



Dyspraxia Support Group of New Zealand Inc
Recognising Developmental Co-ordination Disorder

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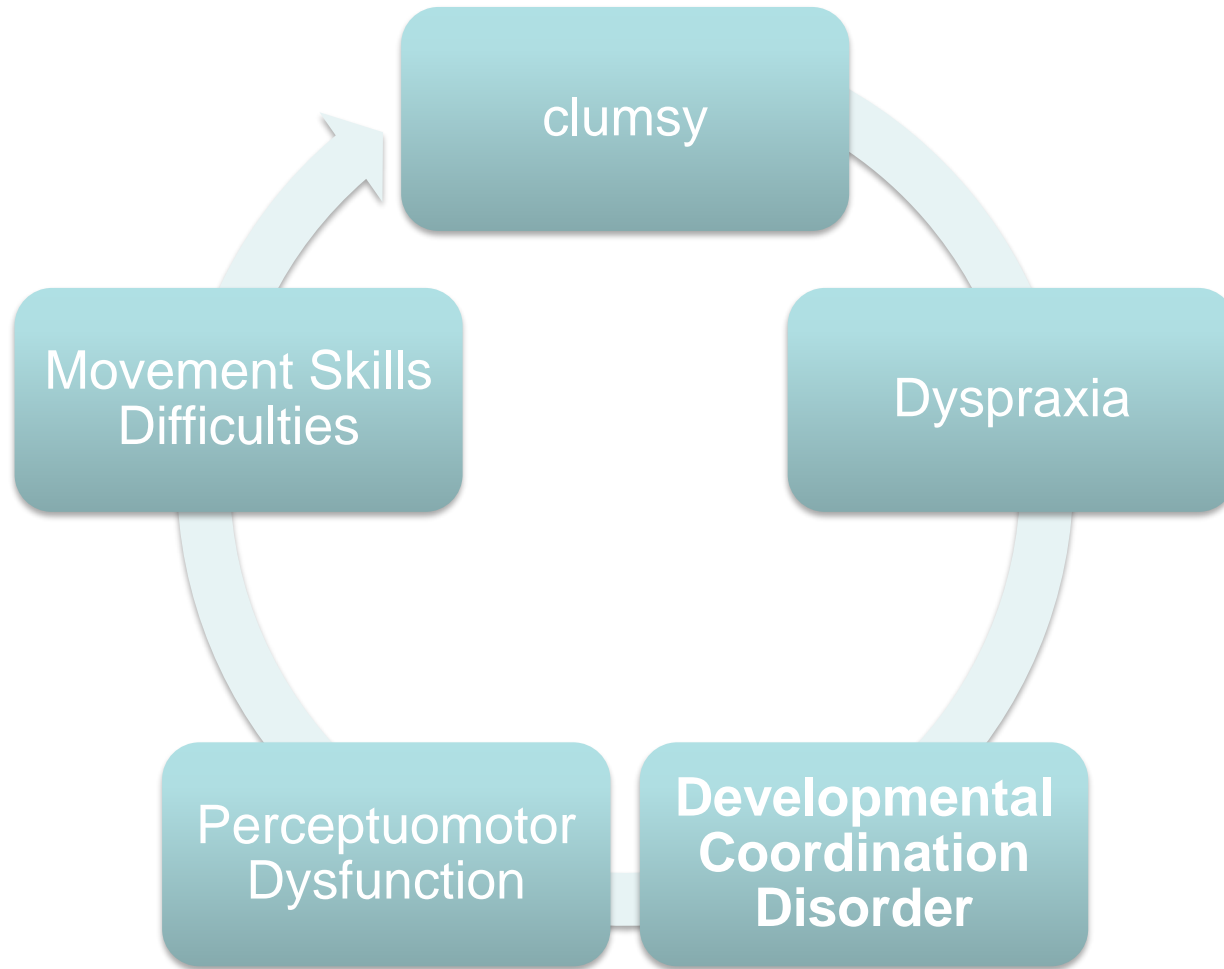
Intervention in Children with Developmental Coordination Disorder: Working with with Parents and Professionals

From Identification to Intervention

Initial Thoughts on Improving Movement Skills

- **Movement is the only way we have of interacting with both other persons and the environment**
- 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
- Thus movement involves the total ecology of the child's daily life

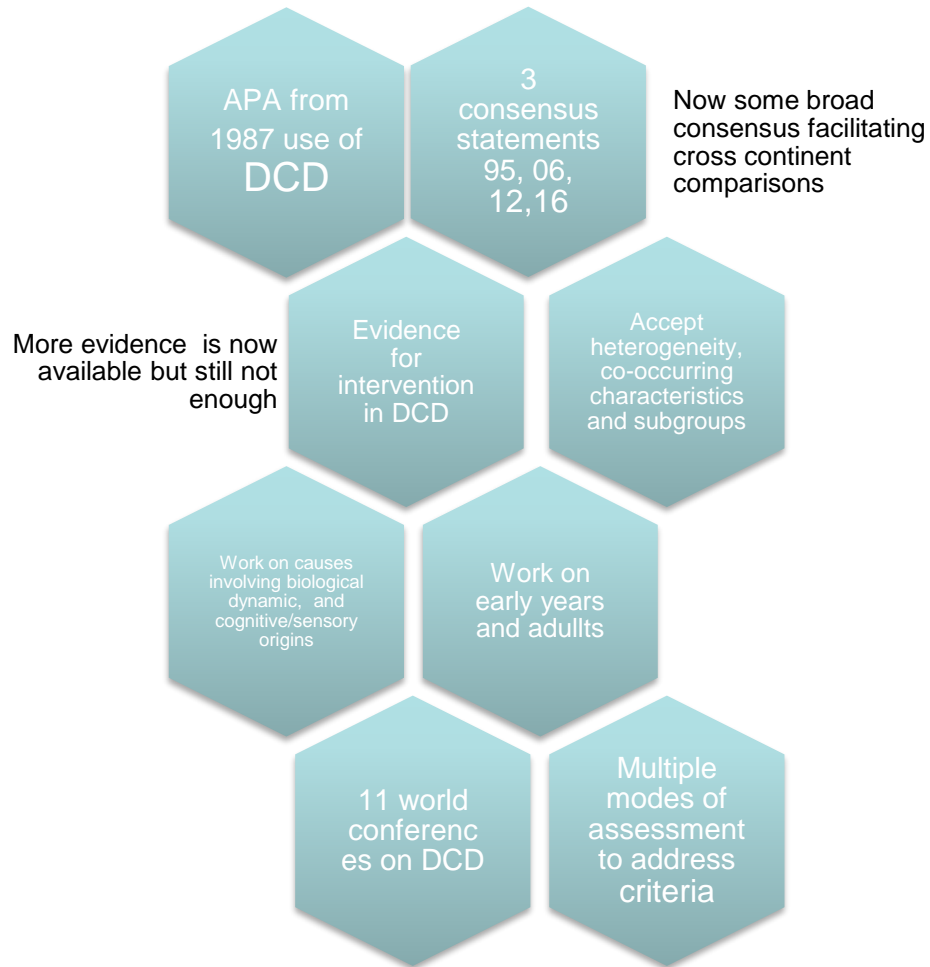
Terminology



Terminology

- DCD is favoured internationally. Only one with:
 - Recognised definition across countries
 - Both APA and WHO use it for primary definition
 - All at 10 international conferences over last 20 years use it
 - High level journals readily acknowledge this is the title to use
 - New European guidelines employing global experts use it.
 - Dyspraxia used clinically in many places and is a good strap line but has few of the above criteria and comes from adult neural models. (I know this will raise queries!!)

Current Scene



Diagnostic Features

DSM V 2013

Diagnostic Criteria

- A. Acquisition and execution of coordinated motor skills is substantially below expected given CA and opportunity.
- B. A Significantly and persistently interferes with academic activities or activities of daily living appropriate to CA and impacts on school, leisure, vocational activities.
- C. Onset of symptoms is in the early developmental period.
- D. Deficits not better explained by intellectual disability, visual impairment or neurological condition affecting movement (CP, MD).

Headline Characteristics

- Core is motor impairment
- Interferes with activities of daily living and/or academic achievement
- Many (most) will have co-occurring characteristics
- Prevalence for ID (as opposed to monitor) 2-4%. APA gives 6%
- Usually more boys than girls
- Diagnosis below 5 not recommended but this does not mean don't do anything
- Without intervention the problem usually stays although symptoms may change
- Most work done with 6-12 year olds but now preschool and adults becoming a focus of study.

International Consensus 2016

Blank et al

- Originally 2012 and revised Stockholm meeting 2016.
- Terminology
- Assessment and Diagnosis:
 - As 2013 APA
 - % Different according to support systems
- Intervention
 - Task based-NTT; COOP; EI
 - Handwriting specific case?

Ecological Intervention

- In the light of this we have entitled our approach to supporting children with DCD, Ecological Intervention (El Sugden & Henderson, 2007).
- 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 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!

Implementing Ecological Intervention

The Approach involves:

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

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

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

Participation and Children with Movement Difficulties

- Children with MD participate less than their TDP, thus widening skill gap.
- This gap widens over time especially in girls.
- Children with MD 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 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- *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 different 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.
- We then look to making small changes in the learning process from many different angles.

Issues not usually Addressed

- Stages of learning geared to instructions/biomechanical/morphological variables.
- Instructions/feedback early to later in learning phase
- Freezing to freeing degrees of freedom
- Concept of variability

Comments

- **Participation** is essential for learning to take place.
- ‘**Little and often**’-*amount of appropriate* practice is a major influencing variable.
- **Clever use of support**: health professionals and significant others, parents, teachers and community.
- **Professionals cascade skills**
- **Group work**
- **Task oriented approaches**
- **Evidence from current motor learning work**
- The **accumulation of these lead to marginal gains** in multiple areas leading to big improvement overall.
- The problems **never** reside **solely** in the child.

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

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-language, cognitive, social, motor and others that are appropriate
- Dynamic assessment-observation by skilled teacher
- Criterion referenced tests-various checklists for teachers, parents and others
- Interviews, 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-Key worker
 - 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, 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 and language examples

- 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'.
- **Specific tasks according to need.**

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

- Break down the task into components
- Each component has to be:
 - achievable
 - a whole in itself-for motivation
 - easy to build into the overall task

Task Adaptation

- **Change** the context/environment-
modify the task.
- **Modify** instructions, feedback.
- **Adapt** the assignment.

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**
Cognitivists and 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, writing,

- Laces

- Ball games

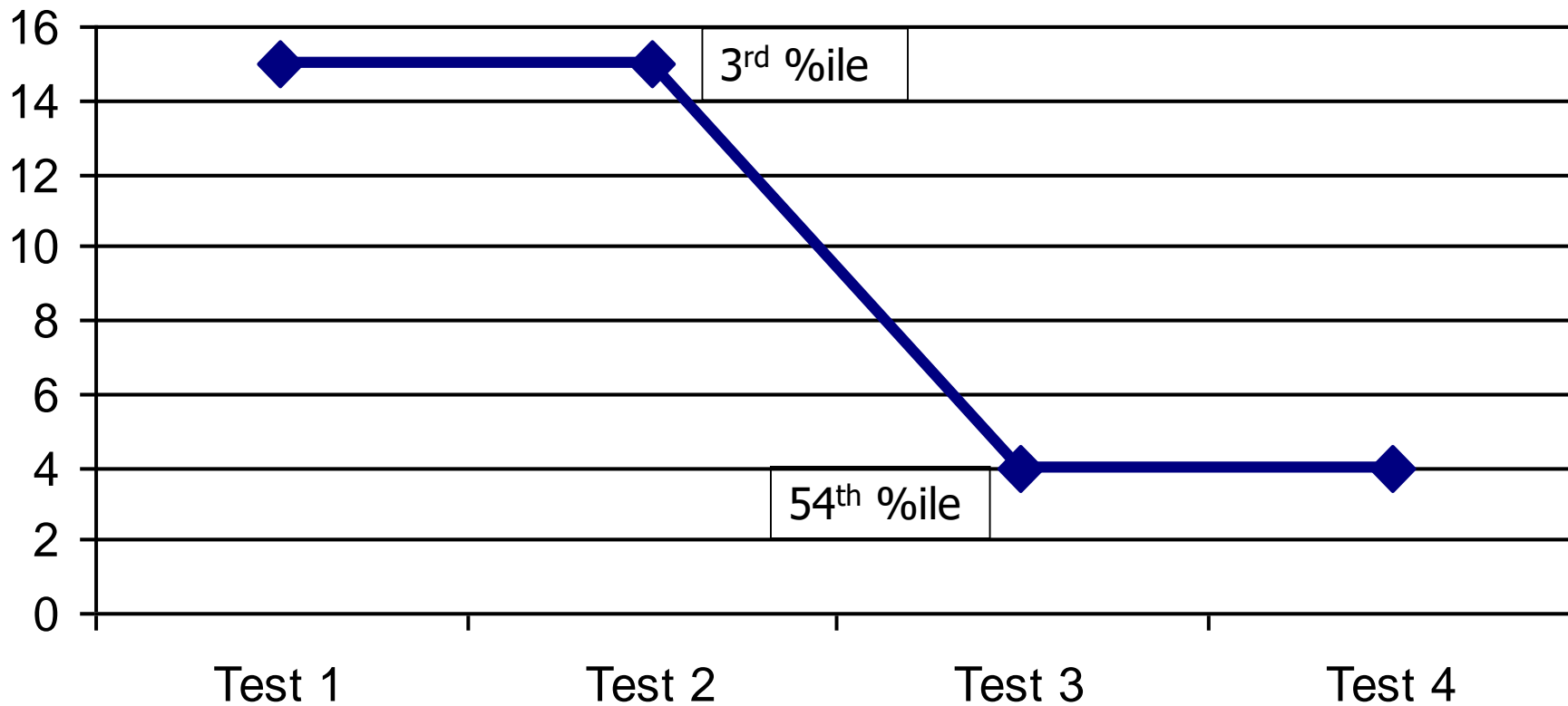
Not worked on but identified by child:

- 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 Work in Leeds

- Supported for 4-5 years by Action Medical Research
- Longitudinal – 31 children – multiple assessments
- Periods of intervention, non intervention & monitoring
- Dilemmas:
 - We wanted to help
 - Long waiting lists-up to two years
 - Specific Professionals, PTs, OTs & others – high skill – low contact time
 - Others – Teachers & Parents – unknown skill/potential – high contact time

Sequence of events over project period

Assessment of total Group

7 weeks **No Intervention**

Assessment of total Group

Group 1 Teacher ***Intervention 7 weeks***

Group 2 Parent

Assessment of total Group

Group 1 Parent ***Intervention 7 weeks***

Group 2 Teacher

Assessment of total Group

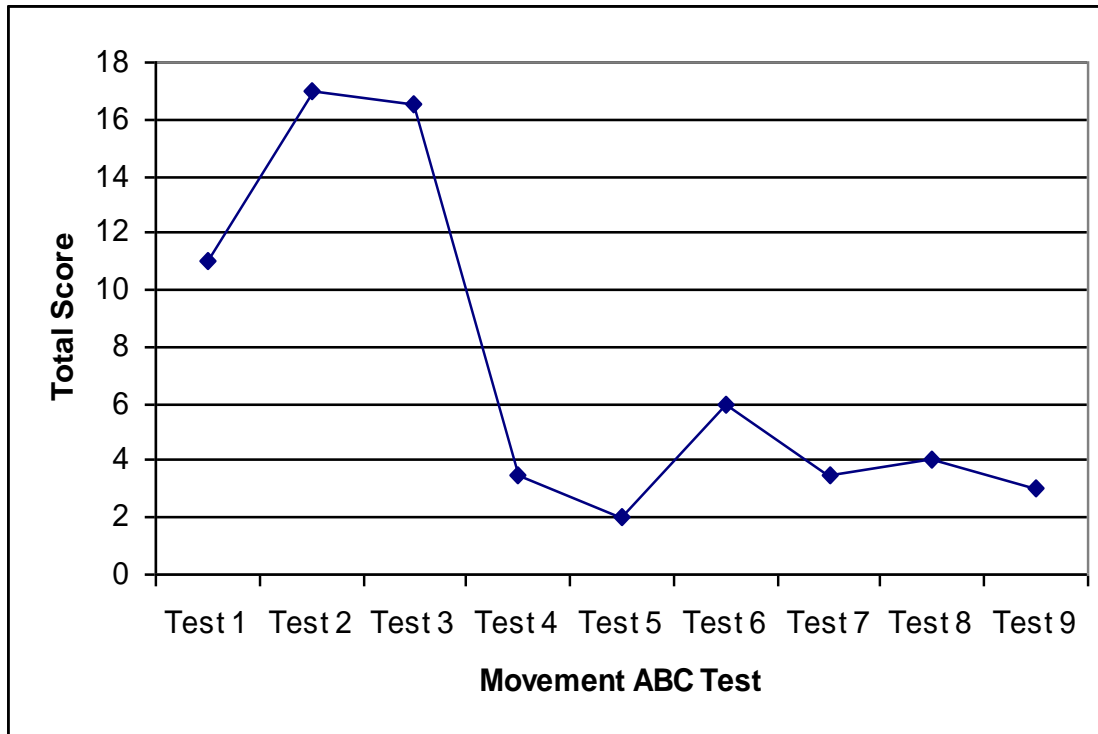
7 weeks No intervention

Assessment of total Group

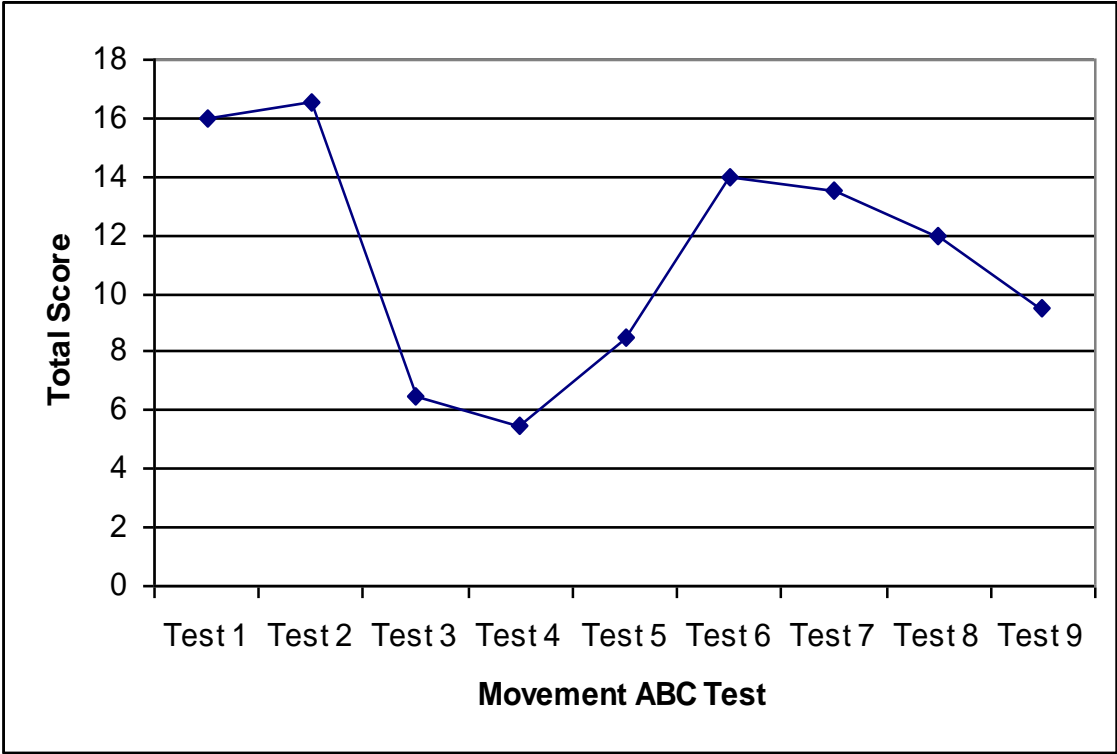
Monitoring

- Monitored and assessed regularly for 2 years
- 26 followed through, testing plus interviews with parents and teachers and children.
- 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% - no improvement

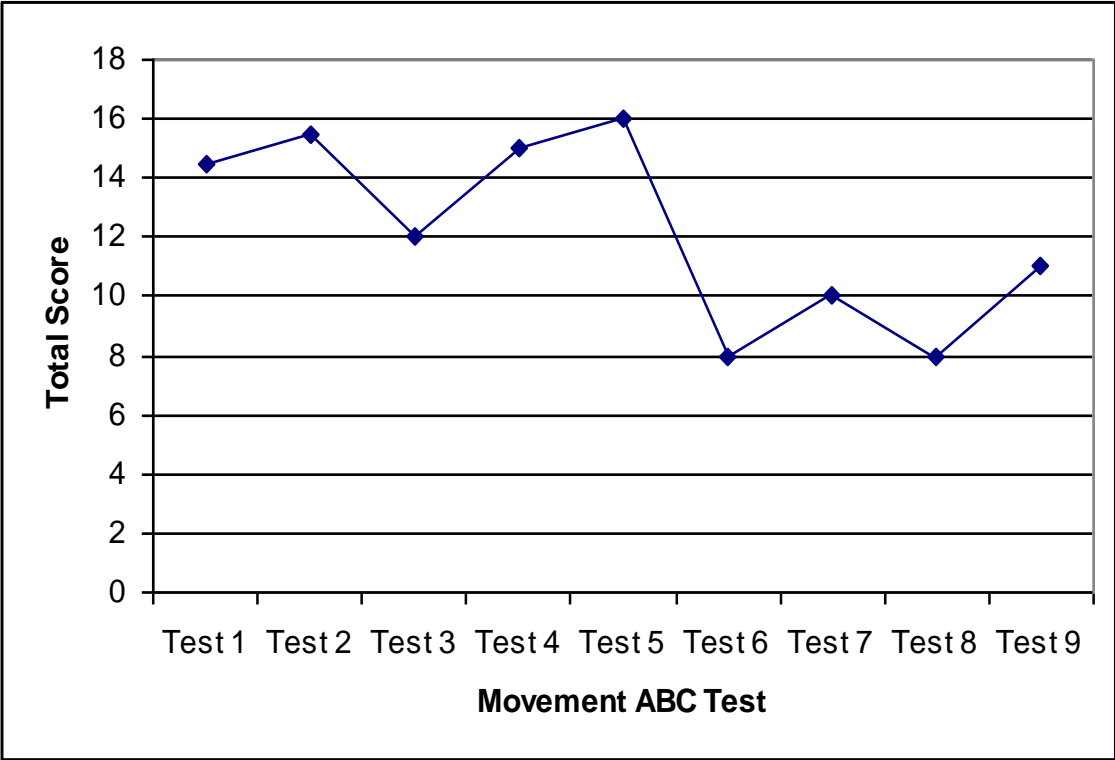
Movement ABC Test scores for Child 4



Movement ABC Test scores for Child 8



Movement ABC Test scores for Child 26



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 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-we have seen this in many intervention studies.

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

movementmattersuk.org/

