

MeCaMInD Guide Booklet

How to Use Method Cards for
Movement-Based Design in
Sports, Health, and Technology



MeCaMInD
Creativity in Motion

Introduction

This MeCaMInD movement method card toolbox provides an entry point into a broad collection of design methods, equipping you with tangible tools to integrate movement into your design practice. This transforms traditional creative methodologies into an innovative, movement-centred approach.

The Method Cards for Movement-based Interaction Design (MeCa-MInD) project is an ambitious initiative funded by the EU via the Erasmus+ strategic partnership program. At MeCaMInD, we believe in placing physical human movement at the forefront of the design, whether it's technology, sports tools, physical training aids, or the development of new sports practices. Our philosophy sees the body as a vessel for interaction and a source of creativity and innovation in its own right.

In this booklet, we introduce the box and its contents, and present the 4M framework which structures the method cards. This is followed by a section on finding and using the movement-based design methods. Facilitating movement-based design sessions can be challenging; thus, we also provide some guidelines on this topic.

For the use of the movement methods, we find it is essential to provide an inclusive design approach for sports and movement; we therefore subsequent section describe several special needs diagnoses and argue along the special need paradigm on how Special Needs and Constraint Modifiers can be helpful to make inclusive design.

Finally, we describe the vision of using the MeCaMInD movement method card toolbox and the development of the Method-card tool-box.



The Design Method Cards Toolbox Design

To bridge the challenging breadth of the combined fields of design, sports & movement, and technology, we've created a well-rounded toolbox of embodied design methods that provides a user-friendly approach to guide design activities. Each card details the method's goal, procedure, use contexts, constraints, and variations. They also feature visual aids such as videos, pictures, and graphics for better understanding.

The method cards are categorised into five types:

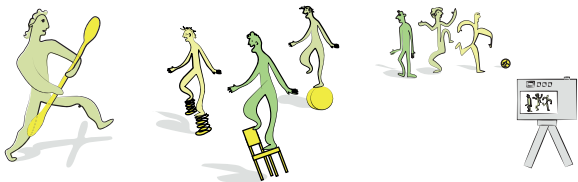
Mood Setters – This is a set of 36 different methods to help you set the creative mood of your body for a design session. They include creative training via icebreakers, warm-ups, and team-building activities, and the online version of Mood Setters contains 30 instruction videos.

Movement Methods – This is a set of 30 design methods geared towards sensitising designers, ideating, evaluating/polishing, or documenting solutions. All of these methods emphasize the moving body at the forefront of the design process.

Movement Concepts – This is a set of 38 chunks of knowledge ready to inform your design. The concepts relate to the movement and sports research literature in seven science, social, humanities and technology fields.

Modifiers – This is +300 cards holding a word or images to tweak the current design activity or find new perspectives and solutions.

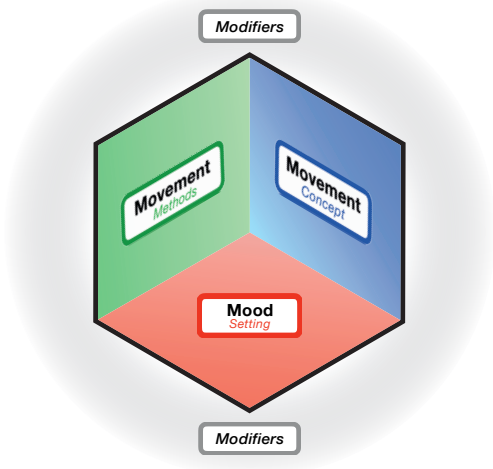
Instruction Cards – These are a set that provide detailed instructions for the various card categories, facilitation guidelines, suggestions for music, physical props, and examples of design route maps – or “design flows” – to help users plan design activities like workshops and events.



The MeCaMInD Approach

Our primary objective is to introduce movement as an integral component in designing novel movement practices, artefacts, and interaction designs for sports and physical activities. We aim to drive the development of more sustainable movement technologies and sports concepts, enhancing health and well-being for people.

By engaging the body as a source of creativity, we can enrich our interactions with technology, promoting physical activity, health, and joy and enhancing the naturalness of these interactions. Thus, movement is the core of the entire design process.



The structure of this toolbox and design methods link to the 4M framework for Movement-Based Design Cards and are founded on the theory of embodied cognition summarised in the 5E's, embodied, enactive, extended, and emotive. Embodied cognition situates the body as an intrinsic part of creativity through an extended mind-body-environment system.

Using the MeCaMInD Movement-Based Design Method


As providers of this box, we suggest using the guidelines sketched in the instruction cards. This can aid in understanding the moving body and designing "for" the moving body. In the early design phases, understanding movement requires designers to either move themselves or observe others moving. In later stages, ideation and evaluation require using the body's movement as a creative resource.

Start by determining your design aim, then sensitise and familiarise yourself or your participants with the activity in focus, next sketch and frame movement insights and share the activity. Continue to explore movement, generate ideas from play and bodystorming, and validate and test movement ideas through roleplay and context play. Finally, document the movement scenario with videos or photo sketches and start building and testing the first prototype.

We suggest using the **gameboard** to plan your design session. If you're having more than one design phase or session (flows), you may use a gameboard for each session. You may also consider creating a belt to carry the cards or punching a hole to carry the cards in a ring.

Based on the aim of the specific design session, choose the methods that contribute to your outcome goal and look up "design flows" for inspiration.

Searching for the cards needed for a specific design session or activity, you start by identifying the type of activity required among the four varieties of methods in the cards.

For the Mood Setting and Movement Methods, the search is further based on estimated preparation time:  (none, short, medium, long)

Proposed activity time:  (± 5 , ± 10 , ± 20 , ± 40 , and ± 60 min).

A needed number of people for the activity:



An estimate of material needed for the activity:



The Mood Setting or Movement Methods typology is sorted according to body Awareness (sensitising), Playfulness, Exertion, and Creativity for Mood Setting and Role-Playing for Movement Method. For Movement Concept, the type of theory application is distinguished: concrete vs abstract and design vs analysis.

The cards on the description side contain the following:

- + The anticipated outcome or result of doing the activity.
- + A list of the specific props needed.
- + A step-by-step guide on how to facilitate the methods.
- + If applicable, suggested variations and use of Modifiers.
- + The contributions this method can bring to your design session, explained in the "Why" section.

The Movement Concept cards' typology sorts the cards by the type of theory application: concrete vs abstract, and design vs analysis, dividing the concepts into inspirational, guiding, sensitising, and analytical. Sports and technology knowledge disciplines categorise the knowledge chunks into the following:

- + Philosophy of Sports and Movement.
- + Understanding the Psychology of Humans.
- + Understanding Humans in Society.
- + Motor Learning and Biomechanics.
- + Physical Training and Physiology.
- + Sports, Games, and Play.
- + Sports and Movement Technologies.

Movement Modifiers include cards and propose physical artefacts that support, modify, tweak, or disrupt design practices. Modifiers include cards with words or pictures related to a movement or sport theme and are placeholders for components within a system. The cards can easily be placed around and used within the design process. The cards can easily be put around and used within the design processes.

The Modifiers span 17 sub-categories that tweak movement by modifying Movement, Structures, Artefacts, People, and Motives. They are formed as props that fuel and scaffold the design process. The artefacts stimulate physical exploration and creativity when participants use them in real-life design settings.

Movement-Based Design Facilitation

The emergence of movement-based design methods presents new challenges for design facilitators. They must guide activities to foster productive outcomes and be skilled in cooperative processes and decision-making. The primary role is facilitating dialogue and collaboration among group members. The facilitator significantly impacts participatory design outcomes and has six key functions:

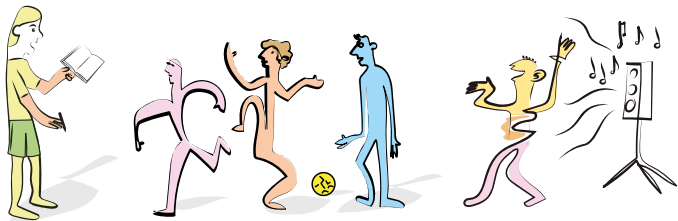
- + Building trust.
- + Enabling participation.
- + Asking questions.
- + Setting direction.
- + Providing values.
- + Advocating for users.

The facilitator must motivate, engage in play, and animate to incorporate bodily experiences – especially if participants have limited movement experience.

The facilitation of movement-based design rests on four pillars: creating a safe and welcoming space, training of methods, embodied ideation, and verbalising embodied experiences.

The facilitator manages their various roles

In applying movement-based design methods, the facilitator plays a crucial role in guiding and shaping the outcome of the design process. The facilitator can adopt different roles, including that of a Game Master, Instructor, Coach and Mediator, Role Model, and Initiator and Animator.





The Game Master plans, prepares the appropriate methods and organises and oversees the design process.

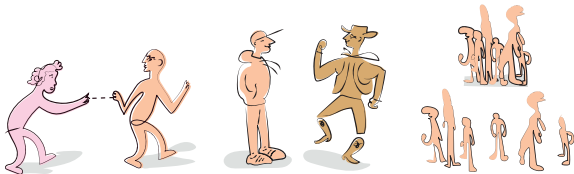
The Instructor explains and structures the execution of each activity but ultimately allows the participants to take the lead.

The Coach and Mediator aim to provoke changes and enhance participants' performance to desired achieve results. They guide the direction of the activity, taking a more active role to gently nudge and steer the group towards a beneficial direction.

The Role Model acts as an "undercover facilitator", engaging in the activity to help others participate in the group activity.

The Initiator and Animator control the activity's purpose and focus on adjusting the energy of the process to achieve the desired outcome. This role explicitly employs 1st, 2nd, and 3rd-person perspectives, promotes improvisation, and animate rather than instructing movement to encourage exploration and improvisation.

The facilitator must create a safe and welcoming space for the participants to move freely and creatively in order to productively include everyone in the process.



Special Needs and Constraint Modifiers

– Brief Introduction to Special Needs in Sports Participation

To qualify the use of Special Needs and Constraint Modifiers, we introduce physical, mental, and social-emotional difficulties and briefly describe some of the most common disabilities. We also emphasize the paradigm shift from focusing on disability to focusing on individual needs and finish this section with a conclusion.

When classifying disabilities, they present different symptoms and challenges, but there are commonalities among them. Many disabilities manifest as physical, sensory, cognitive, or behavioural difficulties, hindering learning, communication, and socialisation in sports and physical activity engagement. Individuals with disabilities often require specialised support and accommodations to succeed in sports. Additionally, it is vital to recognise the potential impact of stigma and discrimination on their self-esteem and mental well-being.

Despite these barriers, individuals with special needs and disabilities possess unique strengths, abilities, and perspectives that can enrich their lives and the lives of others. Recognising and appreciating their contributions, we should strive to foster growth by creating inclusive and supportive environments. By promoting inclusive and accessible sports and physical activities, we can help society including individuals with special needs to further develop their crucial skills and abilities, improve their overall health and well-being, and promote their social and emotional development.

Physical disabilities

Physical disabilities affect a person's physical functioning, including motor skills, movement, and coordination. These disabilities can hinder a person's ability to perform daily activities such as walking, running, or playing sports. Examples of physical disabilities include but are not limited to, cerebral palsy, spina bifida, muscular dystrophy, and mechanical and motor impairments of body parts. Individuals with physical disabilities may need adaptive equipment or people around nudged to make assistive devices or therapy adjustments to benefit just as much from participating in sports and physical activities.

Mental fragility and social-emotional difficulties

Mental frailty and social-emotional difficulties affect an individual's mental and emotional well-being, including their ability to manage stress, cope with challenges, and form positive relationships. Factors such as genetics, environmental stressors, trauma, and neurodevelopmental disorders can cause these difficulties. Examples include but are not limited to, anxiety disorders, depression, bipolar disorder, and attention-deficit/hyperactivity disorder (ADHD). Individuals with mental fragility and social-emotional difficulties may face barriers to sports participation, such as anxiety, motivation, attention deficits, and social interactions with teammates and coaches.

Autism spectrum disorders

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition impacting communication, social interaction, and behaviour. As a spectrum disability, its severity and presentation vary from person to person. ASD symptoms typically appear in early childhood and can include difficulties with social interaction and communication, repetitive behaviours or routines, and sensitivity to sensory input. The symptoms can range from mild to severe and might significantly impact a person's daily living and quality of life. When children with ASD participate in sports, they may encounter sensory processing, communication, and social interaction barriers.

Cognitive learning disabilities

Cognitive learning disabilities (CLD) refer to disabilities affecting an individual's ability to process, store, and retrieve information. These disorders can impact educational and work performance, social interactions, and daily functioning. Examples of CLD include dyslexia, dyscalculia, and language disorders.

When individuals with CLD participate in sports, they may encounter barriers related to memory, learning new skills, following directions, quick decision-making, and communication.



Mental developmental disabilities

Mental developmental disabilities, or intellectual disabilities (ID), affect an individual's cognitive functioning, including intellectual and adaptive abilities and social skills. Characterised by an IQ below 70 and difficulties in adaptive functioning, communication, socialisation, and daily activities, the severity of ID varies from mild to profound. Examples include but are not limited to, Down syndrome, ASD, and Fragile X syndrome. Individuals with ID participating in sports may face barriers related to communication, social interaction, emotional regulation, and behaviour, which can affect their ability to follow the rules, interact appropriately, and understand the game.

Speech or language difficulties

Language difficulties refer to disorders affecting an individual's ability to communicate effectively. These issues can hinder expression or understanding, impacting social interactions, and school and work performance. Speech difficulties may include problems with articulation, fluency, or voice, while language difficulties may involve issues with vocabulary, grammar, or syntax. When individuals with speech or language difficulties participate in sports, communication and social interactions may present barriers.

Hearing loss

Hearing loss affects the ability to perceive sounds and can range in severity from mild to profound. It can be caused by factors, including genetic factors or exposure to loud noises. Conductive hearing loss occurs when sound waves fail to pass through the outer or middle ear, while sensorineural hearing loss happens when there is damage to the inner ear or auditory nerve. Interventions may include hearing aids, cochlear implants, or other assistive devices. When individuals with hearing loss participate in sports, they or surrounding may need special support related to body and spatial awareness, maintaining body balance understanding instructions and communication.

Visually impaired, blind, or color blind

Low vision or blindness affects an individual's ability to see, and individuals with a visual impairment may have difficulty performing tasks such as reading, recognising faces, or orienting themselves in their surroundings. They may require special assistance for daily living activities and assistive technologies such as Braille or screen readers,

orientation and mobility classes, or environmental modifications. When participating in sports, they may encounter difficulties with spatial awareness, depth perception, detection of moving objects, and orienting themselves in unfamiliar environments, which can make learning and performing new skills and interacting with coaches and teammates more challenging.

Shifting Focus from Disability to the Needs of Individuals

When categorising individuals with special needs by type of disability, the list of different disabilities is extensive. Consequently, it is challenging for sports associations, sports designers, or trainers to create specific sports activity programmes or supporting technology for each type of disability. Fortunately, there is an international trend, led by Canada, towards a needs-based approach (for example, www.specialsport.dk¹). By addressing participants' needs rather than focusing on the type of disability, we realise that multiple participants with different disabilities can train together with the same special needs support.

Following the structure shown in the figure below, it is possible to include participants with ADHD and participants with ASD in the same training group (depending on the participants' specific conditions). If the training group can dedicate extra time to learning for each exercise, it can adapt to various disabilities.



The above image show examples of special needs categories. We encourage you to add for your design work.

¹ Specialsport.dk is a nonprofit organisation that works to increase the sports participation of children and youth with special needs and disabilities. Thank you to specialsport.dk for providing the special sports images.

Besides offering growing opportunities for trainers and sports designers to develop and provide sports and physical activities tailored to individuals' special needs, this approach is also proven to be more effective in advancing the development of activities. This approach promotes inclusivity and enhances the overall efficiency of the activities themselves.

Individuals sharing the same disability can have entirely different sets of requirements to succeed in a particular sport or physical activity. These distinct needs may encompass many factors, including physical abilities, sensory sensitivities, cognitive processing, communication styles, and emotional considerations.

To illustrate this point, consider two individuals with autism. While both individuals may require a structured environment in their daily lives, it's important to recognise that not all people with autism experience photophobia - a strong sensitivity to bright light. While photophobia may be a common characteristic among some individuals with autism, it cannot be universally applied to all individuals with this condition. Conversely, photophobia may be more commonly associated with ADHD. Therefore, when addressing the specific needs of individuals with different disabilities, it is possible to design an activity that accommodates multiple disabilities simultaneously.

Conclusion

Considering a participant's special needs, trainers, support staff, sports technologists, and designers can effectively tailor their programmes and activities to accommodate individuals' diverse needs. As designers, coaches, or support staff, we should strive to provide access to high-quality movement and sports activities tailored to each participant's unique needs. We should consider the full range of disabilities and challenges associated with a particular physical activity or sport.



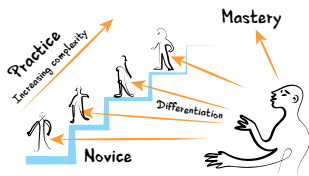
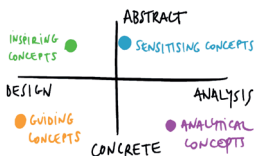
The Impact of MeCaMInD

Through using the MeCaMInD site, www.mecamind.eu we aspire to build an interdisciplinary network, embedding movement as a vital component of the design process. This goal extends beyond merely inventing new design products. Instead, we seek to cultivate a new design mindset where movement is integral to creativity. We foresee this innovative approach influencing future technologies, sports concepts, and movement practices, ushering in a new era for designers, engineers, and students.

We believe in the power of our movement-based methods to promote well-being and a healthy lifestyle. We envision designers, sports teachers, professionals, and engineers creating products and environments that inspire physical activity, bringing joy through movement.

Our vision extends to how we work, play, and interact, fostering an environment where natural and engaging in movement is seamlessly woven into our daily activities. The potential societal impact of this shift is profound, influencing not only individual well-being but also community health, public spaces, and cultural norms.

The method cards have been rigorously tested in various fields, including health treatment, workplace physical activity, inclusive physical activity, mental health in sports, PE-teacher education, creative technology development, high school sports innovation camps, exergames, sports performance enhancement, and many more. This extensive and diverse testing process ensures that our cards can be effectively applied across different contexts, enriching the design process with an understanding of human movement. With these method cards, we aim to spark movement creativity, yielding fruitful outcomes in society.



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Developing the MeCaMInD Cards

The development of the MeCaMInD method cards results from an interdisciplinary collaboration drawing on expertise from engineering, interaction design, and sports sciences, all of whom bring in-depth insights into designing for and with the body. This diverse knowledge base has informed the creation of a toolbox that supports sustainable movement technologies and sports concepts. Each method card is the product of this collaborative perspective, incorporating insights from these varied fields.

Based on these insights, each card succinctly describes a method's goal, procedure, context of use, and potential variations.

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Get online access to +400 method cards, +30 videos, modify or make your own cards, and our extensive knowledge database at:

<https://www.mecamind.eu/>



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