES Board with very little influence over the conferences.

**The NES networks and committees**

Over time, several networks have been established with the aim of cross-border exchanges of knowledge and experience. Committees have been formed with the purpose of presenting proposals for a common Nordic position on topics and shared challenges.

The “Man-Machine Committee” was formed in 1988, and for several years,
Facilitation of student visits: In 1990, it was decided that the NES Secretariat would facilitate student visits, thereby promoting contact between workplaces and institutions in the Nordic countries. This opportunity was utilised for several years. However, it proved difficult to retain this scheme. The Ergonomics Supervision Network was established in 2009 and is described as follows: “is formed by ergonomists from the Nordic Supervision Authorities. They discuss, harmonise, and coordinate supervision and application of the national regulations in countries and the EU Directives on manual handling and work with display screens. They have organised sessions or workshops at the NES and the IEA conferences”.

In 1990, it was decided that the NES Secretariat would facilitate student visits, thereby promoting contact between workplaces and institutions in the Nordic countries. This opportunity was utilised for several years. However, it proved difficult to retain this scheme. The Ergonomics Supervision Network was established in 2009 and is described as follows: “is formed by ergonomists from the Nordic Supervision Authorities. They discuss, harmonise, and coordinate supervision and application of the national regulations in countries and the EU Directives on manual handling and work with display screens. They have organised sessions or workshops at the NES and the IEA conferences”.

In 2017, the NES Board decided to strengthen and support collaboration among the five Nordic societies by the development of networks. One focus will be on innovation that integrates ergonomics into daily use in many ways and fields, and on many levels. Another focus is to bridge the gap between science and practice.

NES information and the Journal of Nordic Ergonomics
In 1983, the NES Board decided to publish a quarterly journal, Nordic Ergonomics: Research and Practice. The purpose was to improve communication and the level of knowledge about what was happening in the Nordic countries in the areas of research and practice. As stated in the first editorial of the journal: “There are far too many who are unfamiliar with our work in Nordic ergonomics. An interesting journal may lead to current non-members becoming members in the future”.

The NES Board set up a Nordic editorial staff, who were tasked with developing the journal. Göran Olsson—an employee at the Luleå University of Technology, Department of Human Work Science—noted in the first issue that “ergonomics is a young discipline, the theories are underdeveloped both in terms of theory and methodology, and efforts are insufficient in the area of implementation. Research and practice must go hand in hand. The contact with practice is the basis for the application of research and relevance to society. Research results and knowledge exchange are practical tools to solve increasingly complex, yet concrete problems”.

The NES journal would address a major challenge by publishing research results, solutions to practical problems, and debates on the state of ergonomics and its development. In the first issue, it was pointed out that “the value of the information is of great importance to our NES members and to those interested in ergonomics, who are not yet members”.

A trial issue print run of 1,000 copies was published in 1983. The issue contained articles about research and practical solutions, book reviews, conference reports and membership services.

There was considerable optimism, but it soon proved difficult to live up to the intentions. It was difficult to publish a journal without professional assistance. A journalist from Luleå was, therefore, hired to edit the journals.

A new editorial staff
In 1988, the editorial work was moved to Denmark. This was before electronic mail; thus, everything was sent by regular post. After three years, the Swedish sub-editor and printing staff were replaced by their Danish counterparts.

Under both Swedish and Danish editorial management, it was difficult to gather articles for the four issues to be published each year. Originally, the issues were intended to be 40 pages in length with 6–8 articles, each 3–5 pages in length. For financial reasons, the number of pages was reduced to 24.

In 1996, the final issue was published, as the Danish editorial staff could no longer continue. It had become more difficult to acquire articles about research and practical solutions. The interest in the NES did not rise over the years, despite the intention of providing a hub for all who were interest-

Over the course of a year, attempts were made to find a new editor and editorial staff. Unfortunately, these attempts were unsuccessful, and it was the end of an era.

**NES information after 1996**

From 1996, the NES Board initiated a collaboration with the Swedish journal, *Arbete Människa Miljö och Nordic Ergonomi* [Work, People, Environment & Nordic Ergonomics], published by Föreningen för Arbeterskydd [Association for Workers’ Protection], which was offered to members of NES national societies at a reduced rate. Here, it was possible to exchange experiences and publish research results, and the NES Board could inform the members of activities. This journal was discontinued in 2003.

An official website has now been created, along with an open Facebook group (www.nordiskergonomi.org), where members can obtain information and share news about activities. The NES Board sends out agendas and notifications through official webpages, and stores information in an electronic network, Storegate.com, which is open to the members of NES Board.

**The NES award and student awards**

In the early 1990s, a decision was made to grant an NES award for efforts in the field of ergonomics that were particularly deserving of recognition, as well as a student award for the best examination paper. The awards would contribute to highlighting and promoting professionalism.

**The NES award**: The purpose of this award is to reward researchers or practitioners who had achieved excellent research or development results, or individuals who had made special efforts to spread knowledge of the field of ergonomics and the adaptation of ergonomic principles. An important principle of evaluation was an integrated approach and an integrated and interdisciplinary approach. Innovative measures and promising new results were particularly rewarded. The Nordic country organising the NES conference is responsible for awarding a researcher or a practitioner from their own country. The NES award is handed over at the conference.

**Student awards**: The purpose of this award is to convey widespread knowledge of the best exam papers in the Nordic countries and to attract more students to the NES.

The following requirements must be met to achieve the student award:

- A report on the work must be approved by a Nordic college, university or other institution of secondary education
- The work must not be a licentiate or doctoral thesis
- At one time, the language could be Danish, Norwegian, Finnish or Swedish, but currently, it is English

**Awarding**: The awards were presented at the annual conferences. The laureates received a diploma and a one-year membership in their respective national ergonomic society. Furthermore, expenses were covered by the conference where their work was presented. The laureates also wrote articles about their work for the *Journal of Nordic Ergonomics*. The NES award was granted until 2004. There are currently no complete records of laureates.

The student award is still being granted but not every year. It is up to the individual conference committee to determine whether they wish to grant the award. The NES Board is no longer involved in this task.

**Innovation Prize**: In 2018, the NES board created the NES Innovation Prize to be awarded for the first time at the NES conference in 2019. The purpose of the innovation prize is to increase the focus on innovations that improve ergonomics. The innovation prize has the same structure as the student prize with the national winners competing for the overall Nordic prize. The innovation prize is awarded as a document the recipient may use to promote ergonomic innovation. This promotes the company, ergonomics and the NES and is perceived as a benefit for all. It is the hope of the NES Board that the innovation prize will highlight and stimulate further interest in ergonomic innovations.
The NES Grant: In 2017, the NES Board decided to create the NES Grant to fund development of short instructional videos of practical ergonomic methods. The NES Grant is based on the idea of providing more value to the members of the NES. Researchers and practitioners can apply for up to 2,000 euro for an instructional video that is to be available to all NES members.

Over the years, the NES Board has initiated many activities. However, it is first and foremost the annual conferences that have maintained cooperation between the five Nordic countries.
Debate on the definition of ergonomics

Since the founding of the NES in 1969, the definition of ergonomics has been debated. Over the years, there has been uncertainty regarding whether the NES members lived up to the broad definition in presentations and articles. There was a tendency for many researchers and practitioners to place greater emphasis on the physical working conditions and to forget that ergonomics includes holistic analysis and assessment of the environments in which people work and live.

As Walther Ruth from the Luleå University of Technology and Per Odenrich from the Faculty of Engineering, Lund University wrote in the *Journal of Nordic Ergonomics* in 1994, “ergonomics was defined more narrowly in the Nordic countries than in international circles. A Nordic simplification of the concept was influenced by the fact that the early human work science research in the Nordic countries was based on medical science and concerned worker protection and hygiene. From 1940, there was a focus on people’s physical resources and limitations in relation to heavy physical labour. Therefore, the ergonomics concept was quickly adopted by physicians. Some engineers (Nordic technologists) with an MTM background, were interested in Murell’s interdisciplinary perspective on human performance” (read more in Annex 1).

The narrow definition of ergonomics has repeatedly been discussed within the NES. In the Nordic countries, it was common for in descriptions in educational material and legislation for ergonomics to be defined as ergonomics for the prevention of musculoskeletal disorders. It was clear that the broader definition was not understood by the public. For instance, it was not uncommon for working practices and methods to involve, first and foremost, the idea that people should learn to adapt to their environment. There was less emphasis on adapting the environment to the people.

Per Langå Jensen of the Technical University of Denmark wrote the following in an article for the journal in 1991, based on a presentation held at an IEA conference in Paris: “Since 1974 I have participated in many annual
conferences of the NES”, and “the situation has given rise to a discussion on the definition of ergonomics, the type and character of knowledge-producing activities and actual practice within the NES. I will identify two positions in the debate:

- “One position is stating that ‘ergonomics’ is concerned with the implementation of results mainly from studies in work physiology in practice. The central area of research is to produce data on the relationship between man and the working environment. The implementation process is not an object for research, but important practical experience is gathered.

- “This type of knowledge is accepted. But the main objective is not to deliver data but to introduce changes in firms so that healthy working conditions are developed. This position raises three critical remarks: 1) work physiology is not the major discipline. All aspects of relevance must be included 2) One person cannot cover all these aspects 3) Knowledge on causal relations as described is not at present the most important knowledge for the profession.

“From this position it is of central importance to develop formalised knowledge on 1) the relation between the production process and situation for the people working in this production and 2) how ergonomic considerations can be accepted and implemented in the decision-making-processes in the firms”.

Per Langå Jensen concludes his article by encouraging the NES and the IEA to “meet the broad action-oriented definition of ergonomics with all the implications stated of the second positions”. This is necessary if the NES and the IEA want to be an “organisation for ‘work-environment-professionals’”.

The NES Board listened to this critique and attempted to expand the broad ergonomics definition. This was done by ensuring that the conferences included contributions with ergonomic weight and breadth, and which met a number of requirements set by conference committees. The same was the case for the content in the Journal of Nordic Ergonomics during the journal’s 13-year existence. Nevertheless, the discussions recurred time and again.

In the 1990s, there were extensive discussions about the terms “ergonomics” and “working environment”. Many participants in the discussions were of the opinion that “working environment” was a broader and simpler term, which encompassed “safety, occupational diseases, ergonomics and social and physiological well-being”. Others believed that “ergonomics” covered a more specific term, which not only encompassed the working environment, but also conditions at home and during leisure time.

Along the way, many different terms surfaced, including good work, developed work, participatory ergonomics, anthropocentric production systems, etc., which were analysed and assessed in relation to the definition of ergonomics.

In 1994, Walter Ruth and Per Odenrich suggested that “it must now be time for the Nordic countries to stop quarrelling over whether ergonomics is a broad or narrow concept, while leaving our international research colleagues to coin definitions for our well-known ergonomic sub-divisions, as if they had invented them”.

Many wanted to downplay the term ergonomics, because it generated considerable disagreement. However, the name of the NES was never changed. First in 2011, it was agreed to supplement the NES with Human Factors. Despite this change, the debate remains relevant and is a challenge for the NES Board and its members.

The international debate that took place within the IEA and the IEA’s technical committees influenced the discussions within the NES to a lesser extent. Globalisation has been influential also on this point. The IEA’s definition of ergonomics is now also applied by the NES: “ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimise human well-being and overall system performance.

“Practitioners of ergonomics and ergonomists contribute to the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of people. Ergonomics helps harmonise things that interact with people in terms of people’s needs, abilities and limitations” (Read more on the IEA’s website regarding the Definition and Domains of Ergonomics).
The future of the NES

THE NES has created a framework and an organisation, which hopefully will continue to exist in the future, and which will enable researchers and practitioners to participate in the activities that the NES and the five Nordic local associations provide.

The NES has built a community in which it is possible to meet at annual conferences and establish networks and committees across borders. It provides an outstanding platform, where members from the five countries can inspire one another and develop new ways to solve practical problems. This is possible through input from a broad circle of very different professions, companies, organisations, universities, professional organisations and educational institutions.

For 50 years, the NES has been a hub for interdisciplinary discussions on the conditions in which people work and live in both private and public companies/institutions. There have been disagreements regarding the objectives and the quality of the activities in the NES. The debate will probably continue in the future and will be a driving force for improving the conditions for people at work and during leisure time. Important and valuable Nordic experience and research will also be shared in the future. However, whether the NES can retain all of those who work in a professional capacity on the working environment, ergonomics and human factor, depends on whether a broad definition of ergonomics is retained.

As the NES Board stated in 2017: “Although the 5 Nordic countries are alike, national differences and ergonomic societies’ differences makes direct collaboration difficult but allows for good learning opportunities for all”.

In the future, there will be an ongoing need for researchers and practitioners to exchange experience regarding technological, working environment-related and organisational changes in the public and private sectors. There is also a need to include “the whole life” to a greater extent than what has been practiced so far. There will be a need for an interdisciplinary organ-
isation like the NES. There are no other organisations attempting to merge research results with practical experience in the Nordic countries within a broader definition of ergonomics. In this sense, the NES is unique.

Respect for human beings is a fundamental value in the Nordic countries, which has manifested itself in the NES for half a century in the best possible manner. For sure, this value can contribute towards uniting professionals with an interest in ergonomics and human resources in the future.

Although the 5 Nordic countries are alike, national differences and ergonomic societies’ differences makes direct collaboration difficult but allows for good learning and opportunities for all.
Background and history of the NES

The background for the founding of the NES should be viewed in light of the developments that took place after WWII. The Marshall Plan boosted industrialisation, and there was a growing focus on the interactions between humans and conditions in the workplace. This generated international interest in the concept of ergonomics, which Nordic researchers, educators and practitioners became aware of at international meetings and conferences in the 1950s and 1960s.

The history of ergonomics and international cooperation

In his historical account from 2006 in connection with the IEA’s 50th anniversary, the former President of the IEA, Ilkka Kuorinka, MD–PhD from Finland, wrote about the international developments that resulted in the establishment of the IEA. Quotes in this section are derived from the IEA’s 50th anniversary booklet (Annex 2).

The historical account describes how the first national ergonomics association was founded in England in 1949 and was significant for the development of the concept of ergonomics. In the years leading up to the founding of the English Ergonomic Society (ERS), an interdisciplinary group was established by naval psychologist K.F.H. Murell, who developed an umbrella term for knowledge regarding human work. They decided to name the concept “ergonomics”, after the Greek words **ergon** and **nomos**, meaning “work” and “laws”.

In the years that followed, their ideas were conveyed across the rest of Europe at meetings and conferences in the European Productivity Agency (EPA), which was an organisation under the Organisation for European Economic Co-operation (OEEC). The focus was on increased productivity in the European industries to maximise scarce resources in the post-war period. Therefore, the innovative knowledge about ergonomics became important for “the implementation of human factors in productivity through ‘Fitting the task to the worker’”.

Annex 1
The EPA established a working group, which, among other things, was tasked with defining ergonomics. They chose to drop the term “ergonomics” and instead used the formulation “fitting the job to the worker”. The working group defined ergonomics as follows:

- To gather the acquired knowledge in the various disciplines in order to understand how to improve both physical and mental working conditions. By that time, the disciplines included time and motion studies, psychology, occupational medicine, industrial environment and hygiene, accident prevention and lighting technology.
- To create a true interest on the part of industries in a better adaptation of workplaces to workers’ capacities and in understanding how to apply biological sciences to the man-machine tandem for better harmonisation of functions. All this had the goal of improving the workers’ well-being and industrial productivity.

Researchers and educators from universities and educational institutions were intrigued by the ideas and called for a closer international cooperation on ergonomics. This resulted in the founding of the IEA in 1957 at an EPA conference in Leyden, the Netherlands. However, it was not until 1959, during a symposium in Oxford, England, that a steering (preparatory) committee was established, which prepared the first IEA General Assembly during an IEA conference in Stockholm in 1961.

From the beginning, the membership in the IEA was on an individual basis. (However, this was changed in 1976, when the IEA became a worldwide association of federated societies). At the founding meeting in 1957, the following thoughts on ergonomics were recorded:

“The founders of the International Ergonomics Association wanted to remind us of the importance of designing work, environmental and technical systems with the physiological and psychological capabilities and limitations of people in mind”.

This understanding of ergonomics has been significant for the work of the IEA and the NES throughout the years. The Nordic participants brought their research and insights home to their respective Nordic countries, and at several universities and educational institutions, the impact of international work was transferred to teaching and instruction.

The Nordic participants at the international meetings discussed the feasibility of establishing local ergonomics associations across the Nordic countries.

After the founding of the IEA, Scandinavian participants were inspired to establish local ergonomics societies across the Nordic countries. The discussions took place in the 1960s in connection with international conferences and meetings.

The concept of ergonomics reaches the Nordic countries

As described, the NES was founded in 1969, 12 years after the founding of the IEA. From international meetings and the meeting in Stockholm where the NES was founded, we have information about some of the participants who actively participated in the work of disseminating the concept of ergonomics in the Nordic countries and who were involved in the founding of the NES.

Engineer Ulf Åberg was one of the pioneers and one of the founders of the NES. He prepared a constitutive meeting in his home, where the name of the NES and the rules of the society were worked out. Ulf Åberg was elected as the first chairman of the NES.

Another participant was work physiologist Nils Lindgren from Sweden. In 1966, he was appointed Head of the Work Physiology Department at the Institute for Occupational Health in Stockholm.

Ulf Åberg and Nils Lindgren were greatly important to the dissemination of ergonomics in the Nordic countries. In particular, the books *Handbok i Ergonomi* [Ergonomics Handbook] and *Människan i Arbete* [People at Work], were hugely influential for everyone working with ergonomics.

From Norway, occupational health professional Arne Bruusgaard was strongly involved in the development of occupational health in Norway and was also involved in initiating the occupational health efforts in the Norwegian Labour Inspection Authority.

From Denmark, there was work physiologist Erling Asmussen, University of Copenhagen, who wrote several textbooks on work physiology, which were used in medical and health education programmes. In 1972, he took part in the development of the education programmes at the Technical Uni-
Ergonomics, the labour market and legislation

There was a growing focus on ergonomics throughout the 1960s. In all the Nordic countries, reports were written on the working environment in various industries. These surveys raised a debate on the health impact of working conditions.

Prevention became a new, topical concept and formed part of the thoughts and attitudes of healthcare professionals and technicians. The question became: How could the content of work, technology and the job be adapted to the employees and not the other way around? How could employees become involved in order to influence their own work situation?

Until the 1970s, worker protection and hygiene were the only areas covered by legislation. An expanded concept of occupational health was first introduced to legislation in Sweden in 1972, Denmark in 1975, Norway in 1977 and Finland in 1972/1978. This legislation was important for preventive efforts in the workplace. It resulted in various occupational groups becoming involved in the effort to improve conditions in the workplace.

Educational material was developed for ergonomics courses in technical education, labour market training and health education. There was a growing, broader interest in ergonomics and the working environment. Working environment institutes were established in all the Nordic countries that conducted research on the working environment and ergonomic methods. Occupational health services were introduced, resulting in more intensive monitoring of the working environment.

From 1970 until 1990, an interest in ergonomics was generated within a broader group, including architects, industrial designers, planners, consultants in professional organisations, etc. This resulted in several debates on the definition of ergonomics in the context of the NES, where efforts were made to disseminate a broader and more international definition of ergonomics.

Changes to working environment legislation at the end of the 1990s meant that occupational health care in companies was closed down in Sweden and
IEA after the USA. This provided a significant opportunity to influence the activities of the IEA.

The IEA promotes knowledge of ergonomics through international activities, including:
- Holding IEA conferences every third year
- Sponsoring other international conferences, symposia and workshops
- Publishing scientific and technical/practical research in journals and books, communications and information
- Cooperating with other related organisations, e.g. WHO, ILO

Through a number of committees, the IEA seeks to promote the professional and qualitative content of international cooperations. The committees in the 1990s included:
- Science and technology
- Education and training
- Publication
- Policy and planning
- Awards
- Public relations and promotions

Over the years, based on the national associations, the NES has sent Nordic representatives to the various IEA committees. In 2017, there were 27 technical committees, several of which included Nordic members.

The names of the existing technical committees are listed in the overview below:

**TECHNICAL COMMITTEES**

- Activity Theories for Work Analysis and Design
- Aerospace HFE
- Affective Design
As the overview shows, there are many opportunities in the IEA for researchers and practitioners to establish international contact on many ergonomic topics.

Over the years, the NES has submitted candidates for the IEA presidency. In the period 1988–1991, Ilkka Kuorinka, MD-PhD, Finland held the presidency. From 1994–1997, Sweden’s Martin Helander from Lindköping University was the president of the IEA. Based on its large membership, the NES has been able to send two representatives to the IEA’s Standing Committee meetings, which are held in connection with international conferences and sessions.

IEA council meetings have been organised in connection with NES conferences in Iceland, Finland and Denmark.
Individual contributions and source literature

Individual contributions from the Nordic countries

• Agnes Saaby, Director of BST [Occupational health services] Søro – President of NES 1989–1991
• Kurt Jørgensen, Associate Professor, University of Copenhagen, member of NES from 1969
• Ole Broberg, Associate Professor, Technical University of Denmark, NES Board Member 1989–1991
• Jakob Ugelvig Christiansen, Senior Consultant at the Danish Construction Association and NES Board Member 2007–
• Gitte Holm Rasmussen, Senior Consultant at the Danish Technological Institute, NES Board Member 1985–1988 and Editor of Nordic Ergonomics from 1990–1996
• Clas-Håkan Nygård, Professor, University of Tampere, Chair of NES Board
• Timo Suurnäkki, Specialist at the Centre of Occupational Safety
• Kristina Juvas, M.Se. (Ergonomics) Occupational Safety Manager
• Elina Parviainen, Work Community and Process Developer (Ergonomics). Chair of Finnish Ergonomics Association (ERY)
• Kaj Bo Veiersted, Senior Researcher, Dr. Med., National Institute of Occupational Health, Oslo, Norway and member of the editorial board 1990–1996
• Kasper Edwards, Senior Researcher, Technical University of Denmark, President of NES 2016–2018

Source literature

Journal 1983 no. 1  Et nordisk tidskrift for ergonomi (A Nordic journal of ergonomics) by Editor Göran Olsson, Luleå University of Technology, Department of Human Work Science.

Letter from 1990  Erling Asmussen, work physiologist wrote in 1990 a letter in Danish and English to the editor of the journal Nordic Ergonomics about the founding of the NES.

Journal 1991 no. 4  The future of ergonomics: A Scandinavian perspective by Per Jensen, Professor, Ph.D., Department of Working Conditions, Technical University of Denmark.

Journal 1994 no. 3  Begreppet ‘ergonomi’ - vad står det för? (The Concept of ‘Ergonomics’ - what does it stand for?)
Walther Ruth, ESS Secretary, teacher and researcher of work environment planning, Division of Industrial Work Science, Department of Human Work Sciences, Luleå University of Technology
Per Odenrick, ESS Board Member, teacher and researcher of ergonomics for the prevention of musculoskeletal disorders, Department of Work Environmental Technology, Division of Industrial Organisation, Faculty of Engineering, Lund University


NES’s website:  www.nordiskergonomi.org.

Examples of articles from the Journal of Nordic Ergonomic

A selection of examples of articles from the first issues in the 1980s, which were edited in Luleå, are listed below:

|------|---------------------------------------------------|
| 1983 | • The expert role must be diminished  
       • Campaign against strain injuries  
       • Ergonomics and digitalisation |
| 1987 | • Thematic issue at the conference: Women and working environment  
       • Daily life and working hours: Women’s lives – working life  
       • A situational picture of women’s work in the 80s  
       • Gender segregation is still alive and well |
| 1988 | • Strain injuries and job satisfaction at work  
       • Crane operators’ working conditions: Enquiry study  
       • Women’s requirements for working in skilled male professions  
       • New technology – new ergonomics |
| 1989 | • Cleaner technology  
       • Internal control: A new strategy to improve the working environment  
       • Participation – a new element in system ergonomics |
Examples of articles from the period 1989–1996, under Danish editorial staff in Copenhagen, are listed below:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>EXAMPLES OF ARTICLES FROM THE YEARS 1989–1996</th>
</tr>
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</table>
| 1990 | • Learning and work  
      • Design model for better work organisation  
      • New technology in an old culture  
      • Small businesses and working environment efforts |
| 1991 | • The human factor in the company - the psycho-social working environment  
      • Ergonomics teaching in the Nordic countries  
      • User interfaces - visual and ergonomic basic requirements  
      • Challenges for unions in the 90s |
| 1992 | • A democratic fishing industry - a social experiment  
      • Occupational health services in the Nordic countries  
      • Working environment and external environment from a human perspective  
      • Production technology at Volvo's factory in Uddevalla |
| 1993 | • The effect of physical strain on pregnant women  
      • Packaging work compared to office work  
      • Job restructuring in the printing industry  
      • Financial ergonomics in economic downturns |
| 1994 | • How to improve the workplace design in practice?  
      • Capabilities and work requirements of senior employments  
      • Employee participation in the development of internal control  
      • The learning organisation and the developing work |
| 1995 | • Working life in development - workplace atmosphere in the year 2000  
      • Physical strain during floor cleaning  
      • Vegetable oils a replacement for organic solvents  
      • Forum theatre as an interactive method in shift work |
| 1996 | • From "action office" to the 90s "office of the future".  
      • Working environment with robotisation of packaging and distribution work  
      • Obstacles to initiating change processes |
### Presidents of the NES and board members 1969-2019

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<th>YEAR</th>
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<th>BOARD MEMBERS</th>
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<tr>
<td>1969-1972</td>
<td>Ulf Åberg (S)</td>
<td>Erling Asmussen (DK) *</td>
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<td>Poul Viskum (DK)</td>
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<td>Finn Haaland (N)</td>
<td>Ulla Runge/Kirsten Jørgensen (DK) - Jouni Lehtela/Jukka-Pekka Ranta (F) - Astrid Haugan/Jon Storstein (N) - Dag Holmgren/Göran Olsson (S)</td>
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<td>Christina Jonsson (S) - Edvin Grinderslev/Jakob U. Christiansen (DK) - Juha Lindfors (F) - (N) - Valdis Bra Porsteinsdottir / Alda Aserirsdottir (IS)</td>
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<td>2012</td>
<td>Christina Jonsson (S)</td>
<td>Edvin Grinderslev/Jakob U. Christiansen (DK) - Juha Lindfors (F) - (N) - Valdis Bra Porsteinsdottir / Alda Aserirsdottir (IS)</td>
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<td>2013-2014</td>
<td>Christina Jonsson (S)</td>
<td>Jakob U. Christiansen (DK) - Juha Lindfors (F) - Thorunn Sund Olsen (N) - Jane Ahlin (S) - Lilja Birgisdottir (IS)</td>
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<td>2015</td>
<td>Christina Jonsson (S)</td>
<td>Jakob U. Christiansen (DK) - Elina Parviainen (F) - Elisabeth Gedde (N) - Jane Ahlin (S) - Lilja Birgisdottir (IS)</td>
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<td>2016-2017</td>
<td>Kasper Edwards (DK)</td>
<td>Jakob U. Christiansen (DK) - Elina Parviainen (F) - Elisabeth Gedde (N) - Jane Ahlin (S) - Lilja Birgisdottir (IS)</td>
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*Names of president and board members do not exist in any documents.*

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<th>YEAR</th>
<th>CHAIRPERSON OF NES</th>
<th>BOARD MEMBERS</th>
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<tr>
<td>2018</td>
<td>Kasper Edwards (DK)</td>
<td>Jakob U. Christiansen (DK) - Elina Parviainen (F) - Elisabeth Gedde (N) - Jane Ahlin (S) - Gudmundur B. Thorsteinsson (IS)</td>
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<td>2019-2021</td>
<td>Elina Parviainen (F)</td>
<td>Mads Olsen (N) - Arto Reiman (F) - Jane Ahlin (S) - Jakob U. Christiansen (DK) - Gudmundur B. Thorsteinsson (IS)</td>
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Treasurers from 1984-2018

<table>
<thead>
<tr>
<th>TERM AS TREASURER</th>
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<tbody>
<tr>
<td>1984-1987</td>
<td>Mary Anne Österman (S)</td>
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<tr>
<td>1988-1994</td>
<td>Sven Dahlman (S)</td>
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<tr>
<td>1995-2000</td>
<td>Mari-Anne Karlsson (S)</td>
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<td>2001-2002</td>
<td>Cecilla Rapp (S)</td>
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<td>2003</td>
<td>Marc Antoni (S)</td>
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<td>2007-2012</td>
<td>Fredrik Rassner (S)</td>
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<td>2012-2014</td>
<td>Fredrik Rassner (S)/Haraldur Haraldsson (IS)</td>
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<td>2014-2018</td>
<td>Hanna Skoog Rowa (S)</td>
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