

Intervention for Children with  
Developmental Coordination  
Disorder: Working with  
Professionals and Parents

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# Initial Thoughts on Intervention

- Movement takes place in a context and therefore context is always considered
- Movement often involves others and therefore different individuals plays different roles
- Movement involves learning specific skills and those that involve generalization
- Movement involves being able to participate and being able to learn
- Movement is the only way we have of interacting with both other persons and the environment
- Thus movement involves the total ecology of the child's daily life

# Ecological Intervention

- In the light of this we (**Sugden, Henderson, Barnett**) have entitled our approach to supporting children with DCD, Ecological Intervention (EI).
- EI is a way of thinking and acting , an approach, that can be delivered by different individuals.
- These different individuals play different, but equally important, roles- child, parents, health professionals, teachers, others.
- Our starting point is that intervention should be an integral part of daily living.

# Key Features of Ecological Intervention

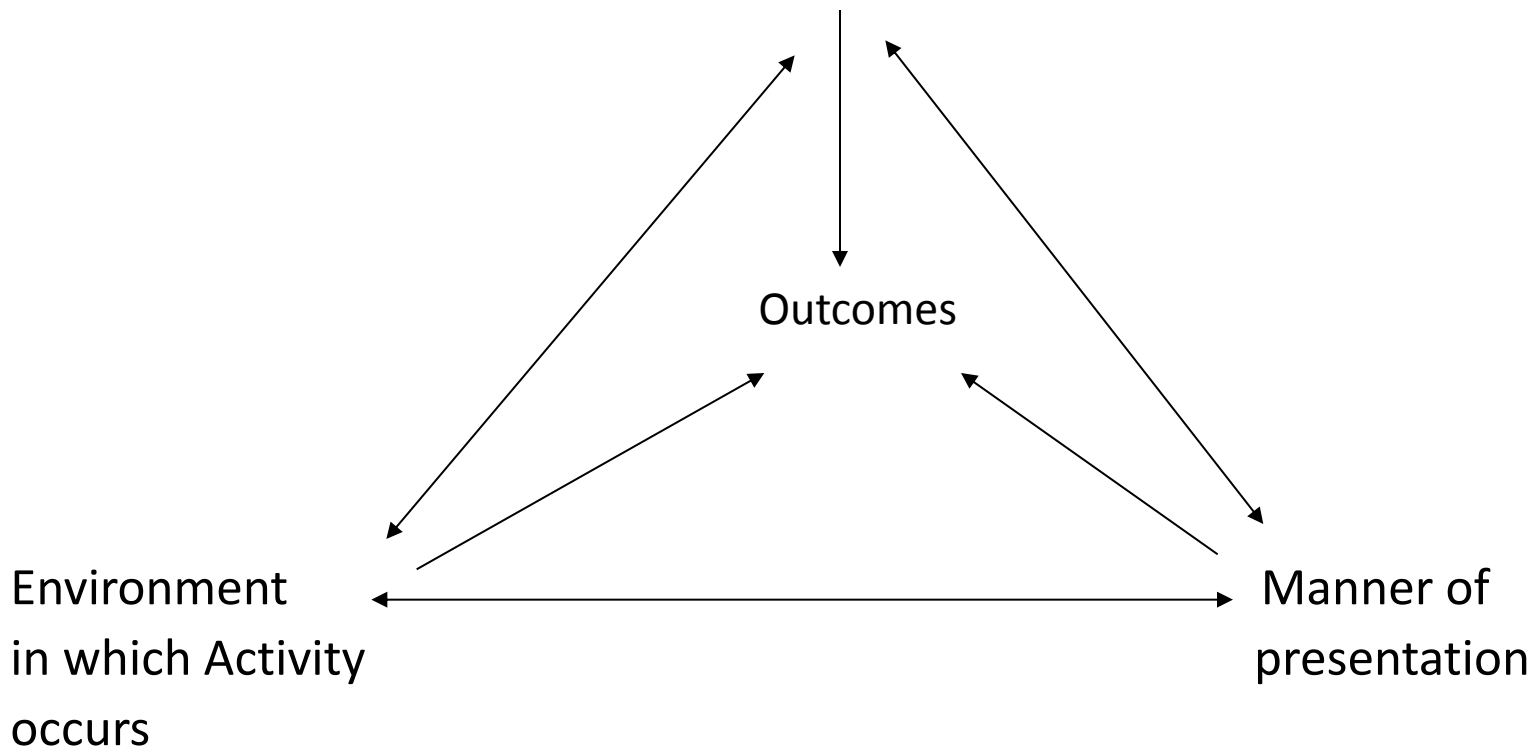
Intervention outcomes are a function of the interaction of the child's resources, the environmental context and the manner of presentation of tasks to be taught.

Or put another way

Any difficulties do not solely reside in the child!

# Ecological Intervention involves three major variables

Resources of the Child



# Implementing Ecological Intervention

The Approach involves:

- Increasing participation through engineering and changing the environmental context
- Increasing learning through good therapy/teaching
- Leading to:
  - Enhancement of child's resources
  - More favourable overall outcomes

# Increasing participation Through Changing/Engineering the Environment

- Participation is a prerequisite for learning.
- We know from other fields (reading) that time spent on appropriate practice is a hugely influential variable for learning.
- Time spent on practice to a large extent depends upon enabling participation
- In order for children to participate the environment has to be accommodating and inviting

# What we know about quality of life in children with general developmental disorders and participation in leisure activities.

- Active participation is important for physical well being.
- Participation is associated with increased self esteem, self competence and respect from others.
- Participation leads to greater happiness and enjoyment of life
- Participation is important for developing friendships



# What we know about Participation and Children with DCD

- Children with DCD participate less than their typically developing peers (TDP), thus widening skill gap.
- This gap widens over time especially in girls.
- Children with DCD enjoy participation less and parents are less satisfied with outcomes.
- There are spin off deficits such as poorer peer relations, lower self concept, and self worth.
- In spite of the above, much of this can be remedied by altering the participation variables.

# In practical terms what does the environmental context involve?

- **Family and home**-*build activities into daily life of family not just special sessions, so food preparation and clearing, gardening as well as family walks, cycles and other leisure pursuits.*
- **School setting**-*more reasonable adjustments; more encouragement, promotion; built into first principles of school policy-labs, PE etc.*
- **Health services**-*how to use professional expertise to link with, and support education and empower parents. Different practices and scheduling according to client needs-group work for example.*
- **Community support**-*sports centres to actively seek rather than passive policy*

The 'accumulation of marginal gains' or lots of small changes result in big changes overall.

- By modifying the environment in these ways we accumulate small yet significant increases in participation.
- Thus by increasing enjoyable participation we have a child on task for more time actively being involved in more appropriate practice.

# Ecological Intervention: Structuring the learning Programme

- Recognising a difficulty
- Collecting information to plan the programme
- Planning the Programme
- Implementing the programme

# Collecting Information on the Resources of the child

- Standardised tests- motor and others that are appropriate such as language and behaviour. MABC, DASH
- Dynamic assessment-observation by skilled therapist
- Criterion referenced tests-various checklists for health professionals teachers, parents and others
- Interviews, health professionals, child, teachers, parents, others
- School reports
- Co-occurring characteristics-attention, personal and social, cognitive, other.

# Collecting Information on the resources of the child

- POP
  - Profile-strengths and needs
  - Objectives-negotiated with child, parent others.
  - Priorities-immediate need, quick wins, lead to others.

# Participation and Successful Learning

- **7 points for guidance**
  - The Key worker-the Movement Coach
  - Organising the context
  - Working in a meaningful context
  - Learning specific skills through task analysis, task adaptation and expert scaffolding with cognitive motor approaches
  - Learning specific skills is not enough: broadening the learning through generalisation and cognitive motor approaches
  - Instructions, practice and feedback
  - Monitoring and evaluation

# The Key Worker Movement Coach

- The person responsible for the organisation of delivery and monitoring of EI.
- Need for central person to argue case and take responsibility
- Plan of action
- Negotiate with significant persons
- Coordinate with families
- Who is it-possibilities?



# Organising the context

- Data on:
  - Child, targets s/he has set
  - Targets others see as important
  - Support systems and possibilities
  - Individuals and their roles
- Meeting and firm commitment
- Scheduling and practice
- Communication and timetabling for action

# Working in a meaningful context

- Functional tasks
- Realistic and relevant
- Everyday activities-formal and informal
- Active movements

# Teaching specific skills through task analysis, task adaptation and expert scaffolding

- Analysing
  - Adapting
  - Strengths –weaknesses
  - Expert scaffolding
  - Bike riding example
- 
- In most cases specific skills need to be generalised

# Choice of tasks

- **Functional activities-** from assessment, objectives and priorities. Very strong research evidence for this.
- **Group tasks for generalisation** eg same cognitive processes, similar demands but vary the detail. Helps 'solving a problem'.

# Task adaptation and task Analysis

- **Task adaptation** good for participation.
- **Task analysis** good for learning
- **Together** they interact and achieve both participation and learning.

# Task Analysis and Adaptation

- Analysis:

–Break down the task into components, each one being:

- a whole in itself-for motivation
- easy to build into the overall task

- Adaptation

- Change/modify task
- Modify instructions, feedback.

Teaching specific skills is not enough: broadening the experience through generalisation

**– Prior learning affecting new learning**

- Taking information, skills, knowledge learned in one context and using them in another
- Performing new skills in a slightly different manner to ones learned

# Generalisation

- What is required to generalise?
  - The acquired knowledge, strategies, dispositions, abilities, information for a particular task
  - A recognition, automatically or consciously/cognitively, that the new context requires the above.

The second bullet point is the one that often proves to be very problematic and particularly resistant to improvement in children with atypical development



# Generalisation

- So we focus on:
  - **Tasks**  
*Type and range*
  - **Learners**  
*Cognitive approach involving learner's perception of similarity*
  - **Contexts**  
*Sociocultural perspectives and social interactions in context*

# Facilitation of Transfer/Generalisation

## Clinical/educational/home settings and practices

- Variability of examples/practice in class of actions (**Task**)
- Importance of explicit task analysis (**Learner**)
- Cognitive strategies-explaining to each other, teaching of self regulation, monitoring (**Learner**)
- Expert scaffolding (**Context**)
- Practice in context (**Context**)

# Example of handling the learning process

## Instructions and practice

- Understanding the skill
  - *Short and simple, move straight into task; pick out 1 or 2 major points the child needs to understand. Feedback the same.*  
*Cognitive awareness*
- Acquiring and refining the skill
  - *Gradual progression to looking at errors and how to correct.*  
*Cognitive awareness*
- Automating and generalising
  - *Dual tasks and different contexts/cognitive awareness*

# Monitoring and Evaluation

- Ongoing monitoring
  - Check with child-enjoyable-progress
  - Check with others-carryon? Adjustments?
  - Realign targets and priorities?
- Evaluating the whole programme
  - Childs view
  - Meeting of original targets-view of the team
  - Test data
  - Other data

# Case study

## Boy

- Referred by health visitor
- Born 6 weeks prematurely
- Concerns since reception - fidgeting, concentration, shouts out, clumsy
- Extra help in school - real problems holding a pencil, handwriting “appalling”
- Good memory, conversation & computer skills

# GOALS:

- Writing - parents choice but he agreed & set following goals for himself
  - Sitting properly, holding paper, handwriting,

- Laces

- Ball games

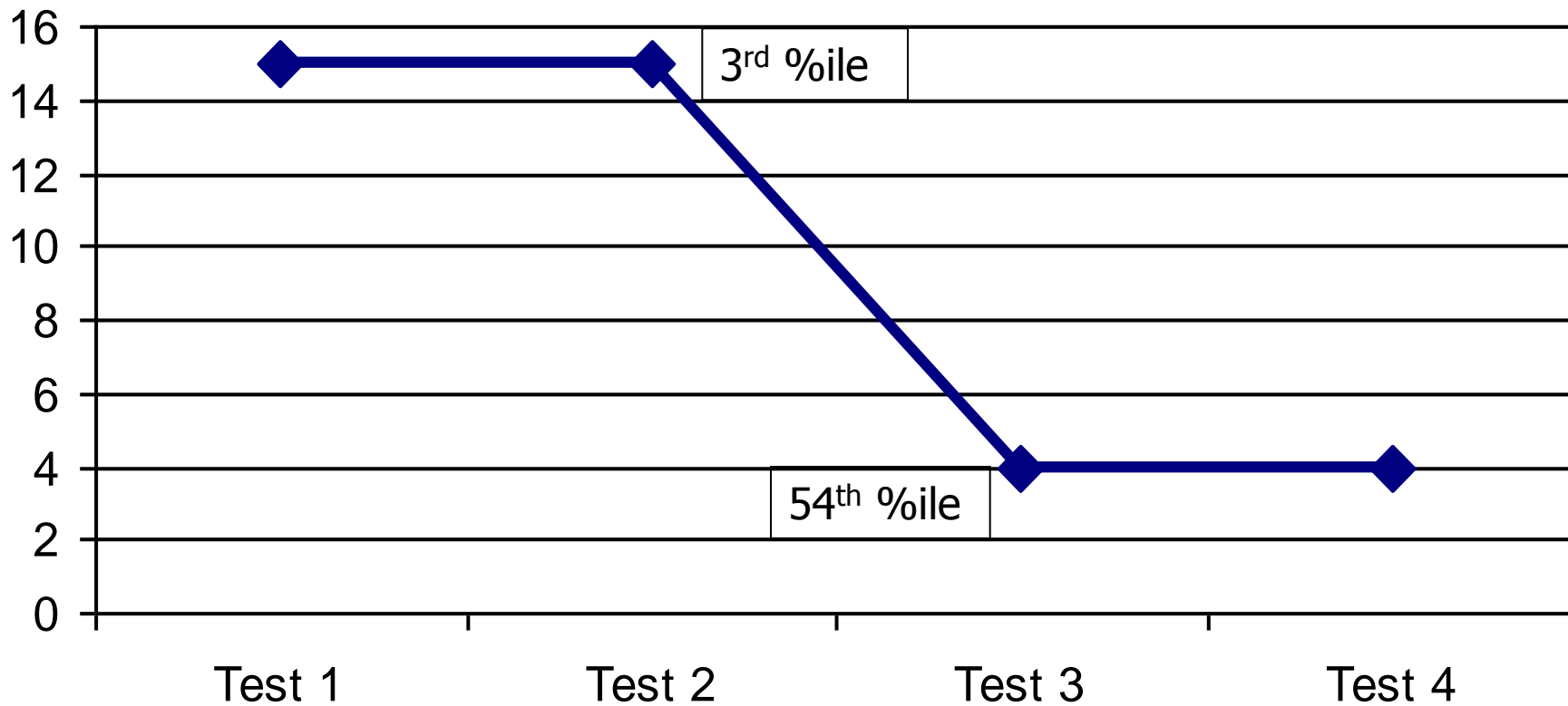
Not worked on but identified by child:

- Trying new things on the playground - a bit scared
- Running - in races mostly win

# Intervention methods

- Child & parent agree goals
- Therapy 8 times over 2 weeks - 50 minutes- in group of 5-peer support, cooperation.
- Based on functional tasks from criterion B
- Teachers acting in the classroom mainly manual skills, laces manipulation and handwriting. Over an 8 week period.
- Local sports club and small side soccer
- Parents-dressing support; food preparation, some gardening.

# MABC total score





# Results

- **Coordination improved** -observation at camp
- **Writing improved** - sitting position, hand on paper, mum says she can now understand writing in homework book.
- Can now do own laces (occasionally come undone)
- **Ball skills** - minor change on MABC (but overall score improvement) but improvement in football skills noted by parents, teachers, child and OT.
- **Running & trying new things** on the playground - he says no longer an issue

# An Example from DCD Group Work in Leeds

- Supported for 4-5 years by Action Medical Research
- Longitudinal – 31 children – multiple assessments
- Periods of intervention, non intervention & monitoring
- Dilemmas:
  - Long waiting lists-up to two years
  - Specific Professionals, PTs, Ots– high skill – low contact time
  - Others – Teachers/Parents – unknown skill – high contact time
- Results over period- Formed 3 groups
  - 14 stayed out of lowest 5%-10 out of lowest 15%
  - 8 variable- some (5)staying out as long as intervention continued
  - Thus 19 out of 26 improved as long as intervention is present
  - 2 minor changes and 2 children stayed in lowest 5%

# Concluding Comments

- Participation is essential for learning to take place.
- ‘Little and often’-*amount of appropriate* practice is the major influencing variable.
- Clever use of health professionals and significant others, parents, teachers and community
- The problems never resides solely in the child.

## Final Thoughts

- Much of the definition and particularly intervention success is in our control-optimistic model.

*Engineer/change the environment and deliver good learning practices and strategies*

# Further Reading

- Henderson, S.E., Sugden D.A. & Barnett, A.L. (2007). *Movement Assessment Battery for Children-2*. (MABC-2) London: Pearson.
- Sugden, D.A. & Henderson, S.E. (2007). *Ecological Intervention for Children with Movement Difficulties*. London: Pearson.
- Barnett, A.L., Henderson, S.E. Scheib, B. & Schulz, J. (2007). *Detailed assessment of Speed of handwriting*. (DASH). London: Pearson.
- Sugden, D.A. & Wade, M.G. (2013). *Typical and Atypical Motor Development*. Clinics in Developmental Medicine, Mackeith Press.