Targeted Motor Control TMC

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Developed and Designed the TMCP in Jan 2011
Targeted Motor Control Program
Amanda Bacon

- Screening and Individual Profile (Key Objective Assessment markers)
- Intervention and Education Program (Targeted Motor Control [TMC] Program)
- Re-evaluation (Key Objective Assessment Markers)
- Data Analysis, Reflection and Future Program Planning
Key Objective Assessment Markers

- Single Leg stance
- Hop
- Forward/Backward line Jump
- 20m Run Test
- Ball Bounce Tests (Age Dependent)
Timing of Class Sessions

- Assuming 25mins of actual activity time
- Pick one activity from each of the five categories so each area is covered per lesson
- End session with 5mins of fun/group activity
- Each activity station should be timed and take approximately 5mins
Timing of Class Sessions

- Term 1 (5 weeks) starting in Week 5 with Assessment
- Term 2 (9 weeks) Start TMC program two class sessions per week of 45 mins available (assume 25 min of actual activity, 5 min of fun activity at the end, 5 min of transitions between stations, assume 10 min of other lost time)
- Term 3 (10 weeks) Continue TMC program two class sessions per week of 45 mins available
- Note: only one session per week might be used for TMC and other session may be used for regular curriculum – at teachers discretion
- Term 4 (5 weeks) available for re-evaluation
General Theme of Sessions

- Ensure communication style always uses positive encouragement
- Correction of form in activities concise and clear
- Feedback (verbal, visual) timely and positive
- Focus on strengths and abilities
- Ensure maintain fun environment
- Focus on individuals improvement and never use comparisons within the group
- Always ensure activity is achievable
- Finish session with a fun/group activity
# Attendance Sheet

P = attended and participated, A = attended but did not participate, D = did not attend

| Name | Class | Week | Term 2 | | Week | Term 3 | |
|------|-------|------|--------| |------|--------| |
|      |       | 1    | 2      | | 3    | 4      | |
|      |       | 5    | 6      | | 7    | 8      | |
|      |       | 9    | 1      | | 2    | 3      | |
|      |       | 4    | 5      | | 6    | 7      | |
|      |       | 8    | 9      | | 10   |        | |

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Executive Summary

- Screened 38 preps, 40 year ones, captured and flagged for program 22 girls, 19 girls participated and all girls completed program; nil dropped out. One year three girl received program individually also.

- Logistics: Scheduling, practicalities (Ms Kym Phillips)
Executive Summary cont.

- All students that participated in the program demonstrated some improvement in all of the Key Assessment Markers.
- Although not all individual improvements were clinically significant, over 85% of the girls showed improvements in each of the Key Assessment Markers that were clinically significant. All girls showed statistically significant improvements in at least one area.

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Key Assessment Markers

- Single Leg Stance Left/Right
- Forward/Backward Line Jump
- Ball Catch Chest
- Streamlined markers chosen (numbers and staffing)
Results

Key Assessment Marker – Single Leg Stance Right

Notes:
• Grade 1 students are numbered 4-11
• Prep students are numbered 12-22
Results

Key Assessment Marker – Single Leg Stance Left

Notes:
• Grade 1 students are numbered 4-11
• Prep students are numbered 12-22

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Results

Key Assessment Marker – Fwd/Bwd Line Jump

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Notes:
• Grade 1 students are numbered 4-11
• Prep students are numbered 12-22
Results

Key Assessment Marker – Ball Catch Chest

Notes:
• Grade 1 students are numbered 4-11
• Prep students are numbered 12-22
Analysis of Results

- Zero (line of statistical significance)
- Five (line of clinical significance)

<table>
<thead>
<tr>
<th>Key Assessment Marker</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Std dev of mean</th>
<th>95% Confidence interval for true mean</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Single Leg Stance Right (Time)</td>
<td>11.88</td>
<td>10.98</td>
<td>2.519462091</td>
<td>6.589129609</td>
<td>5</td>
</tr>
<tr>
<td>Final Single Leg Stance Left (Time)</td>
<td>12.13</td>
<td>12.46</td>
<td>2.858824582</td>
<td>6.126468377</td>
<td>5</td>
</tr>
<tr>
<td>Final Fwd/Bwd Line Jump (# of jumps)</td>
<td>11.47</td>
<td>6.10</td>
<td>1.398345767</td>
<td>8.53347389</td>
<td>5</td>
</tr>
<tr>
<td>Final Ball Catch Chest (#)</td>
<td>11.05</td>
<td>10.78</td>
<td>2.473808632</td>
<td>5.855001873</td>
<td>5</td>
</tr>
</tbody>
</table>
Analysis of Results

- Critical look at results
- This is more like a Single Case Design, Randomized Controlled Trials (RTC) much stronger evidence
- RTC possible if reassess the girls flagged/captured that did not participate in TMC program to give a true effect of the program
- Why results so good? Tester bias, Girls keen to please the therapist, natural developmental process
- Overall most girls moved from scores below the norm expected for their age to within the expected norm; which is the aim of the program
Burns Y et al, (2008), Pilot Trial of Premature infants with NSMDA score in minimal to mild category.


Bishop D, Edmundson A, (1987), Specific language impairment as a maturational lag: evidence from longitudinal data on language and motor development.

Burns Y, O’Callaghan, Mc Donell, Rogers Y, (2004), Movement and motor development in ELBW infants at 1 year is related to cognitive and motor abilities at 4 years.


Reference cont.

Movement Competency and Learning/Why TMC?

- Learning problems are associated with motor deficits
- Studies indicated poor coordination and balance assoc. with learning difficulty (LD)
- Others postural stability and tone, sensory motor deficits, poor vestibular function
- Developmental Coordination difficulties (DCD) ‘clumsy kids’ 50% have concomitant LD
- Motor scores (NSMDA prems at 1yr) predictive of later cognitive function (at 4yrs McCarthy) Burns et al
- Language impairment 60-90% have concomitant motor problems
Recent Research Studies

- Marko T et al. Physical Activity and Obesity mediate the association between childhood motor function and adolescents academic achievement, Neuroscience.

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Evidence behind Physio Group Program

- Dr Leanne Johnston (School group program, 2010)
  DCD: School-based RCT, 2010, L Johnston, Y Burns, S Brauer
- Dr Pauline Watter (DCD results with intervention, 1987)
  Patterns of Improvement in Neurological Functioning of Children with Minimal Cerebral Dysfunction with Physiotherapy intervention, 1987, P Watter, M Bullock
- Prof Yvonne Burns (Pilot trial 2008, Current study 2011)