

## Give musculoskeletal health to children and young workers

20-21 March 2019, Hotel Carlton, Plaza Federico Moyua, 2 – Bilbao

### Perspective 2: Ergonomics – with a policy dimension

#### INTRODUCTION

The seminar brought together four perspectives, mixing research, policy, and practice to explore the scope and variation in the theme of ‘MSD prevention among school children / young workers’:

Perspective 1: Mainstreaming OSH into education – with a practical dimension

Perspective 2: Ergonomics – with a policy dimension

Perspective 3: Musculoskeletal health and young people – with a research dimension

Perspective 4: Body self-perception – with a communications dimension

All attendees participated in expert-led discussions in four small groups and covered the four different perspectives. The groups did not discuss the same questions, as through the group discussions, the experts led the meeting discussion, funnelling down in specificity towards the preparation of an outcome. Each group spent one hour with each expert.

For more information about the practicalities and the dynamics of the workshop, please consult the agenda of the seminar and the PPT called “background information (ahead of the seminar).”

In this document the summary of the perspective 2 is presented. The discussion questions were:

- What is ergonomics all about?
- What is the societal impact of poor musculoskeletal health?
- How can ergonomics in public health and occupational health be brought together at a political level (a multidisciplinary approach)?

#### What is ergonomics all about?

- 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 applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. (International Ergonomics Association, 2000)
- **Ergonomics provides the knowledge and skills for fitting the environment, equipment and activities to people**
- The dual aims of ergonomics are to improve the **well-being of people** and to enhance **productivity of work systems**
- For the practical application of ergonomics, the following subfields are identified:
  - **physical ergonomics** – e.g. postures and movements, physical workload, manual material handling, workplace design
  - **cognitive ergonomics** – e.g. information processing, mental workload, human-computer interface, applications for transmitting information

- **organisational ergonomics** – e.g. coordination of work processes, such as assembly lines, combinations of work activities, work-rest schedules, collaborative development of work activity
- **Ergonomics is a scientific discipline and a development tool to create healthy and effective workplaces**

#### ▪ **Ergonomics goes beyond Work Related Musculoskeletal Disorders (WRMSDs)**

Good ergonomics is more than WRMSDs and the assessment of work postures, repetition, and human effort, it also includes, for instance:

- taking into consideration human information processing and error,
- applying knowledge on human capabilities, abilities and limitations in product (e.g packaging / tool) design,
- using systems approach,
- individual differences and special needs,
- usability and accessibility.

#### ▪ **What is true ergonomics<sup>1</sup> like?**

For many reasons, application of ergonomics is often limited to **physical ergonomics** or even only to workplace arrangements. However, to achieve sound results, a more **holistic concept** of ergonomics is required. This means<sup>2</sup> that, e.g.<sup>1</sup>:

- **systems approach** is used, e.g. taking all interactions between the worker and the elements of the work system into account, and, applying all relevant knowledge and experience
- application of ergonomics is **design driven**, taking place in design activity, and in all stages of the design process, e.g. in concept design, in the design of the premises, in the design of the work system, in implementation, in evaluation, in redesign, or, in the continuous improvement of the system
- the aims include both **well-being of the people** and **performance of the system**, thus providing all achievable benefits as well as acceptance and support of all groups concerned in the enterprise.

#### ▪ **Some of the challenges present throughout the discussions when it comes to musculoskeletal disorders and school children / schools environments:**

- How to teach the fundamental principles of ergonomics in schools and how to embed ergonomics into the education sector / schools in general?
- Teachers and children are the key target audiences and there is a need to set up an approach combining both. This is challenging because for teachers the schools are an occupational setting (their workplace) so there are very specific OSH requirements to be fulfilled. But what about for schoolchildren? It was raised several times the idea that for schoolchildren (the future workers) the schools should also be considered as their “workplaces”, so as far as possible schools should also be ergonomic”
- “We need to do ergonomics not just teach ergonomic principles”, we need to make schools / workplaces ergonomically friendly. Children learn by seeing and experiencing. In this sense the new pedagogic approach “schools on the move” (integrating movement and sensorimotor experience as a basic principle into everyday school life) is addressing some of the issues raised by an ergonomic approach (without using the word “ergonomics”) and this is perceived as a very positive opportunity or development.

<sup>1</sup>We invite readers to visit the websites of the Federation of European Ergonomics Societies (FEES) (<http://ergonomics-fees.eu/>) and the International Ergonomics Association (<https://iea.cc/whats/index.html>) to get more information about ergonomics.

<sup>2</sup> A strategy for human factors/ergonomics: developing the discipline and profession (IEA 2012)

- The “message” and the way to “communicate” on the topic (“MSDs”) is key. There has to be a clear message about the importance of adopting good body postures, about the need to move, about the need to prevent MSDs from an early age. But the message has to be kept simple, focused and expressed in a way in which OSH or ergonomic jargon is avoided. The message has also to be disseminated in a positive way, the stress has to be on promoting a good musculoskeletal health and healthy habits in general. The idea behind all this is that “words matter”: complex definition/phrases scare or demobilise people”.
- **Examples of initiatives / policies / schemes / resources / good practices identified during the discussions**
  - *Italy.* Ergonomics are included in school programs. INAIL published in 2011 a guide on the topic: *Ergonomia a scuola. A scuola di ergonomia.* This publications is available at: <https://www.inail.it/cs/internet/docs/alg-ergonomia-a-scuolapdf.pdf>
  - *Ireland.* “Keep safe” event. State agencies and regional organisations with a safety remit come together to talk to children with a common message – Keeping Safe. The event promotes safety and community awareness through involving the children in a series of interactive scenarios (in which ergonomics are embedded / included), with a strong safety theme. "Keep Safe" takes place over a morning where children from local schools come to a central venue for an event accompanied by their teachers. More information available at:
    - [https://www.hsa.ie/eng/Education/Safety\\_and\\_Health\\_Initiatives\\_in\\_Education/Primary/Keep\\_Safe\\_Programme.html](https://www.hsa.ie/eng/Education/Safety_and_Health_Initiatives_in_Education/Primary/Keep_Safe_Programme.html)
  - *United Kingdom.* Different initiatives and resources:
    - Derby City Physical Literacy Programme. More information available at: <http://www.emcouncils.gov.uk/write/physical%20literacy%20intervention%20-%20derby.pdf>
    - Healthy Working MOVE. More information available at: <http://www.ergonomics4kids.co.uk/>
    - Jolly Back resources. More information available at: <https://www.jollyback.com/resources/>
    - The LOCHER Project. More information available at: <https://www.safetygroupsuk.org.uk/campaigns/locher/>
  - *Denmark.* Initiative at policy level. School-based approaches promoting physical activity are recommended. This policy was set up for many reasons. One reason among others was that there were not very good academic results and also the need to develop a new pedagogical approach. This new approach also aims to achieve safer, healthier and more ergonomic schools and contribute to prevent absenteeism (sick days) among teachers and pupils. It is important to underline that these school-based approaches have also improved the academic results of pupils and not only their health.
  - *Finland.* A guide on safety, health and wellbeing at schools intended to labour inspectors was developed.
  - *Norway.* Initiative at policy level (similar to the initiative just described below). A less traditional pedagogic approach is being developed with the aim to address public health issues like sedentary lifestyle and obesity. There is a special focus on a smoother transition from kinder garden (where kids are more free to move) to primary school (where pupils have to sit down still for hours).
  - *Croatia.* National program “Healthy living”. “The five components of this programme that include various projects are: Health Education (physical health: the project Polygons; 10-minute exercises; recommended menus for elementary schools and high schools; mental health, sexual and reproductive health), Health and Physical Activity, Health and Nutrition, Health and Workplace, Health and the Environment. The target populations of the National Programme are: children and youth, persons of middle and older age, generally – persons with increased behavioural and biomedical risk factors”. More information available at: <https://www.hzjz.hr/>
  - *Portugal.* Training intended for teachers (train the trainer concept). This training is focused on their OSH practices, so they are aware of their actions and can then teach other teachers and pupils. Another initiative is the integration of OSH content into curriculum.

- *Latvia*. Authorities are currently working on the new curriculum for primary and secondary education. The idea is to deal with OSH related issues through the different subjects: integrating OSH or health aspects in the content of the different subjects. It exist the willingness to increase awareness about the importance of health in general by teaching and ensuring that schoolchildren understand how work, bad habits, bad postures impacts the musculoskeletal health.
- *Slovenia*. Right now three ministries are working together on mainstreaming OSH into education. A transversal approach is adopted by introducing OSH topics into various subjects.
- *EU initiative*. Napo and MSDs – lighten the load. Initiative intended to schools for teaching basic ergonomic principles. More information available at: <https://www.napofilm.net/en/using-napo/napo-for-teachers>

### MSDs and children

- When talking about MSDs and children the following issues are usually raised: heavy backpacks, bad postures, lack of ergonomic furniture in schools and the (extensive) use of ICT devices (like tablets, mobiles phones or computers).
- When it comes to heavy backpacks, recommendations about the weight of the backpacks, the better design of backpacks or the proper use of backpacks exist. But the best way to address this issue could be by minimising the number of books to carry every day by storing most of the books in the schools (lockers). So the focus should be put – in a first instance - not on the backpacks but on organisational measures.
- Books are replaced by tablets in some schools (in some countries). So the weight of the backpack is not an issue any more, but the use of tablets. Intensive use of tablets is associated with discomfort, pain and MSDs. More training, information, recommendations about how to properly use tablets or the risks for the musculoskeletal health of the intensive (or bad) use of tablets are needed.
- The intensive use of mobile phones is also associated with MSDs.
- In order to prevent MSDs at schools the focus should be put on the organisational and physical environment as well as on training and behavioural aspects. The priority (based on the general principles of prevention) should be given to the design / the work environment. If schools / workplaces are not ergonomic, training - as a part of a prevention approach - will not help much (priority: 90% design / workplace arrangements, 10% behaviour part). Ideally the approach should consist in developing a safety and healthy culture which consists in a technical / organisation part along with an awareness and behavioural one. This approach should start from kindergarden and go through all the academic cursus.
- Children are exposed to MSDs also during their leisure activities, so to address this issue means to go beyond the school. If we take into account the issue of young people and technology, the time exposure is problematic as children spend more and more time in front of different kind of screens. Ideally gestures, postures, habits learned at school will then be applied outside of school in free time.
- There should be more focus on educating young people on speaking up if they feel pain. It is considered important to teach children to express / to inform when they feel pain in back, joints, etc. and help them understand what it means to have an MSD. This has to be part of their education along with learning good postures, correct movements, and healthy habits.
- It has to be underlined that there are children with pre-existing MSDs. Their special needs have to be addressed and for sure a more ergonomic school environment and a school more aware of the importance of having a good musculoskeletal health would help in the efforts to address their special needs.

## What is the impact of poor musculoskeletal health<sup>3</sup>? (e.g. human and societal costs). Setting the problem – business case

- The impact of poor musculoskeletal health was addressed in a general way (and not only focusing on schoolchildren) among other reasons because the information / data on MSDs and schoolchildren and young workers is scarce.
- There is a need to improve the available information on the topic (to be able to measure the size of the problem and build the business case). That could be the contribution of EU-OSHA: gather the existing knowledge and data and disseminate it.
- The impact of poor musculoskeletal health: pain, discomfort, difficulties to run a “normal” life; cost for the public health system and for the society as a whole. The potential lifelong consequences of musculoskeletal ill health among young children was also raised (in terms of difficulties to enter the job market, psychosocial wellbeing).
- Ideally this issue should be address more in terms of investment (return on investment) than in terms of costs. There is an ongoing need to provide evidence that “ergonomics” or investing in OSH is a good investment. During the discussions examples of research and interventions providing evidence that investing in health is good (having in mind policy makers) were raised. Apart from better health, economics gains like increased productivity and less absenteeism were mentioned. In the case of the school / schoolchildren better academic results can put forward along with improving wellbeing.
- There is a need for case studies or good practices in order to convince, for instance, to buy ergonomic furniture. One of the messages to be stressed is that sedentarism, obesity, lack of physical exercise, MSDs are global issues / problems (not just an OSH or health issue).
- Examples of a good school (in terms of ergonomics) are needed. It is mentioned that EU-OSHA could contribute in the task of providing this kind of information or at least contribute to the dissemination of the existing ones.

## A multidisciplinary approach is required to promote a good musculoskeletal health among young people and workers in the education sector

- Children and young workers (and their musculoskeletal health) are concerned at least by these three policy areas / sectors: OSH, public health and education sector.
- Each specific policy area / sector needs to open to the others (to take into account the effects of (and on) policies and outcomes in other sector and areas).
- These sectors are already addressing “more or less” or “in one way or the other” (depending on the countries (their legislation, priorities, etc.) the musculoskeletal health of young children.

### *Public Health Sector*

From the Public health sector point of view:

- Policies, schemes and initiatives with the goal to foster physical activity, prevent sedentarism and obesity are put in place.
- Schools are a privileged setting to address these issues and in some countries some collaboration within the education sector and public health is already going on (examples from Denmark, Norway and Croatia mentioned above).

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<sup>3</sup> The “human musculoskeletal system” is an “organ system” that gives humans the ability to move using their muscular and skeletal systems. The musculoskeletal system provides form, support, stability, and movement to the body ([https://en.wikipedia.org/wiki/Human\\_musculoskeletal\\_system](https://en.wikipedia.org/wiki/Human_musculoskeletal_system)). Health of this system is defined as the absence of disease or illness within all of the parts of this system.

- In such scenario, it could be good if the OSH sector manages to ensure that in the existing programs and schemes the promotion of a musculoskeletal health taking into account the future working life of the current children and young workers (and the general principles of ergonomics) is integrated somewhere.

#### *Education sector*

From the education sector several initiatives can be mentioned<sup>4</sup>:

- Initiatives improving the psychological school environment by making it more “ergonomic”:
  - Ergonomic furniture (mainly chairs and tables)
  - Ergonomic schools from an architectural point of view. Architects have to consider children as users and make schools ergonomically adapted to children.
- New pedagogies embedding (or compatible with) ergonomic principles:
  - “School on move” promoting a more dynamic way to organise learning in schools. The idea being to integrate movement and sensorimotor experience as a basic principle into everyday school life.
- “Mainstreaming OSH into education” approaches
  - Integrate OSH into the curriculum
  - Train the trainer
- By ergonomic interventions like the Ergokita project (see the presentation of the project available along with this summary)

In all these initiatives the key role played by the teachers it is always mentioned. Teachers leading the initiatives or as role models. The key role played by schoolchildren is also often underlined: young people have to be ambassadors on peer to peer level.

#### *OSH sector*

- The OSH legislation targets the teachers (as workers) and the schools (as workplaces - work environments). The OSH legislation do not target the schoolchildren but it depends on the countries (see example below from Germany).
- It is clear that in the school environment what it is good for the teachers (good light, ergonomic equipment, etc.) it is also good for students (and the other way round). That’s why in this more general OSH approach (going beyond the teachers as workers) schoolchildren have to be integrated (at least not forgotten).
- In some countries (Germany) pupils are covered by insurance which is not the case in other countries. That means that in Germany pupils have to be considered in the same way as teachers. This explains the initiatives carried out in this country targeting schoolchildren. The legislation would need to change in these other countries if we want to see some new developments. In this sense legislation could be considered as a driver / barrier.
- A lot of actors are involved in the complex system of the education sector (from an OSH perspective): head master and other managers, teachers, owners of buildings, local authorities, rescue people, safety reps, parents, children, how to involve them all on OSH and ergonomics? To implement initiatives/schemes regarding preventing MSDs among young people there has to be multilevel collaboration among all these actors (and this is challenging).
- Labour inspectors need education on ergonomics. To address this issue in Finland a guide on safety, health and wellbeing at schools intended to labour inspectors was developed.

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<sup>4</sup> See Mainstreaming report for a more systematic presentation of such initiatives.