SUMMARY SARPHATI EXPLORE 3

Motor skills in early life

7 October 2021

Sarphati Explore organizes meetings for researchers, health care professionals, policy makers and other stake holders on specific themes. Together we aim to explore future research and collaboration possibilities for relevant topics within Sarphati Amsterdam. By creating network of experts in a certain field we can jointly work towards more impact in the academic world, health care and society as a whole. A third edition on October 7th was themed motor skills in early life. In this report we would like to share the highlights of this meeting with you.

This edition of Sarphati Explore started with plenary presentations by experts in the field of motor skills in early life, highlighting the theme from different perspectives. Mirka Janssen (HvA) talked about the importance of motor skills and the current situation of motor skills regarding primary school children in Amsterdam. Sanne Veldman (Amsterdam UMC, location VUmc) described existing motor skill interventions and the gap between science and practice. Lastly, Annick Ledebt (VU) explained possible relationships between parenting and motor learning in children. Each topic was discussed in more depth in breakout sessions as summarized below.

Enjoy reading!

SESSION 1: WHY MOTOR SKILLS MATTERS

Factors that should be included in research were discussed during the first breakout session. Participants agreed that gender rule or gender bias should be taken into account when developing interventions. Including these factors in interventions could make the difference in how to approach boys and girls and how parents and professionals react to them, taking into account differences in behavior. The session also covered how we could improve motor skills. It is known that increasing physical activity is a way. However, if you consider individual differences, we are faced with the issue of reversed causality: poor motor skills leading to decreased physical activity instead of the other way around. This increases the gap between children with good and poor motor skills. Children have a tendency to participate in activities that they are good at. Children who have poor motor skills, enjoy less being physically active, and therefore may become less physically active. The question was raised if children should be grouped by their motor skill levels. A comparison was made with the current Dutch schooling system, so that everyone could perform at their own level. The participants agreed that we should be careful of separating children with good and poor motor skills, because it may increase inequalities. It was also mentioned that it was important that all children should be given the opportunity to engage in physical activity.

To gain more insight into factors that could influence the motor skills of children, creating a causal loop diagram could be helpful in the systems surrounding this target group. This leads to insights into what factors are already influenced by professionals and policies and where the highest potential lies. For the LIKE project, a casual loop diagram was made for four behaviors in

adolescence: screen time, sleep, physical activity, and unhealthy snacking. This input was used in co-creating actions to improve these behaviors. Within the Centre of Expertise Urban Vitality of the HvA, a casual loop diagram is currently being drafted for the factors that may influence motor skills in primary school children. It's important to formulate the variables in the casual loop diagram as neutral. For the motor skills diagram, there are doubts about whether to add fixed factors, such as genetics, as these cannot be changed. When we are born, there are already differences in motor skills. It's not something you can target through interventions; however, it is also not something to level out of the equation. Some interventions will work better for some genotypes than others. This can be used to level starting abilities in motor skills.

SESSION 2: HOW TO CLOSE THE GAP BETWEEN SCIENCE AND PRACTICE

The gap between research and practice was the focal point of this session, when following an overview of factors influencing gross motor development and interventions promoting gross motor development (international literature). Two intervention studies with a different approach were compared as a start for the discussion. The first intervention Active Beginnings, was conducted in Australia, designed in collaboration with Early Childhood Education and Care Directors and implemented by putting staff together with the researcher. The second intervention, CHAMP, was a high-autonomy, child-centered and teacher-facilitated program, grounded in the Achievement Goal Theory, implemented by researchers and conducted in the United States.

Being aware of the gap between science and practice was the most important message in this breakout session, especially for researchers who lead a research project where they need to involve residents to answer research questions. All agreed on the fact that finding middle ground is also hard. During this session participants shared ideas about how to overcome this gap and thought about approaches for this issue. A starting point to close the gap is by acknowledging the gap. Finding a better balance between science, feasibility and sustainability, important aspects during this session, could be a next step. Feasibility can be explained by being able to successfully carry out the designed program or intervention or by asking the question 'Can this be done in practice?'. Sustainability on the other hand means the ability to keep conducting the program or intervention after, for example, the research finishes. Examples of factors influencing feasibility and sustainability include time, money, available equipment or space, but also factors such as confidence of staff to implement a program.

Some countries do value this bridge between practicality and research. While in other countries funding agencies focus more on theory (point of view of the researchers), this makes it hard to find funding for research that focuses more on the practical aspect (practical view). Making interventions more sustainable by involving stakeholders in the development and actual implementation of the intervention could make the implementation easier, especially by including children and their parents themselves. A project manager who understands the practical aspect, like a PA teacher, can implement research more easily as an extra task for the long run. Given that parents play a big role in young children's lives, they should be involved more when it comes to interventions. Another option is involving private companies, but from a research perspective this could be tricky because you don't want the results to appear to be influenced. Should we focus more on high quality research or actually helping the children?

SESSION 3: POSSIBLE RELATIONSHIPS BETWEEN PARENTING AND MOTOR LEARNING IN CHILDREN

Acknowledge the importance of involvement of parents was the main message of this breakout session. The first results of the GO EXPLORE! study (part of bigger cohort Generaties[2]) suggest that a focus on involving parents can be effective to enhance the impact of interventions. However, involving parents more in exercise seems to be a great challenge. The question is how we can increase the participation of parents in interventions. There are extensive ways to do that, for example by promoting physical activity for the whole family assuming that activity of the children will follow (high dropout, implementation difficult). Another way is to increase the awareness of parents, especially for families that are living in neighborhoods with low opportunity for physical activity.

It's good that parents are aware that a lot can be done outside the sports club, but how to interact, how to encourage and guide the child to play outside? To be there as a parent when children are physically active might increase overall physical activity and enhance the chance that they will improve their fundamental motor skills. Some parents may encounter problems as they may also have limited physical skills and not be very well equipped to inform and instruct the children. Some parents do not spontaneously provide the right support or restrict the child's activity because they consider it to be dangerous. If parents receive support in this, it might enhance the impact of an intervention. A way to do that could be to provide extra information (for example about parental skills). For conditions such as autism, modules have been developed for parents to better interact with their children. In the future, such modules may be good for parents to encourage children to exercise more.

Mapping parenting styles and parenting load, such as interaction between parent and child during exercise in large longitudinal studies is interesting with regard to how this affects the development of the child, and other health outcomes. To do this, it is necessary to first define categories of parenting styles by using micro analysis during interaction between parent and child investigating the situation (like in the GO EPXLORE! project). The observation at micro level can be related to the data at the macro level. Although determinants of physical activity at macro level cannot always be influenced by interventions, several possibilities exist*:* local politics can demonstrate that healthy environments are important for children. It is therefore important to encourage parents to make use of the facilities (the *micro level)*, like seeing a physiotherapist if needed. Together they could make effort to let children move more together with parents and to find what is possible within the family.

HOW TO TAKE THE NEXT STEP TOGHETHER

Altogether, more insight into factors influencing motor development and approaches to close the gap between science and practice are needed. The possible relationship between children's motor skills and parenting involve different pathways that can be captured through analyses at micro and macro levels. The tools to observe and code interactions at micro level during motor tasks are not yet fully developed yet and need further research. Setting up a follow up meeting to come to specific ideas and to see how we can proceed would be a great start. What is the most urgent thing to invest in? Is there (Sarphati Cohort) data that you want on this? How could Sarphati Amsterdam support in all of your ideas? We would like to hear from you! You are more than welcome to share any questions or ideas with us via info@sarphati.amsterdam.