Motor Skills Assessment and Intervention in pre-school and primary school

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Children and young people with motor skills difficulties are:

- At risk of academic underachievement (Davis, Ford, Anderson & Doyle, 2007; Alloway, 2007)
- At risk of social and emotional problems such as low self-esteem (Piek, 2009) and behaviour difficulties (Davis et al., 2007)
- More likely to be socially rejected (Kauer & Roebers, 2012)
- At risk of reduced physical fitness (Lubans et al., 2010)

These difficulties:

- become evident from a young age (Sullivan & McGrath, 2003)
- Rarely occur in isolation (Hill & Barnett, 2011)
- Have a long-term impact on mental health, academic achievement and career choices (Losse et al., 1991; Hill & Barnett, 2011)

Most fundamental movement skills are in place by 8 years of age so pre-school and primary age ranges are important to target for development of these skills (Piek, Hands & Licari, 2012)
How can we assess children’s motor skills?

- Assessments need to be sensitive to children’s development, possible gender differences and changes in motor ability patterns over time (Piek et al., 2012)
- Standardised assessments are often closed tests that are time consuming to administer
- There tends to be a lack of agreement between tests regarding range (e.g. gross, fine, planning) and type of skills (underlying motor abilities or functional movement performance) that should be or are assessed
Assessing motor skills

- Tests should be appropriate for particular use e.g. clinical assessment, research or intervention evaluation
- Some assessments may be too general or lacking validity to be able to measure specific interventions
- Few measures exist for assessing pre-school interventions
- Handwriting and writing readiness are particularly difficult skills to assess
What do schools need? An assessment that focuses on relevant skills, is quick to complete and informs intervention and evaluation.

What form should an assessment of children’s motor skills take? Strongest evidence is for functional-motor approach to assessment of motor skills (Sugden and Dunford, 2007)

The best evidenced motor skill norms were used where possible (Crawford, Wilson & Dewey, 2001)

Tool developed and revised over a year with OTs, teachers and TAs.

Inter-rater reliability testing with 37 children in 11 schools found high levels of agreement between researchers and TAs.
Assessment tools (KS1 and KS2) focusing on functional skills relevant to the school context (gross, fine motor skills and organisational skills)

Children are assessed individually on 10 tasks and each assessment takes approximately 15 minutes

The assessment is designed to be done before the child takes part in a motor skills group and at the end

For each item the child is rated on a four point scale, which follows a skill acquisition model

- 0 = Not able to complete task
- 1 = Early stage of skill acquisition
- 2 = Becoming more competent
- 3 = Fluent
How can we intervene effectively?

General intervention principles:
 Intervene in the least intrusive way possible
 Tailor the intervention to the severity of the child’s difficulties
 Ensure activities are engaging and relevant
 Provide opportunities to develop skills to mastery in order to build self-esteem (Bandura, 1994)
 Use positive feedback to increase motivation (Avila et al. 2012)
 Teach a global strategy – Goal, Plan, Do, Check for all skills (Mandich, Polatajko, Missiuna & Miller, 2001)
 Develop self-efficacy e.g. by encouraging children to plan their own solutions (Mandich, Polatajko, Missiuna & Malloy-Miller, 2001)
 Use task specific strategies e.g. children verbalising and visualising and adults modifying tasks and prompting (Wilson et al. 2002; Henderson, Barnett & Sugden, 2007)
 Provide social learning and generalisation opportunities (Mandich, Polatajko & Rogers, 2003)
Interventions tend to focus on enhancing the EY curriculum for all:

- Developing Early Motor Skills (Ostermeyer & Knight, 2008)
- Little Champs (Draper et al. 2012)
- Primary Movement Programme (Brown, 2010)
- Animal Fun (Piek et al. 2010)
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- large scale RCT study (520 4.5-6 year olds)
- whole class intervention
- Flexible - teachers decide pace and content
- Gross motor, fine motor, self-perception and social skills
- assessments (motor, social, self-concept)
Interventions 4-10 years

- Meta-analysis of 11 studies of children aged 4-10 years demonstrated effectiveness of FMS interventions to improve children’s gross motor skills. Further studies are needed to assess ideal programme/session duration, instructional approaches and focus on other areas of FMS (Logan, Robinson, Wilson & Lucas, 2011)

- Further comparison needed re underlying motor abilities vs. functional movement performance approaches

- Whole class vs targeted intervention
The Manchester Motor Skills Programme (Bond, 2011)

- After children are assessed they take part in a group for 20 mins daily for 8 weeks (or 3-4x per week for 12 weeks)
- Assessments are used to inform group selection and planning
- The programme is designed to be flexible within a prescribed daily structure

Session structure

- Group warm up
- Paired activities
  - timed tasks
  - tracking individual progress
  - mix of fine motor, balance or organisational and ball skills
- Collaborative concluding activity
- Celebrating successes/personal target setting
How effective is the MMSP?

- Repeated measures design with 24 children assessed using the MMSA

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<th>T2</th>
<th>T3</th>
<th>T4</th>
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Results

Monthly progress

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Future implications

- Continue to focus on early intervention
- Large scale studies likely to be difficult to fund
- As practitioners/researchers we need to show the link between our motor skills interventions and impact on broader outcomes e.g. academic and social/mental health outcomes
- Address some of the gaps in the evidence base e.g. joint work with parents
- Develop local networks and research collaborations (Bond et al. 2011)
References

References

References