Developmental changes of functional skills of young children with and without physical disabilities

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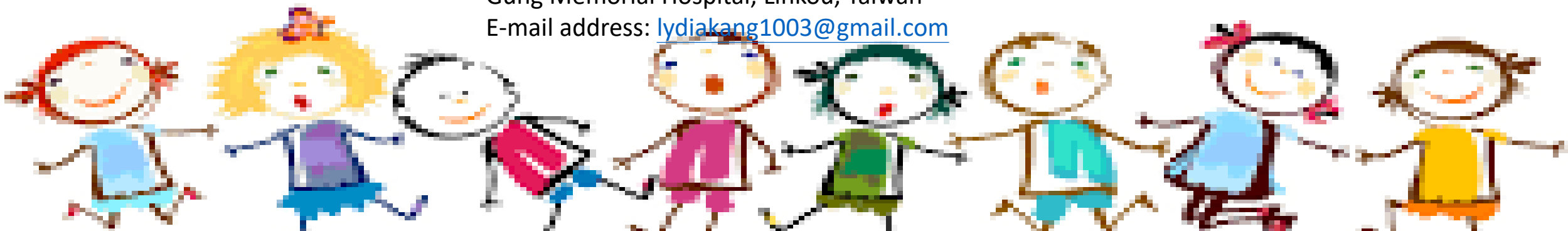


Project name

Determinants of 'Participation' for Preschool Children with Physical Disabilities: A longitudinal study

- **Primary Investigator:** Lin-Ju Kang
- **Executive unit :**Graduate Institute of Early Intervention in Chang Gung University
- **Funding:** Ministry of Science and Technology (104-2314-B-182-022-MY3)

Background

- Under the ICF multi-years initiative, the definition of health and disability on individual was not only focused on disease and diagnosis, but also concerned about functional skills the children use to implement daily activities.
- Research was limited in describing developmental changes of functional skills of young children with and without physical disability (PD).

Objective

- To track and compare functional skills in 3 domains of self-care, mobility and social function across 3 consecutive time points

- For children 2-6 years of age with physical disability (PD) and typically developing (TD) peers in Taiwan.

METHOD

Participants and recruitment

Inclusion criteria

- The *inclusion criteria* for children with physical disabilities are: (1) children aged 2 to 6 years old; (2) children with physical disabilities with a primary diagnosis associated with CNS, including cerebral palsy, spinal cord injury, spina bifida, traumatic brain injury or developmental delay and (3) parents agree to participate in this study.
- The *inclusion criteria* for children with typical development are: (1) children aged 2 to 6 years old; (2) children without medical or health conditions related to developmental disabilities; (3) parents agree to participate in this study.

Exclusion criteria

The exclusion criteria for children with physical disabilities are

- children with unstable health conditions, such as cancer, having surgery within 3 months, infection, or other active medical conditions; (2) children with progressive disease (e.g. neuromuscular disease) or degenerative disorders (e.g. degenerative seizures)
- children with progressive disease (e.g. neuromuscular disease) or degenerative disorders (e.g. degenerative seizures)
- children with autism or emotional disturbance (such as clinical depression)
- parents who do not understand Chinese well and thus cannot complete the measures.

The exclusion criteria for children with typical development are

- children with unstable health or medical conditions (e.g. trauma or infection)
- parents who do not understand Chinese well and thus cannot complete the measures.

Participants

- A sample of convenience
- **61** children with **physical disabilities (PD)** and **64** children with **typical development (TD)** 2 to 6 years old
- Their parents were interviewed

Instrument

PD (n=61)

TD (n=64)

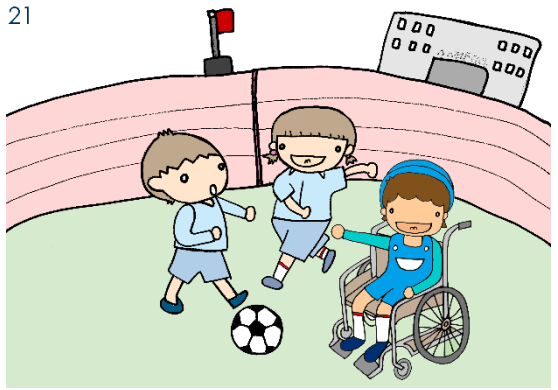
1st year PEDI-C → 2nd year PEDI-C → 3rd year PEDI-C

Chinese version of Pediatric Evaluation of Disability Inventory (PEDI-C)

- Ability and performance assessment for functional activities in children from 6 months to 7.5 years.
- The raw scores from the **3 functional domains** are added and converted to scaled scores, values range from 0-100.
  - Social function
  - Self-care
  - Mobility

Social function

- Uses real or substituted objects in simple pretend sequences
- Tries to work out simple plans for a play activity with another child
- Can state first and last name
- Connects two or more thoughts to tell a simple story



Self-care

- Finger feeds
- Brushes or combs hair
- Lifts open cup securely with one hand
- Puts on T-shirt, dress or sweater with assistance

Mobility

- Rolls, scoots, crawls, or creeps on indoor floor
- Walks down full stairs with no difficulty
- Sits unsupported on toilet or potty chair
- Walks with out support at outdoor.

Results

Child Demographic Information

Variables	PD (N=61)	TD (N=64)	P-value
Child's age			.127
< 2 years	18 (21.3%)	17 (26.6%)	
3 years	12 (19.7%)	24 (37.5%)	
4 years	13 (21.3%)	18 (28.1%)	
≥ 5 years	18 (29.6%)	5 (7.8%)	
Child's sex			.286
Boys	40 (65.6%)	36 (56.2%)	
Girls	21 (34.4%)	28 (43.8%)	
Child schooling			.609
Preschool	49 (80.3%)	49 (76.6%)	
At home	12(19.7%)	15 (23.4%0	

[a] ABI (TBI, brain tumor, stroke, seizure, infection, anoxia)

Child Demographic Information

Variables	PD (N=61)
Primary conditions	
Central nervous system	
Cerebral Palsy	23 (37.7%)
Developmental delay	16 (26.2%)
Chromosomal disorder	10 (16.4%)
Acquired brain injury [a]	10 (16.4%)
Congenital anomalies	2 (1.5%)
Extent of impairment	
Mild impairment	13(21%)
Moderate impairment	20(32.3%)
Severe impairment	17(27.4%)
Complete impairment	12(19.4%)
Receive early intervention	
Have early intervention	60(98.3%)
None have	1(1.7%)

[a] ABI (TBI, brain tumor, stroke, seizure, infection, anoxia)

Family Demographic Information

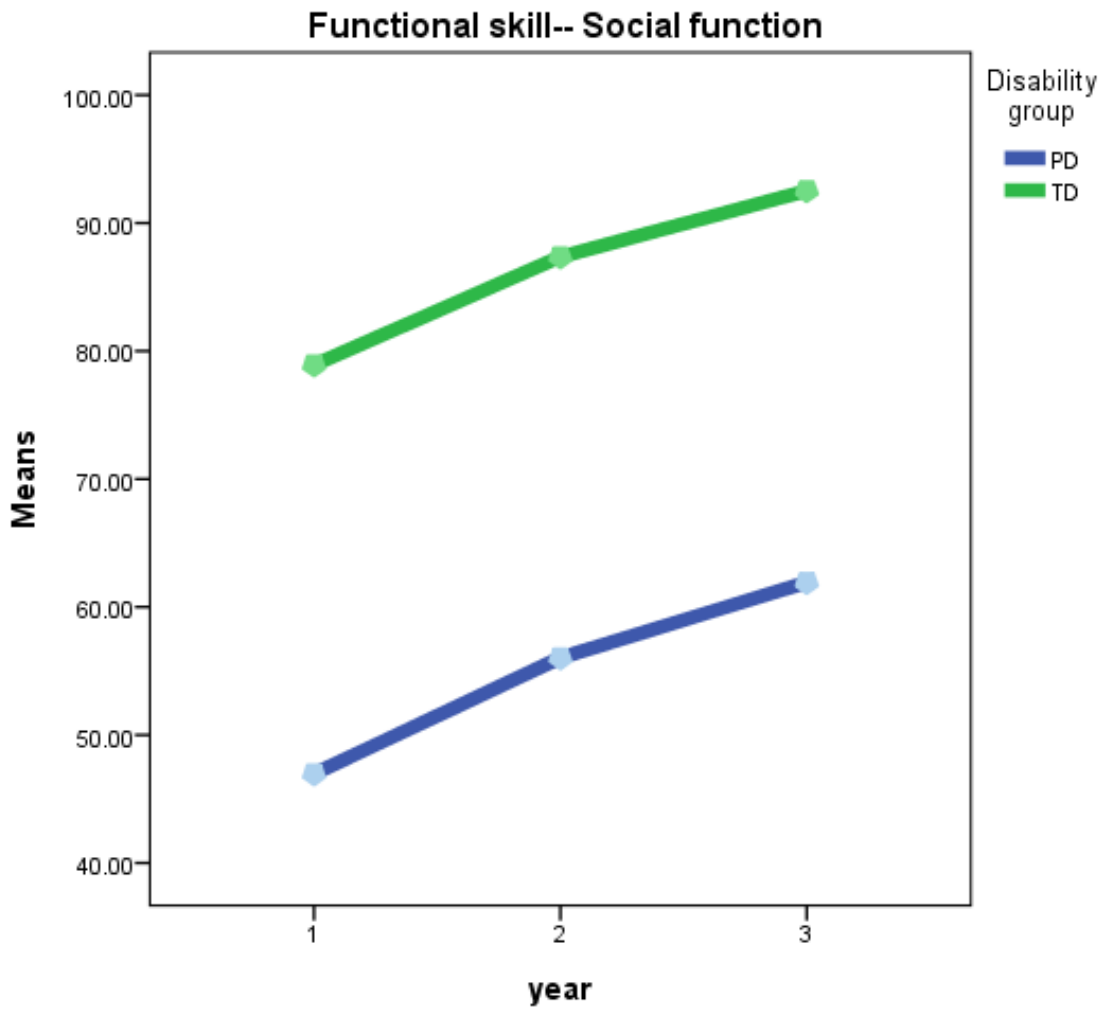
Variables	PD (N=61)	TD (N=64)	P-value
Parent respondents			.370
Mother	53 (86.9%)	53 (82.8%)	
Father	8 (13.1%)	9 (14.1%)	
Grandparent	0	2 (3.1%)	
Parental education			.000
Junior high school and under	3 (4.9%)	0	
High school graduate	34 (55.7%)	11 (12.9%)	
College/university graduate	21(34.5%)	24 (37.5%)	
Graduate degree	3 (4.9%)	27 (42.1%)	
Unanswered	0	2 (3.1%)	

Family Demographic Information

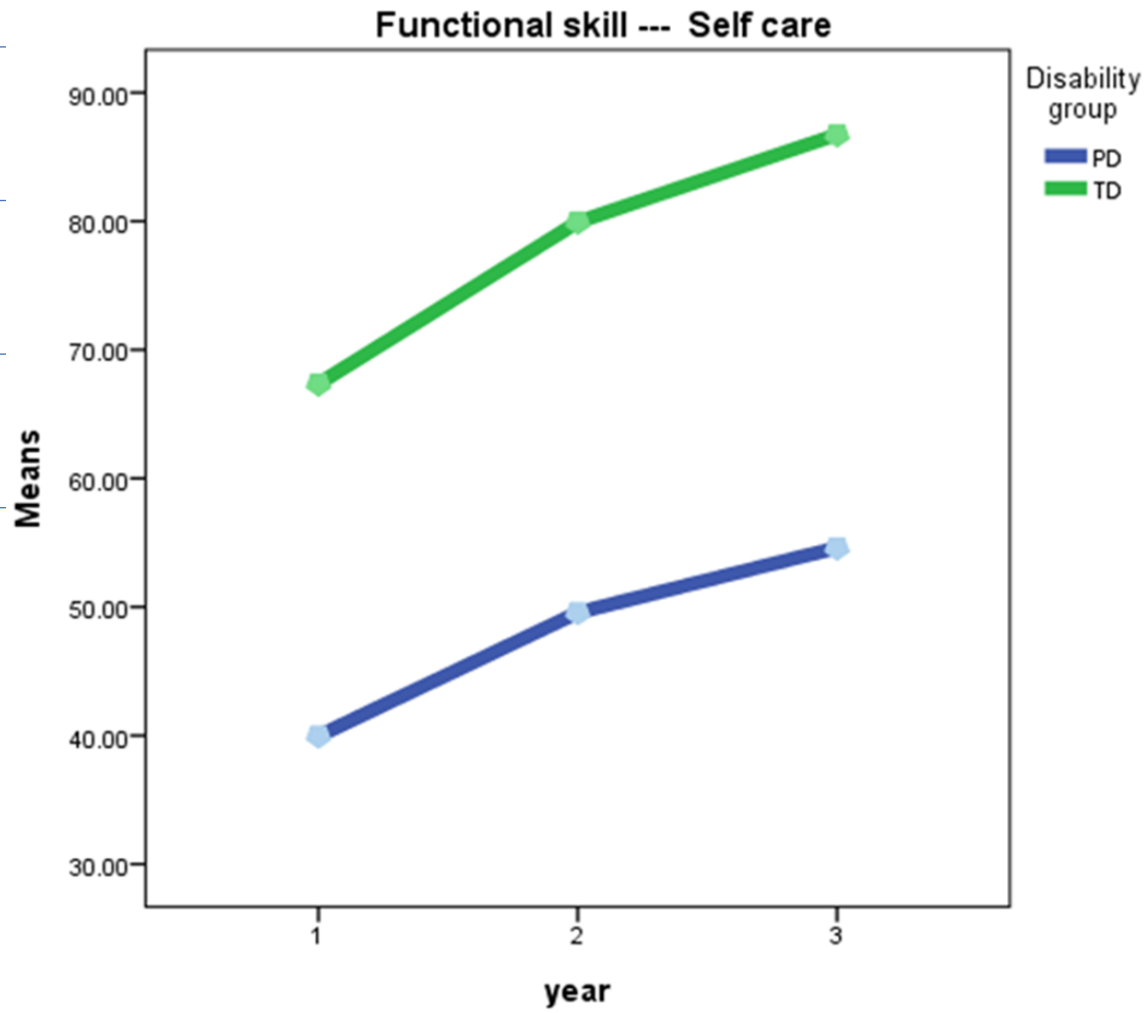
Variables	PD (N=61)	TD (N=64)	P-value
Parental employment status			.000
Employed	26 (42.6%)	54 (84.4%)	
Unemployed	35 (57.4%)	8 (12.5%)	
Unanswered	0	2 (3.1%)	
Household income [a]			.000
<$550,000	22 (36.1%)	4 (6.3%)	
$550,000-$1000,000	27 (44.2%)	25 (39.1%)	
$1000,000-$2500,000	10 (16.4%)	30 (46.8%)	
>$2500,000	0	5 (7.8%)	
Unanswered	2 (3.3%)	0	

[a] Unit: New Taiwan Dollars (NTD$30 = USD$1)

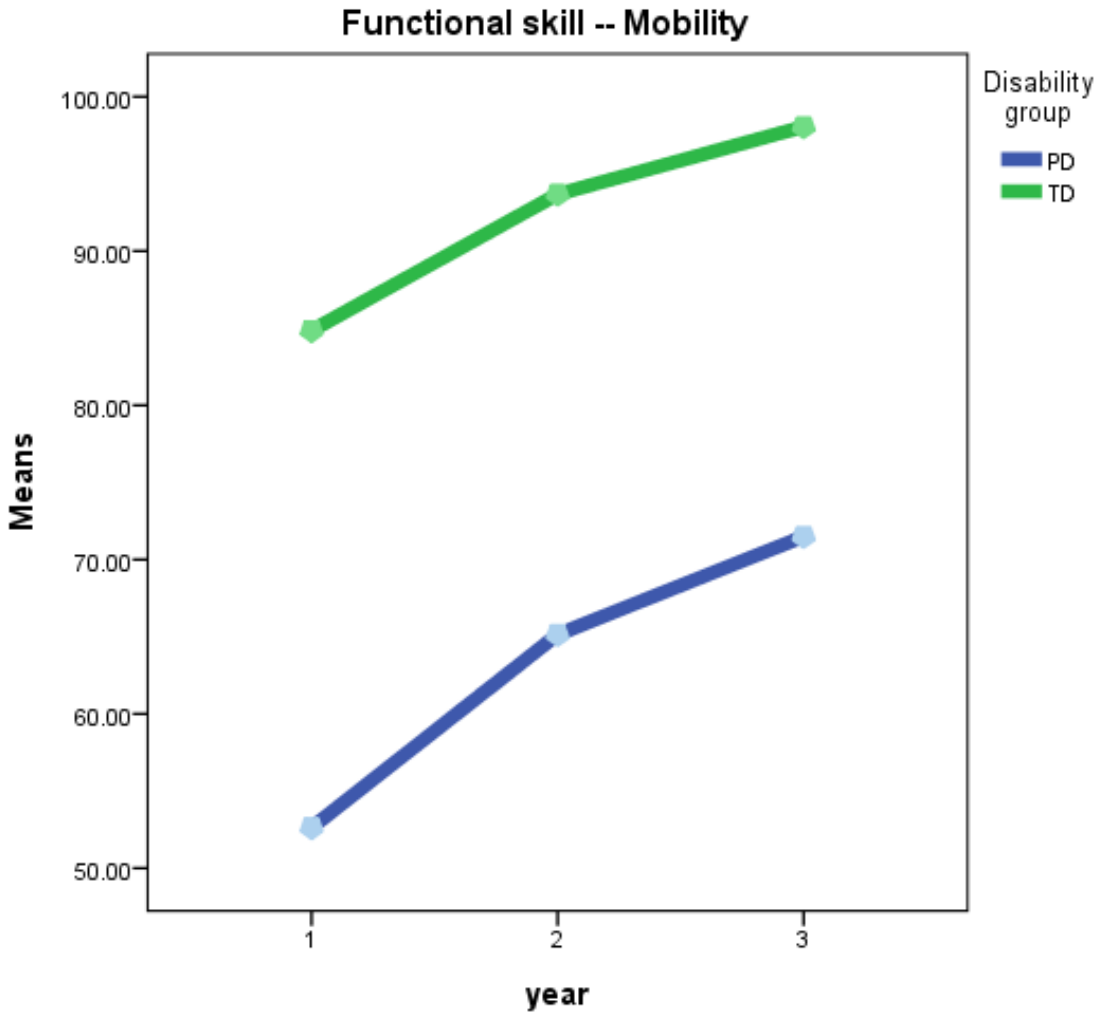
Variables	PD (N=61) Mean ± SD	TD (N=64) Mean ±SD	P-value (group effect)	Group * Time
Social function			<.001	.725
Social function _1st	46.9 ± 17.8	78.9 ± 11.2		
Social function _2nd	56.0 ± 21.8	87.4 ± 7.6		
Social function _3rd	61.9 ± 22.7	92.5 ± 5.8		



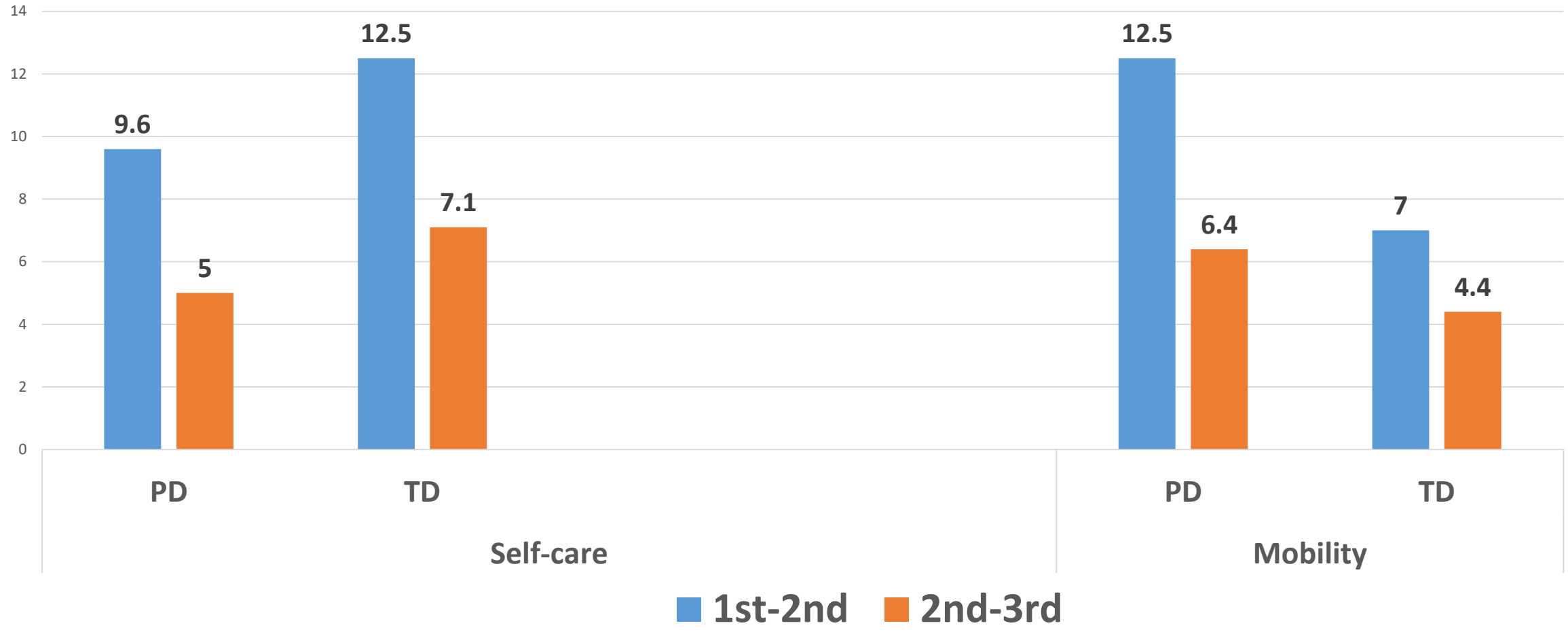
Variables	PD (N=61) Mean ± SD	TD (N=64) Mean ±SD	P-value	Year * group
Self care			<.001	.029
Self care_1st	40.0 ± 18.5	67.3 ± 12.7		
Self care_2nd	49.6 ± 22.1	80.0 ± 11.4		
Self care_3rd	54.6 ± 23.4	86.7 ± 9.9		



Variables	PD (N=61) Mean ± SD	TD (N=64) Mean ±SD	P-value	Year * group
Mobility			<.001	.012
Mobility_1st	52.6 ± 23.9	84.8 ± 9.2		
Mobility_2nd	65.1 ± 26.5	93.7 ± 7.0		
Mobility_3rd	71.5 ± 27.7	98.0 ± 4.5		



Amount of changes between Time 1-2 and Time 2-3



Conclusion

Conclusion

- Although PD children had lower levels of functional skills, both of PD and TD children had **progress in terms of functional skills in life situations.**
  - Children are growing up in their own steps.

- PD children displayed **a similar amount of change** with TD children in **social skill** of life situations.

Conclusion

- PD children have **a smaller amount of change** than TD children in **self-care** of life situations.
  - Need to focus on self-care in the training program.

- PD children have **a greater amount of change** than TD children in **mobility** of life situations.
  - Children have a significant progress may result from parents' efforts and early intervention.

Thank you and bye-bye!

(Art crafts made by our participants)