Vision Therapy Improves DCD

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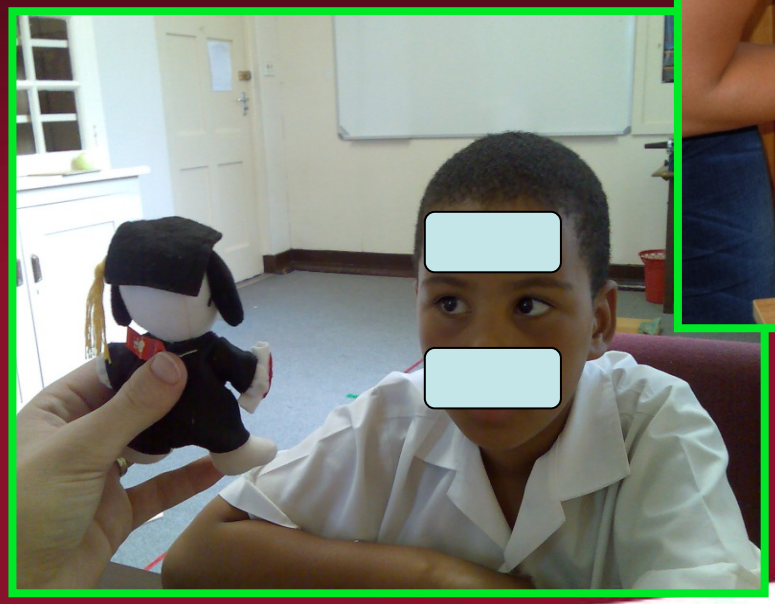
AIM OF THE STUDY

To determine whether vision therapy will have a positive influence on the DCD status of children diagnosed with DCD.



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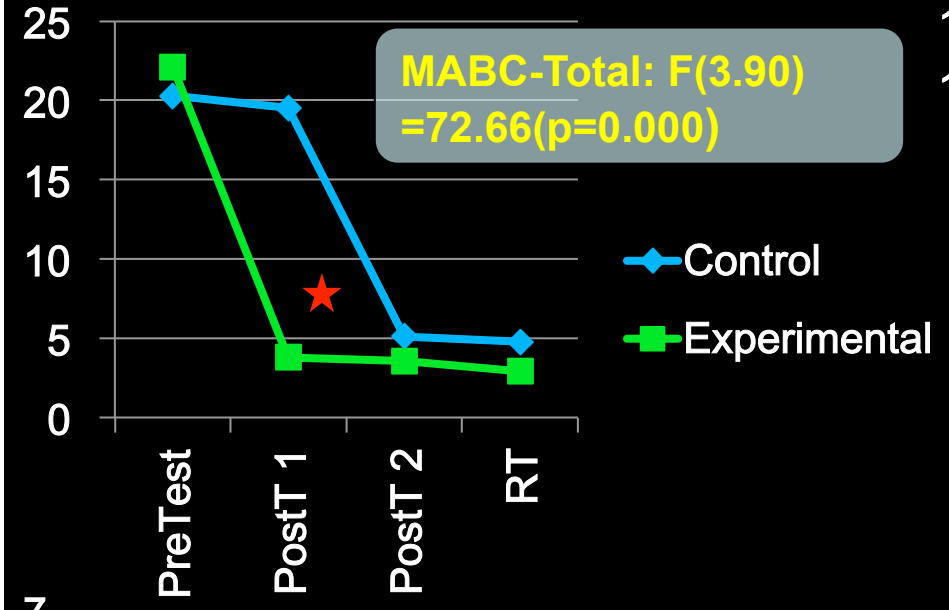
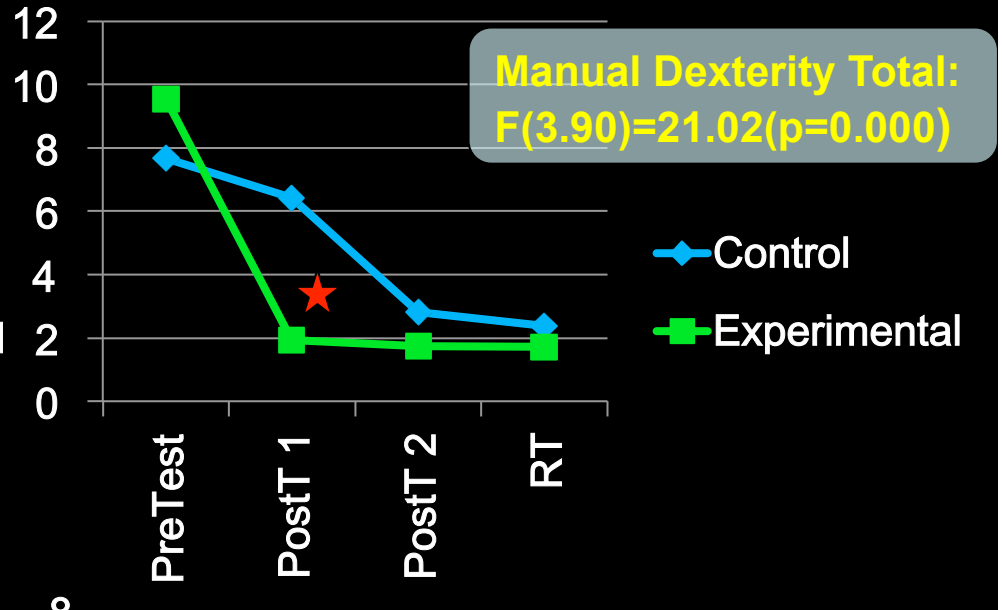
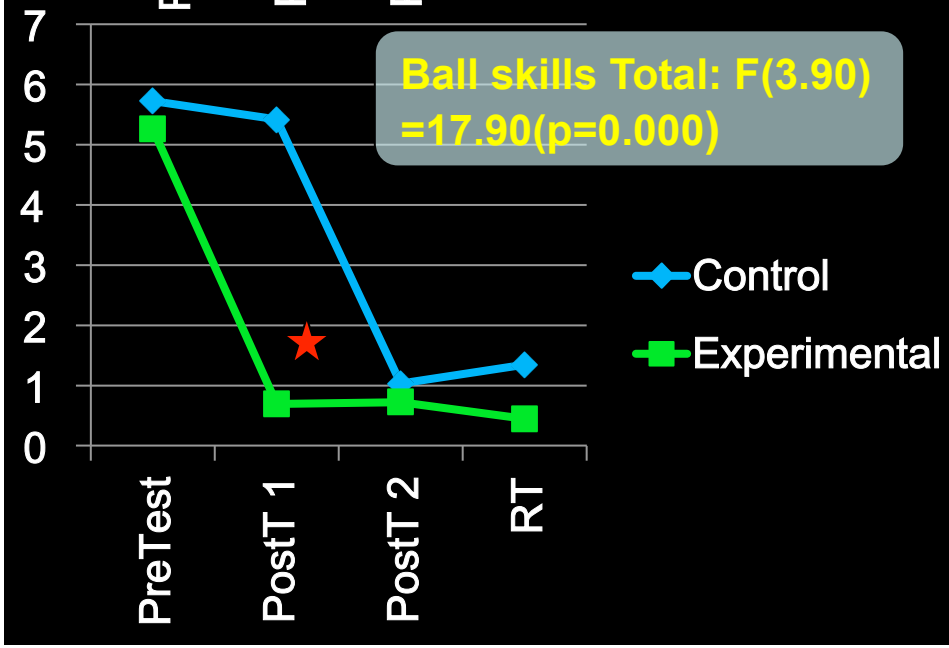
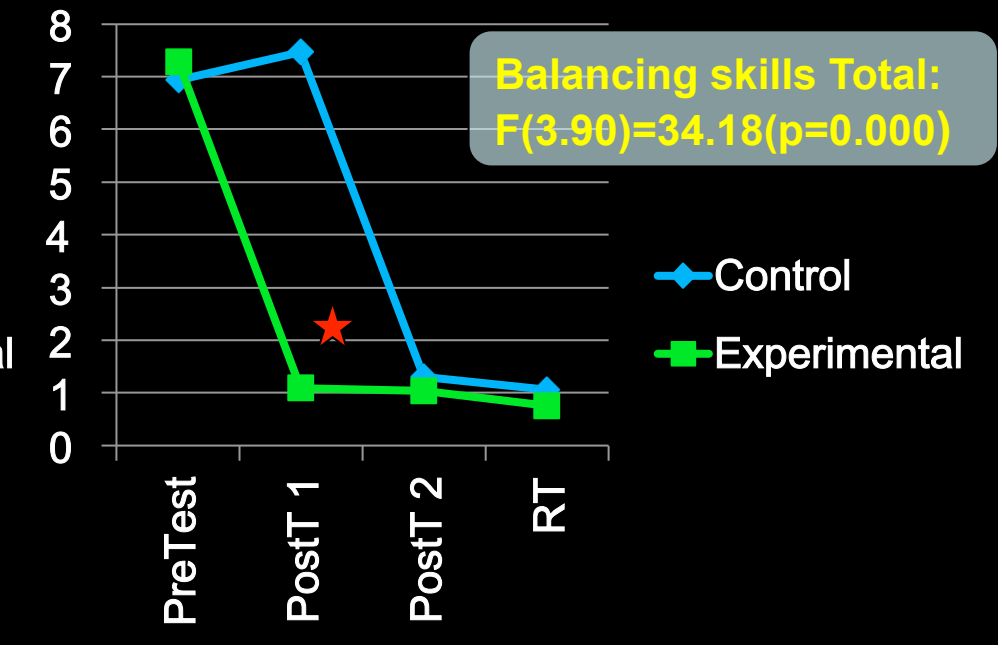
RESULTS


MABC-Total: F(3.90) =72.66(p=0.000)
25
20
15
10
5
0
PreTest
PostT 1
PostT 2
RT
Control
Experimental


Manual Dexterity Total: F(3.90)=21.02(p=0.000)
12
10
8
6
4
2
0
PreTest
PostT 1
PostT 2
RT
Control
Experimental


Ball skills Total: F(3.90) =17.90(p=0.000)
7
6
5
4
3
2
1
0
PreTest
PostT 1
PostT 2
RT
Control
Experimental


Balancing skills Total: F(3.90)=34.18(p=0.000)
8
7
6
5
4
3
2
1
0
PreTest
PostT 1
PostT 2
RT
Control
Experimental

CONCLUSIONS

- Both groups improved significantly (p = 0.00) after the VT intervention in the MABC-total and sub-sections.
- VT is recommended for children with DCD who experience motor problems as a result of poor ocular motor control.
- Control Group (without DCD).
- More subjects to generalize the results.
- More research to determine the effect of a vision intervention program on DCD and the ocular motor control.
- Office-base VT and home-base VT.

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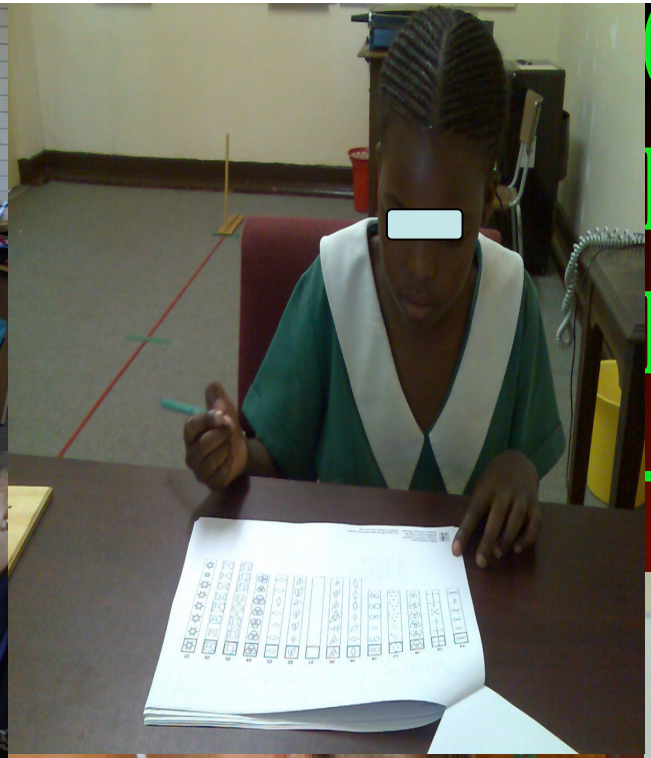

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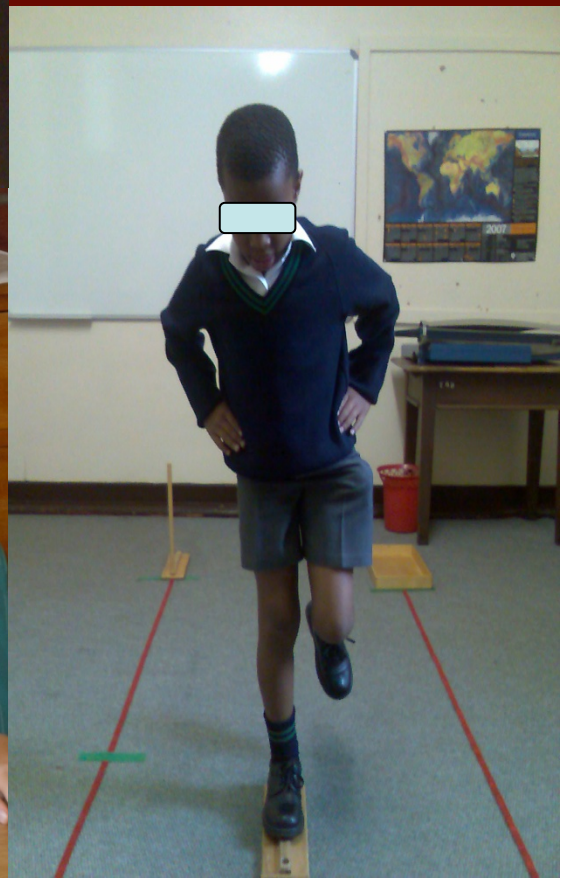


Role of Physical Activity and Perceived Adequacy on Physical Education Academic Performance in Children with Developmental Coordination Disorder

Brent E. Faught[1], Adi Silman[2], John Hay[1] & John Cairney[3]
Brock University[1], Wingate Institute[2] & McMaster University[3]

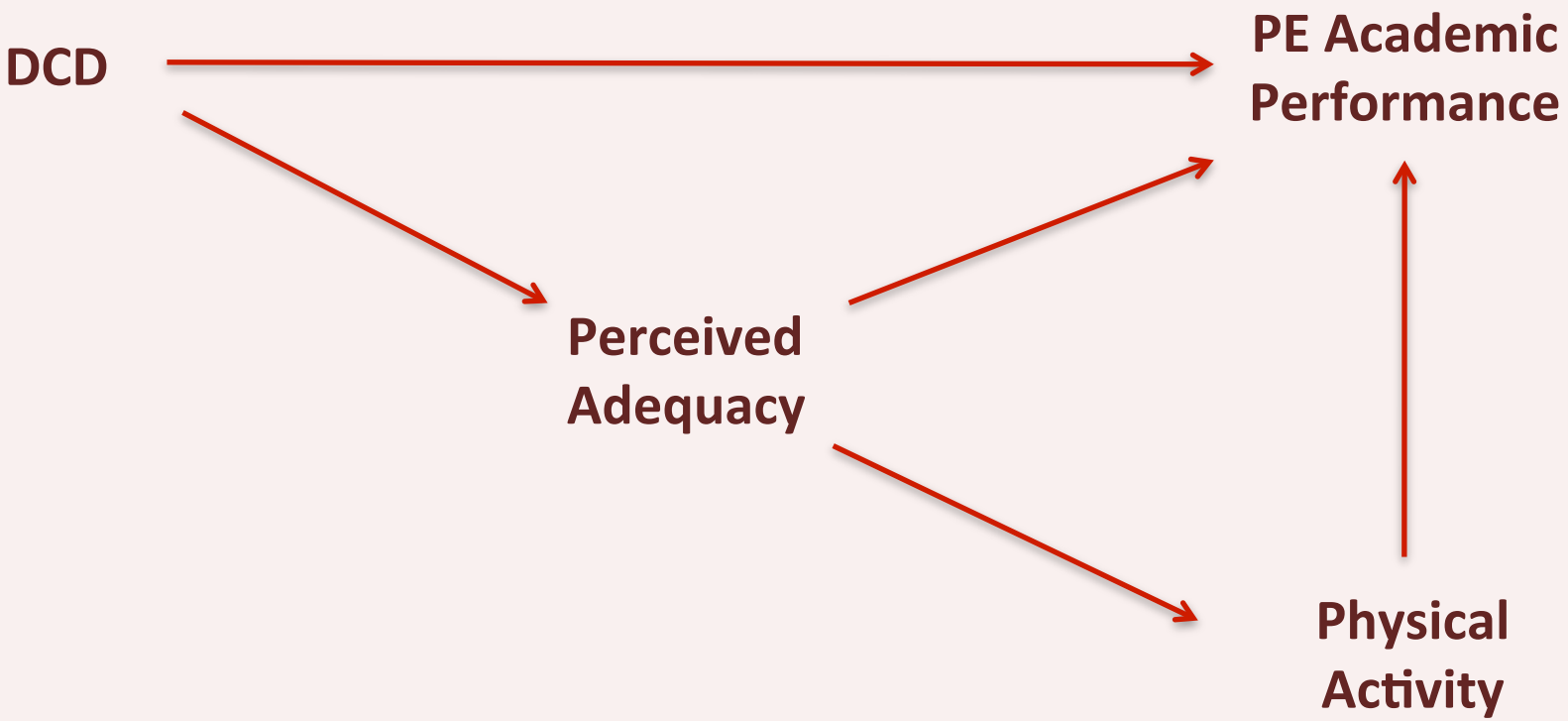


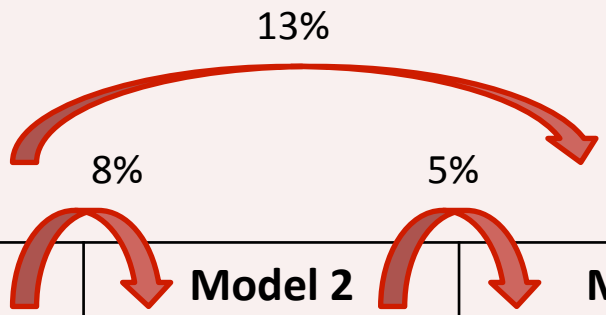
Figure 1: Conceptual Model

Table 1: Sample characteristics (mean [SD])

	Entire Sample	Control	p-DCD
Number of Subjects	122	61	61
Males	72	36	36
Females	50	25	25
Age (years)	12.9 [0.41]	12.8 [0.38]	12.9 [0.44]
Mass (kg) *	54.7 [15.5]	50.2 [11.5]	59.1 [17.7]
Height (cm)	157.6 [7.8]	156.9 [7.8]	158.4 [7.7]
Adequacy *	21.41 [4.83]	23.40 [3.96]	19.12 [4.75]
Physical Activity *	15.63 [6.63]	17.82 [6.32]	13.10 [6.10]
Physical Education (%) *	75.97 [6.68]	79.02 [7.23]	72.71 [4.04]

Note: * denotes significant difference (p<0.000) between p-DCD and Control.

Table 1: Regression of PE Academic Performance on DCD, perceived adequacy and physical activity



Variables	Model 1	Model 2	Model 3	Model 4
p-DCD	-6.26† (1.11)	-5.78† (1.2)	-5.46† (1.18)	No gender interaction
Age	-0.54 (1.41)	3.17* (1.51)	2.26 (1.52)	
Gender	0.07 (1.19)	-2.76* (1.21)	-2.22 (1.19)	
Adequacy		0.42† (0.31)	0.22 (0.15)	
Physical Activity			0.246*(0.10)	
Constant	85.87	30.45	42.15	
R-squared	0.225	0.372	0.406	

Note: *p<0.05; †p<0.001

Early DCD Assessment –Tests

- **The Imitation of Gestures** (Bergès & Lézine, 1972) – tasks for performing gestures by crossing the vertical midline of the body and rotating the hands (Ozbic & Filipcic, 2010) – from 6 years.



- **Zurich Neuomotor Assessment (ZNA) tool** (Largo, Fischer & Caflish, 2002; Largo, Fischer & Rousson, 2003), testing neuromotor integrity and motor dysfunction – from 5 years.

Table 1: Examples of Standardized Tests to Assess Aspects of Motor Performance (adapted after Larkin in Cermak, 2002)

Test	Reference	Age (years)
TESTS OF MOTOR PROFICIENCY		
Bruininks Oseretsky Test of Motor Proficiency, 2nd Edition (BOT-2)	Bruininks & Bruininks, 2005	4 -21
Movement Assessment Battery for Children, 2nd Edition (MABC-2)	Henderson, Sugden & Barnett, 2007	3-16.11
Peabody Developmental Motor Scales, 2nd Edition (PDMS-2)	Folio & Fewell, 2000	Birth to 5
McCarron Assessment of Neuromuscular Development (MAND)	McCarron, 1982	3 1/2 - 18
Test of Gross Motor Development, 2nd Edition (TGMD-2)	Ulrich, 2000	3-10.11
NEUROBEHAVIORAL TESTS		
Quick Neurological Screening Test, 2nd Edition (QNST-II)	Mutti, Sterling, Martin & Spalding, 2004	5-18
Miller Assessment for Preschoolers (MAP)	Miller, 1988	2.9 - 5.8
The Toddler and Infant Motor Evaluation (T.I.M.E.)	Miller & Roid, 1994	Birth to 3 1/2
Clinical Observations of Motor and Postural Skills, 2nd Edition (COMPS)	Wilson, Kaplan, Pollock & Law, 2000	5-15
Sensory Integration and Praxis Tests (SIPT)	Ayres, 1989	4-8.11
VISUAL-MOTOR TESTS		
Beery-Buktenica Test of Visual Motor Integration, 6th Edition (VMI)	Beery, Buktenica & Beery, 2010	2-100
Test of Visual Motor Skills, 3rd Edition (TVMS-3)	Martin, 2007	3-90
Developmental Test of Visual Perception, 2nd Edition (DTVP-2)	Hammill, Pearson & Voress, 1993	4-9

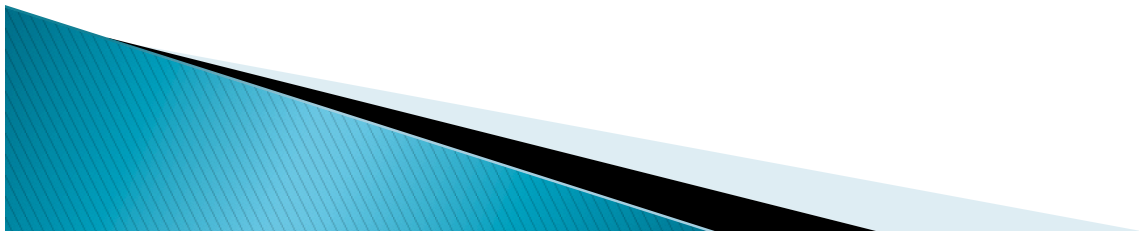
Other Assessment Tools

- **DCDQ '07** (Wilson, Kaplan, Crawford & Roberts, 2007) – from 5 years; other **Parent / Teacher Questionnaires**, checklists for activities of daily living.
- **Institute for Neuro – Physiological Psychology (INPP)** (Blythe & McGlown, 1979, 1998; Goddard Blythe, 2006) – retained primitive reflexes and improper development of postural reflexes – from 3 1/2 years.
- **Masgutova Neurosensorimotor Reflex Integration (MNRI)** (Masgutova, 1989; 2007) – assessment of reflex patterns for evaluation of their level of integration – from 3 1/2 years.
- **Special Needs Assessment Profile – SNAP** (Weedon & Reid, 2003) – from 5 years.

Research Aim

Establish a proper protocol for a comprehensive early DCD assessment of Slovene children.

- Which assessment tools are available for Slovenian preschool children?
- Which assessment tool should be used as an initial screening of DCD in the general population?
- Which assessment tool should be used for identifying DCD in a preschool child?
- How to assess developmental and environmental factors of DCD? How to assess activities of daily living?
- Which assessment tool should be applied for assessing strengths and weaknesses of a preschool child with DCD?
- How to make an assessment comprehensive?



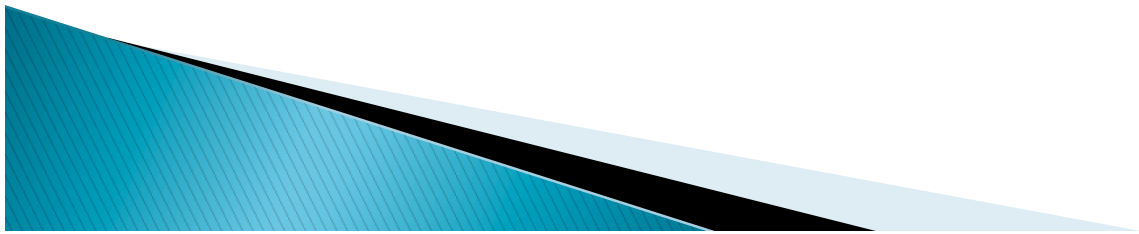
Protocol for DCD Assessment of Slovene Preschool Children

- **SCREENING**
  - **The Imitation of Gestures, part 1** (Bergès & Lézine, 1972)
  - **Frostig Developmental Test of Visual Perception – DTVP-2** (Hammill, Pearson & Voress, 1993)

- **FINAL DCD IDENTIFICATION**
  - **Movement ABC (SI)** (Henderson & Sugden, 2005)
  - **DCDQ '07** (Wilson, Kaplan, Crawford & Roberts, 2007)

Comprehensive Assessment of Slovene Preschool Children

- **SNAP (SI)** (Weedon & Reid, 2009)
- **Test of Early Socio-Emotional Development – TOESD** (Hresko & Brown, 1984)
- **Psychological Tests**
- **Speech and Language Tests**



Walking patterns of children with and without Developmental Coordination Disorder

I've always been very clumsy, and I constantly walk into things

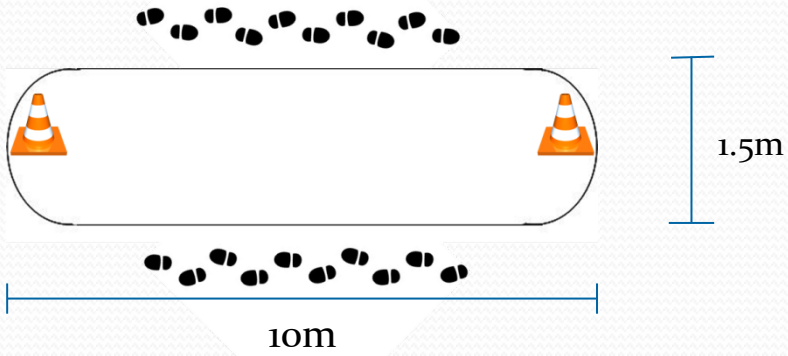
I am always bumping into chairs or tables and bruising my legs. It's annoying because I can see where I'm going and I want to walk straight, but my body just won't cooperate.

I often get in peoples way when I'm out. I can't always work out where they are going to step next and I nearly walk into them.

http://www.dyspraxicadults.org.uk/forums/viewtopic.php?f=4&t=1152

Walking patterns of children with and without Developmental Coordination Disorder

- Nine boys aged 11 to 16 with DCD (M-ABC <6th centile) and nine age matched TD boys (M-ABC >50th centile).
- Participants walked around a flat pathway for 2 minutes;



- Three conditions; walking; walking plus opaque tray; walking plus transparent tray.
- Video recordings measured six variables: Distance travelled; Cadence; Froude number; % time spent in Double stance; Velocity and Step length.

THE RELATIONS BETWEEN COHERENCE, EFFORT, HOPE AND PARTICIPATION AMONG YOUNG CHILDREN WITH DCD

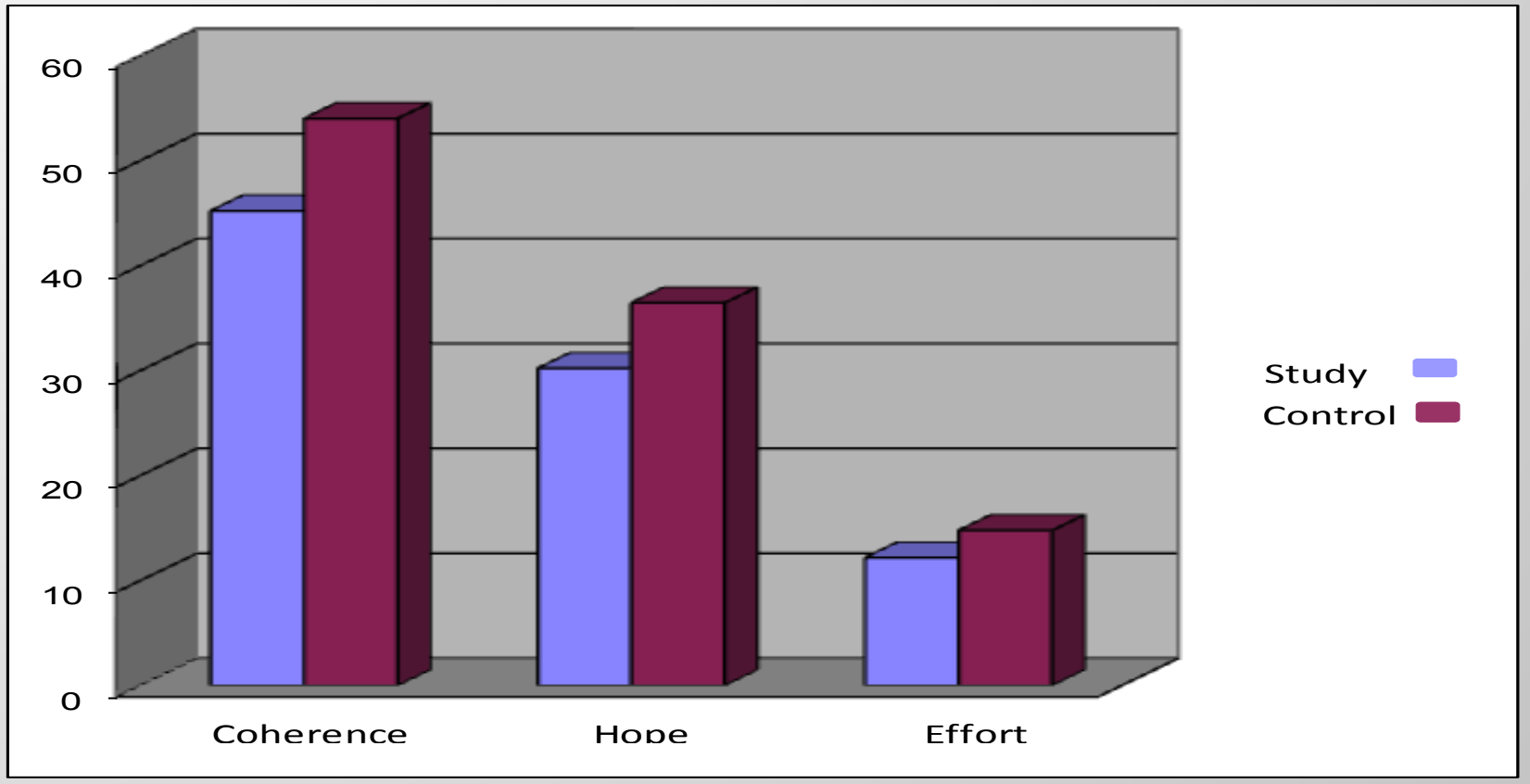
Orit Bart, Lihi Liberman, Navah Ratzon

Tel Aviv University, Israel

Kupat Holim Meuhedet, Herzelia, Israel

Are children with DCD hopeless?

- Children with DCD had lower affective components than their peers



Correlations between Coherence, Hope, Effort, Participation, and Performance skills

	Coherence	Hope	Effort
Independence	0.33*	0.15	0.20
Enjoyment	0.44**	0.26	0.33*
Parental satisfaction	0.48***	0.26	0.37*
Motor skills	0.52***	0.32*	0.42**
Process skills	0.37*	0.31*	0.35*
Communication skills	0.32*	0.30*	0.24

to see you around

Descriptive & Factor Analysis of DCDQ'07 in a Population-Based Sample of Children with and without Developmental Coordination Disorder

Lisa Rivard, John Cairney, Cheryl Missiuna & Brenda Wilson

Canada

The 9th International Conference on Developmental Coordination Disorder
Lausanne, Switzerland
June 23-25, 2011

Problem

- Characteristics of the DCDQ’07 (Wilson et al., 2009) when used in a large, population-based sample have not yet been examined

Method

- **3151** Canadians aged 8 to 15 years **screened** with DCDQ’07
  - **122** children met diagnostic criteria for DCD (DSM-IV)
- DCDQ’07 total score distributions **described** by age & gender
- Principal Component **Factor Analysis** completed

Results

- DCDQ’07 total score distribution means (SDs):
  - **n=3070:** 65.14 (10.17); **n=122:** 47.64 (13.05)
  - significant gender differences
- Factor analysis revealed **3 factors**

Implications

- Study findings increase our understanding of DCDQ’07 performance in children with and without DCD

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Centre for Childhood Disability Research

Effects of internal and external constraints on inter-manual and perceptual-motor couplings in children with and without DCD

Jessica Tallet[1], Jean-Michel Albaret[1], Régis Soppelsa[1], Jérôme Barral[2]

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[2] Institut des Sciences du Sport de l'Université de Lausanne, Suisse
e-mail: tallet@cict.fr

Our aim was to investigate the possible deficits in inter-manual and perceptual-motor couplings experienced by DCD children in a continuous tapping task internally or externally constrained.

Tasks/conditions :

Bimanual in-phase tapping mode in 4 conditions :

With *internal constraints* :

1. At spontaneous tempo
2. At maximal speed

With *external constraints* (auditory metronome) :

3. At a tempo similar to the spontaneous tempo (600 ms)
4. At a slower tempo (800 ms)

Participants

20 right-handed children (10 DCD and 10 controls, 7-10 years old, 6 girls)

Dependent variables

- the produced tempo (Tmean) and its variability (Tsd)
- the relative phase of the bimanual tapping (RPmean) and its variability (RPsd).

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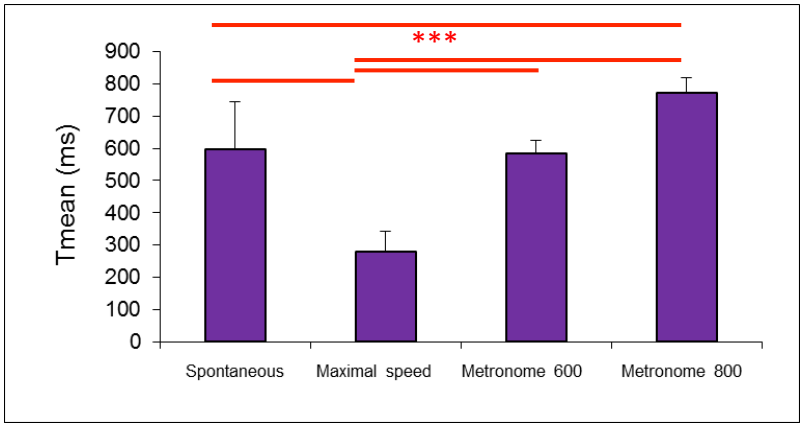

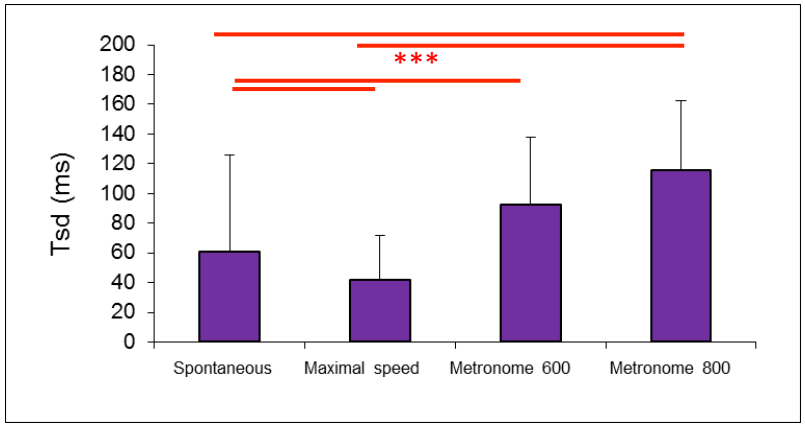

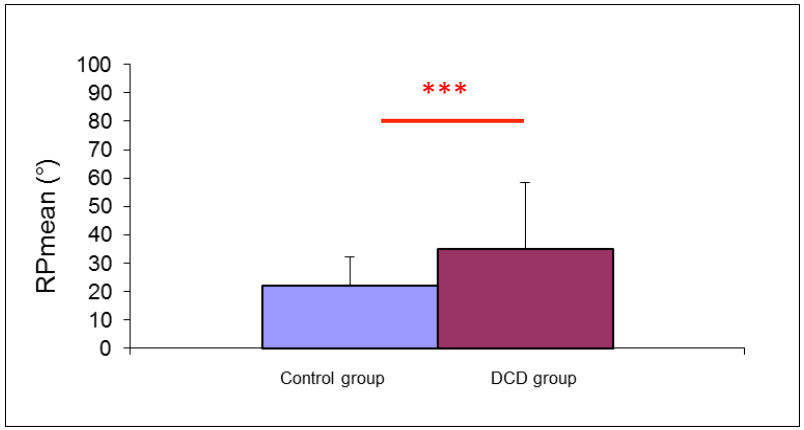

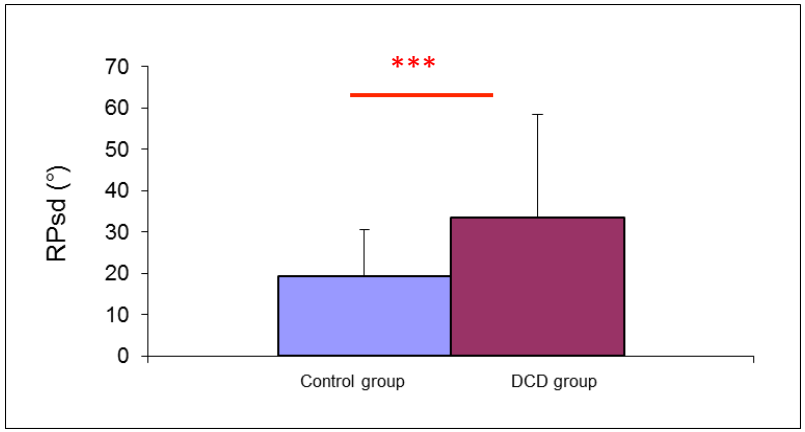

DISCUSSION

The DCD children seem to present a deficit in bimanual coupling that is not affected by internal and external constraints. These results do not support a beneficial effects of external constraint (auditory cueing) in bimanual tapping production in DCD.

Is Self-Concept in Physical Education a Linking Factor Between Motor and Psychosocial Problems?

Helena Viholainen, PhD[1,2,3]; Tuija Aro, PhD[3,4]; Timo Ahonen, PhD[4,3]; Jarno Purtsi, MSc[2] & Marja Cantell, PhD[5]

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[2)] Finnish CP Association, Helsinki, Finland;

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[5)]Department of Psychology, Rijksuniversiteit, Groningen, the Netherlands

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AIM & PROCEDURE

Aim:

To investigate if *low self-evaluations* of motor competence and ability in physical education relate to psychosocial problems in grade 7 to 9 adolescents

Participants:

675 adolescents (males 347,females 328), mean age 14.2 yrs
6,8 % of high, 57,6 % high average, 33,4 % of low average, 2,2 % low motor competence

Measures (all self-reported):

Adolescent version of the Developmental Coordination Disorder Questionnaire (A-DCDQ)

The Strengths and Difficulties Questionnaire (SDQ)

The Self-Concept of Ability in Physical Education (SCPE)

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RESULTS & CONCLUSIONS

- Motor competence and Self Concept of Ability in Physical Education (SCPE) were correlated
- The low SCPE in the LMC group was associated with
  - More emotional symptoms
  - More peer problem symptoms
- Conclusions:
  - Adolescents with low self-evaluations in motor competence and ability in PE can also have a risk for psychosocial problems
  - More early motor intervention research needed so that problems do not become emphasized in adolescence
  - Self-report tools in adolescents, i.e., DCDQ-A and SCPE need to be further validated

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Functional Strength Measurement (FSM), a valid and reliable instrument for children between 4-10 years of age.

Developers of the FSM
Mrs Wendy Verhoef-Aertssen MSPT
Prof Dr Bouwien Smits-Engelsman

488 typically developing children in the age 4-10

Inter Class Correlation (ICC) was used to evaluate the test-retest reliability.

Pearson correlations were calculated to compare the items of the FSM to items of the Hand-Held Dynamometer.

Factor analyse was performed to identified the factors behind this data.

Standard scores were developed per year group

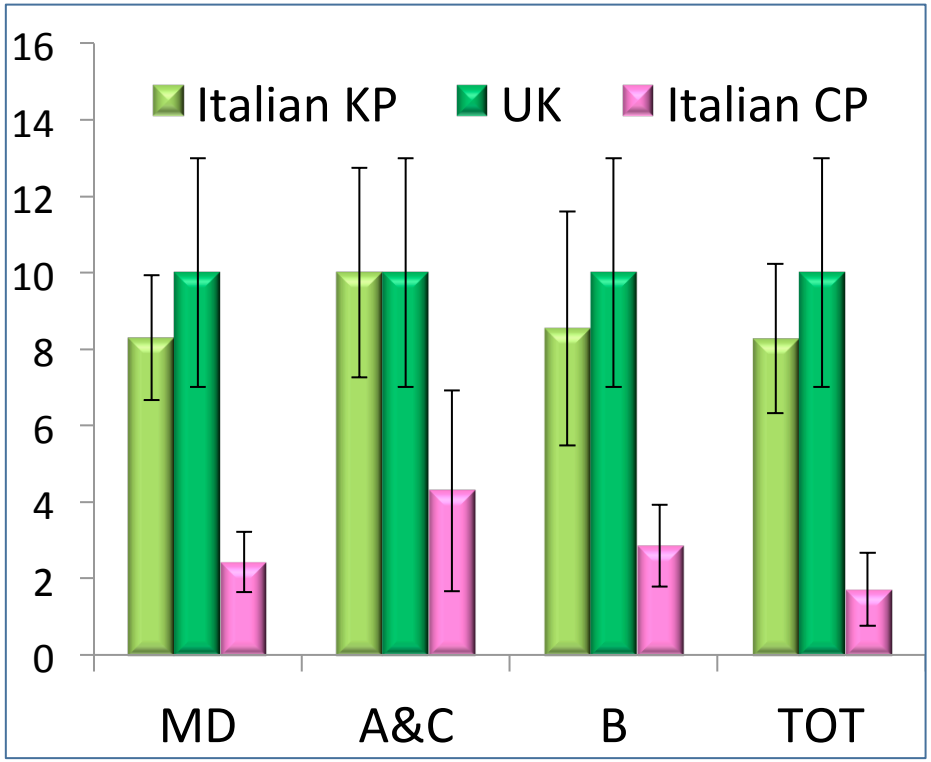
Conclusion

This study showed:

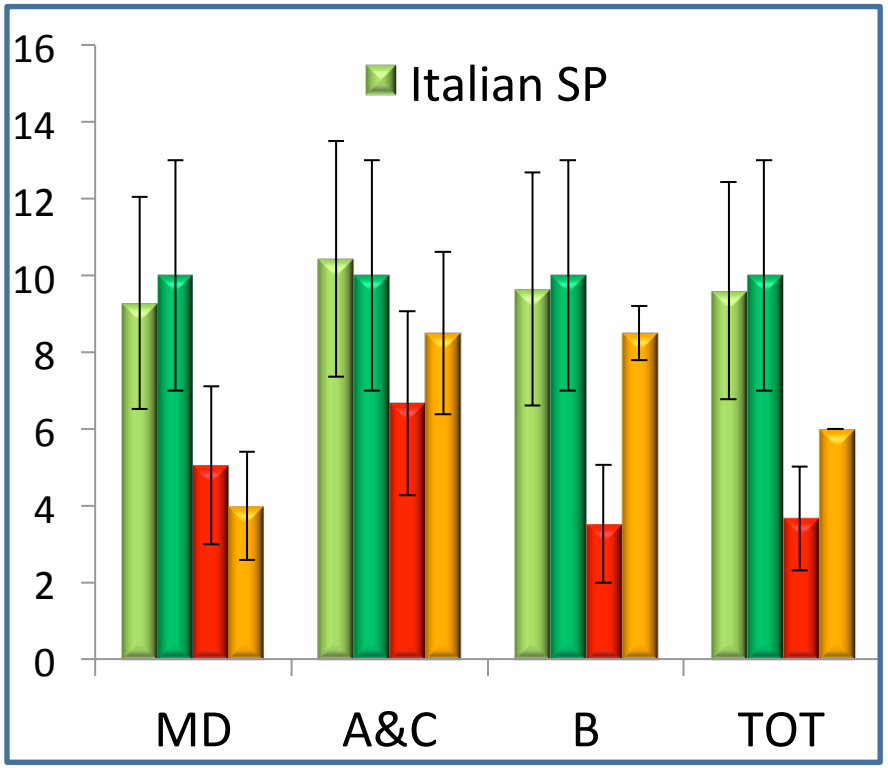
- that the FSM with its newly developed reference values is a valid and reliable instrument.
- it confirmed that functional strength is not the same as localized strength of one muscle group, although they are related.

Aims: usefulness of the MABC-2
reliability of the parents/teachers checklist

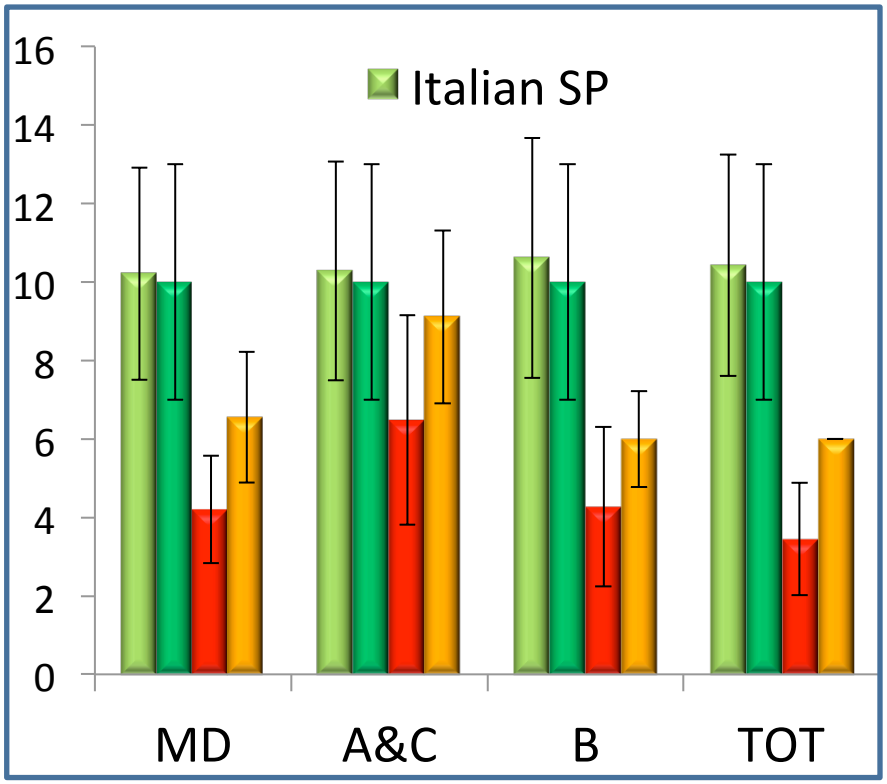
Two samples: 310 kindergarten-school population (KP-SP)
68 clinical group (CP) referred for motor difficulties.



Age 3-4 yrs



Age 5-6 yrs



Age7-10 years

In general UK MABC-2 data hold for the Italian population as well,

Minor differences in:

- continuous marker on paper drawing task
- static balance task
- Aiming & Catching tasks discriminate DCD children less.

MABC-2 CHECKLIST

Parents can judge the motor difficulties of their children well.

Teachers have difficulties in judging motor skills of children in daily living activities and give many “not observed” responses.

The MABC-2 checklist data seem to need adaptation.

Variables implied regard teachers’ training, cultural aspects and cut-off values at different age levels.