



## RESEARCH ARTICLE

### LEARNING ACHIEVEMENT OF PHYSICALLY DISABLED STUDENT IN PHYSICAL DISABILITY SPECIALIZED SCHOOL IN BANDUNG ACADEMIC YEAR 2014/2015

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#### ABSTRACT

**Background:** The burden of children with physical disability also affects people around them. A lot of skills can be obtained by attending a special school, as special school has its program to overcome problems that arise from disabilities. Learning achievement is needed as an evaluation tool for the education of physically disabled student. The objective of this study is to describe learning achievement of student with physical disability

**Methods:** Learning achievement was obtained from student's study report. Academic courses were described in scores. As students in Physical Disability Specialized School of Disabled Children Development Foundation (Yayasan Pembinaan Anak Cacat) in Bandung were categorized into academic and developmental classes, the description of their learning achievement in this study followed that categorization as well. The school has special programs for motoric capability and activities of daily living. Those special programs were described with categorization of similar concern and obtained from teacher's description in study report.

**Results:** The score for academic courses both of classes improved by the end of the academic year. Developmental class is lower in achievement of both academic course and motoric capability than academic class. All students in academic class could eat and drink independently but they had poor ability in dressing and toileting. As for developmental class, all students depended on their caregivers and teachers in their daily activity.

**Conclusions:** Students from academic class with normal intelligence to mild mental retardation provided a better study results than students with multiple disabilities. Both classes showed no significant improvement in motoric capability and activities daily living.

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## INTRODUCTION

Based on the etiology, physical disability can be divided into two categories: physical disability that was caused by nerve system impairment (for example Cerebral Palsy) and physical disability that was caused by musculoskeletal impairment (for example muscle dystrophy) (Efendi, 2008). The prevalence of physical disability of children in Indonesia is the highest compared to other type of disabilities (Ministry of Health of Indonesia, 2013). Children with physical disability is often limited in both mobility and activity of daily living (Wichers et al., 2009).

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Their physical disability can be a major barrier for their activities (Hilderley and Rhind, 2012; McPhail et al., 2014). For physical disability that was caused by nerve system impairment, as the disease is associated with impaired brain, it can also cause abnormality in other aspects such as learning achievement and social functioning (Pinquart et al., 2012). Although physical fitness affects learning achievement as well, (Castelli et al., 2007) low intelligence is not a consequence of motor impairment (Jean et al., 2014). Despite the fact that physical disability is type of disability that occurs the most in children in Indonesia, special school for physical disability is only one in West Java Province. Compared to six special schools for hearing disability in Bandung city only, it is obvious that special school for physical disability is lacking in number (Department of Education of West Java Province, 2013). Children with physical disability will grow up eventually. The

burden of children with physical disability also affects people around them as most of physically disabled people live with their families (Purser *et al.*). A lot of skills can be obtained by attending a special school, as special school has its program to overcome problems that arise from disabilities. It is important for disabled children to attend school. That is why the lack of school, and the lack of study regarding their education also should be considered as problem. Until now, there is no study that describe learning achievement of physically disabled student. Learning achievement is needed to give us a view about the condition of their education. A study of learning achievement is needed as an evaluation tool for education of physically disabled student. Physical Disability Specialized School of Disabled Children Development Foundation (*Yayasan Pembinaan Anak Cacat*) in Bandung is the only school that specializes for physically disabled student in West Java Province.<sup>9</sup> Academic year 2014/2015 is the closest time to when this study is conducted, thus makes that as the most feasible year to be studied. The objective of this study is to describe learning achievement of student with physical disability.

## METHODS

### Setting and Participant

This descriptive quantitative study was conducted from August to November 2015. The participants were recruited by total sampling method from Physical Disability Specialized School of Disabled Children Development Foundation (*Yayasan Pembinaan Anak Cacat*) in Bandung. Students who studied at the school in academic year 2015/2016 and owned study report of academic year 2014/2015 were included in this study. Approval was obtained from Universitas Padjadjaran Ethic Committee and Physical Disability Specialized School of Disabled Children Development Foundation (*Yayasan Pembinaan Anak Cacat*) in Bandung.

### Data Collection and Analysis

Learning achievement was obtained from student's study report. As students in Physical Disability Specialized School of Disabled Children Development Foundation (*Yayasan Pembinaan Anak Cacat*) in Bandung were categorized into academic and developmental classes, the description of their learning achievement in this study followed that categorization as well. Students with normal intelligence to mild mental retardation were assigned to academic class, while students with moderate to severe mental retardation or multiple disabilities were assigned to developmental class. Academic achievement were described in scores. As a special school for student with physical disability, it has special programs for motoric capability and activities of daily living. Those special programs were described with categorization of similar concern and obtained from teacher's description in the study report.

## RESULTS

From 27 physically disabled students, 23 students had met the inclusion criteria. The final participants in this study are 13, because 3 students refused to participate in the study and the rest was unreachable when the study was conducted. Study reports from 5 students of academic class and 8 students of developmental class were collected.

**Table 1. Characteristics of disabled students in this study**

Variable	n=13
Sex	
Male	9
Female	4
Age*	
Mean	15.25
10-13	3
13-16	5
17-20	3
>20	1
Cause of Disability	
Cerebral Palsy	12
Scoliosis	1
Class	
Academic Class	5
Developmental Class	8

Note: \*Data were only available for 12 participants

As can be seen in table 1, Cerebral Palsy was the majority of the cause of physical disability in participants. The mean age of participants was 15.25 years old, which the youngest was 11 years old and the oldest was 22 years old.

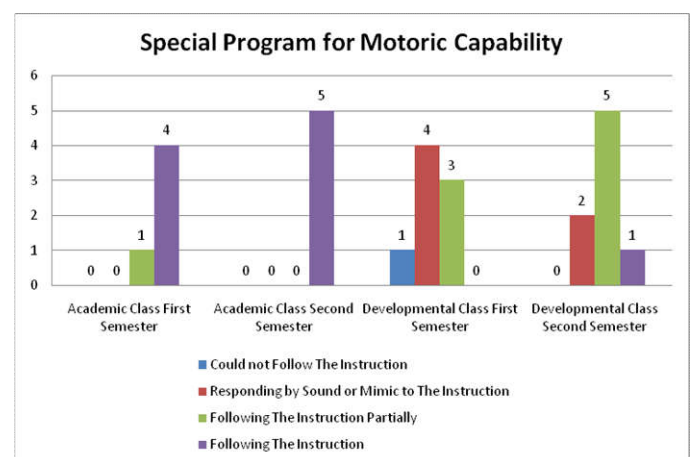
### Academic Subject

**Table 2. Mean score for academic subjects in academic year 2014/2015**

Variable	Academic Class		Developmental Class	
	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
Religion	76	80,2	72,5	75
Civics	74	81	68,75	74,5
Bahasa	74	82	70	74,5
Math	74	76	66,9	73,25
Science	74	82	68,75	74,5
Social	73	78	68,75	73,25
Art	76	74	71,25	73
Sundanese	78	77	63,3	70,7

Table 2 displays the mean score of all academic subjects for developmental class improved, and only two subjects declined for academic class. Special Program for Motoric Capability was described by graph.

### Special Program for Motoric Capability



**Figure 1. Description of student's motoric capability to follow teacher's instruction in academic year 2014/2015**

In academic year 2014/2015, both academic class and developmental class had few students that showed an

improvement in their motoric capability. For academic class, there was one student who still followed the instruction (for example to grab the object, to move the object) partially in the first semester but improved in the next semester, resulting all of students from academic class could follow the instruction by the end of academic year 2014/2015. In developmental class, a clear lower comparison in motoric capability than students from academic class was shown. In the first semester, there was one student who still could not follow the instruction, with the majority of the rest only responded by sound or mimic when being instructed. It was improved in the next semester, where the majority of students could follow simple instruction partially. Despite the improvements in both classes, their mobility was still fully supported. Students from academic class still had to wear wheelchair and students from developmental class were still fully supported by their caregiver or teacher for their mobility.

### **Special Program for Activities of Daily Living**

The capability to perform activities of daily living in academic class was same in both semester. All students in academic class could eat and drink independently but they had poor ability in dressing and toileting. As for developmental class, all students were dependent on their caregivers and teachers in their daily activity.

## **DISCUSSION**

The objective of this study is to describe academic achievement of student with physical disability. As most of participants of this study are physical disability caused by Cerebral Palsy, although many factors contribute to individual's academic performance, (Florence *et al.*, 2008) it should be taken as a note that a previous study that was conducted in Germany discovered that low level of academic functioning were large in children with Cerebral Palsy (Pinquart *et al.*, 2012). In this study, although it is not really shown from mean score, as can be seen in Table 2, learning achievement of students from developmental class were lower than students from academic class. That finding is supported by the fact that students in developmental class experience multiple disabilities that affect their intellectual, perceptual, sensory, and speech abilities (Kang *et al.*, 2010). A study by Kang *et al* revealed that in regular educational program, student had higher level of academic functioning (Kang *et al.*, 2010). In this special school study, it is also shown that the more "regular" class with normal intelligence to mild mental retardation, have a higher level in academic subjects than students in developmental class. In term of motoric capability aspect, children with physical disability are often limited in both mobility and activity of daily living (Wichers *et al.*, 2009). Although the amount of change in the outcome is proportional to teacher efficacy and quality of instruction, (Huitt *et al.*, 2015) the condition of students themselves are already limited. Most of them are also Cerebral Palsy patients that are associated with impaired brain (Pinquart *et al.*, 2012). Although students from academic class still need an assistance in following the instruction, they can perform the instruction from their teacher. While students from developmental class have difficulty in understanding and responding to the instruction as physical functioning is positively related with cognitive functioning (Chiang-Soon Song, 2013). Overall, children with Cerebral Palsy experience a reduced quality of life in terms of physical pursuits as result of the impairments in

their physical functioning (Calley *et al.*, 2012). A slight improvement where few of students move up to higher category can be seen in Figure 1, but the performance of physical activity itself does not change significantly. This finding is similar with a study by Palisano *et al* that discovered that performance of physical activity did not change significantly over one year period (Palisano *et al.*, 2007). All of students still have limitation in their physical activity, especially their mobility, as physical disability impacts the mobility greatly (Kuvalekar *et al.*, 2015).

Personal factors are important in the ability to perform activities of daily living, and students with physical and learning disability also are impaired in activity daily living (Eck *et al.*, 2010). All students from academic class can feed themselves but still have difficulty in dressing and toileting. It was also revealed in another study, where dressing was considered a more complex task than self-feeding (Chan *et al.*, 2005). Students from developmental class are fully dependent and can not do any of activities of daily living and self help task at all. The conclusion, students from academic class with normal intelligence to mild mental retardation provides a better study results than students with multiple disabilities. Both classes shows no significant improvement in motoric capability and activities daily living. The limitation of this study, as Cerebral Palsy dominated the cause of physical disability, the description does not represent learning achievement for physically disabled student in general. Prospective studies describing learning achievement of physically disabled student caused by another disease should be conducted.

### **Acknowledgement**

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## APPENDIX

## Appendix 1. Letter Confirming Research Approval from Health Research Ethics Committee Universitas Padjadjaran



KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI  
UNIVERSITAS PADJADJARAN FAKULTAS KEDOKTERAN  
**KOMISI ETIK PENELITIAN KESEHATAN**  
HEALTH RESEARCH ETHICS COMMITTEE

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Telp. & Fax. 022-2038697 email: kepk.fk.unpad@gmail.com

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PEMBEBASAN ETIK  
ETHICAL EXEMPTION

No: 535 /UN6.C1.3.2/KEPK/PN/2015

No. Reg.: 0115060499

Komisi Etik Penelitian Kesehatan Fakultas Kedokteran Universitas Padjadjaran Bandung, dalam upaya melindungi hak asasi dan kesejahteraan subjek penelitian kesehatan dan menjamin bahwa penelitian yang menggunakan formulir survei/registrasi/surveilans/Epidemiologi/Humaniora/Sosial Budaya/Bahan Biologi Tersimpan/Sel Punca dan non klinis lainnya berjalan dengan memperhatikan implikasi etik, hukum, sosial dan non klinis lainnya yang berlaku, telah mengkaji dengan teliti proposal penelitian berjudul:


*The Health Research Ethics Committee Faculty of Medicine Universitas Padjadjaran Bandung, in order to protect the rights and welfare of the health research subject, and to guaranty that the research using survey questionnaire/registry/surveillance/epidemiology/humaniora/social-cultural/archived biological materials/stem cell/other non clinical materials, will carried out according to ethical, legal, social implications and other applicable regulations, has been throughly reviewed the proposal entitled:*

"GAMBARAN HASIL BELAJAR ANAK-ANAK TUNADAKSA DI SEKOLAH LUAR BIASA D YAYASAN PEMBINAAN ANAK CACAT BANDUNG TAHUN AJARAN 2013/2014"

Nama Peneliti Utama <i>Principal Researcher</i>	:	Fitri Karimah
Pembimbing/Peneliti Lain <i>Supervisor/Other Researcher</i>	:	Rodman Tarigan, dr., Sp.A, M.Kes. Putri Teesa Radhiyanti Santoso, dr., M.Kes
Nama Institusi <i>Institution</i>	:	Program Sarjana Kedokteran Fakultas Kedokteran Universitas Padjadjaran

proposal tersebut dapat disetujui pelaksanaannya.  
*hereby declare that the proposal is approved.*

Ditetapkan di : Bandung  
*Issued in*  
Tanggal : 15 - 07 - 2015  
*Date*

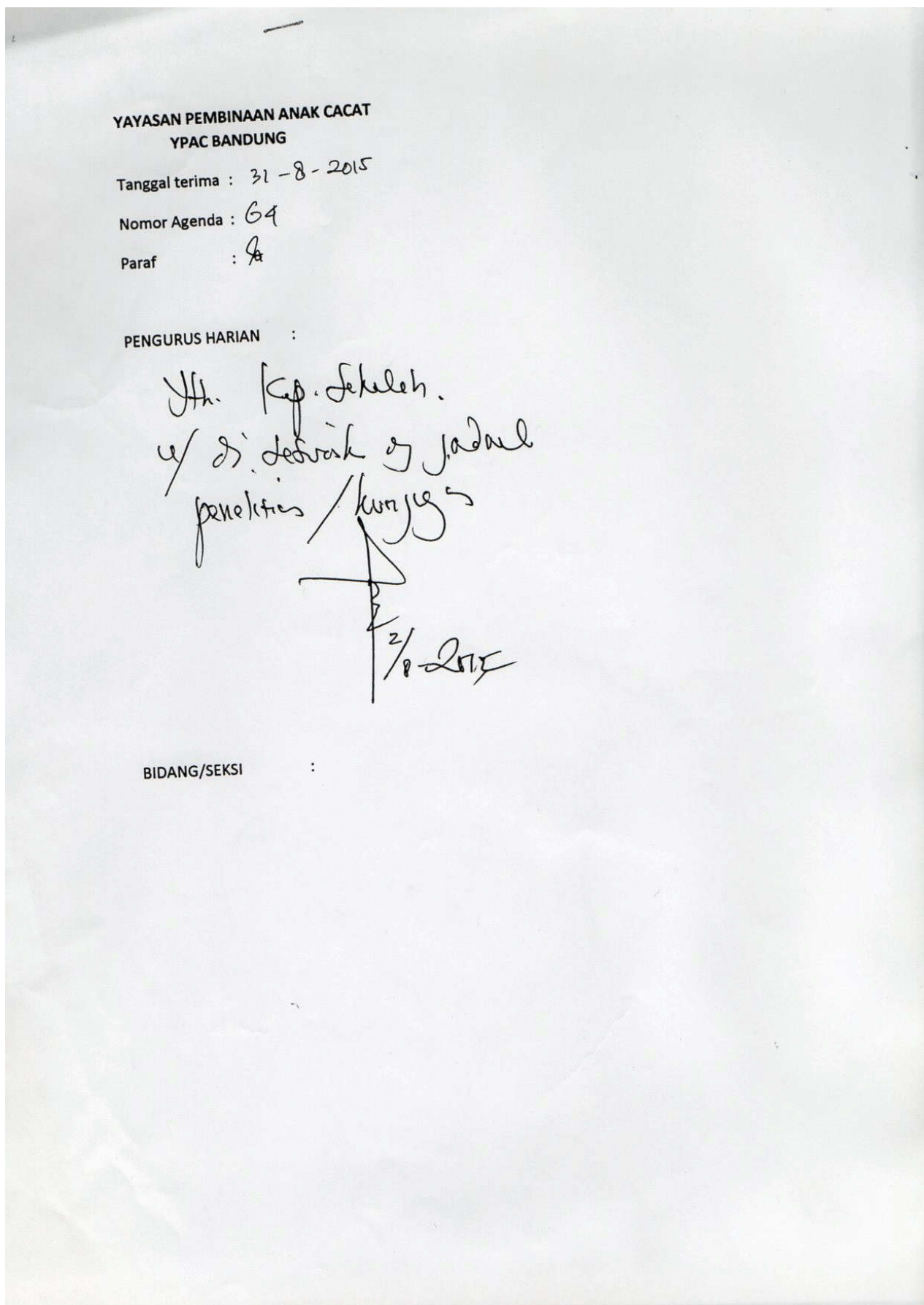


Ketua  
*Chairman*

Prof. Dr. Firman F. Wirakusumah, dr., SpOG-K  
NIP. 19480115 197302 1 001

**Keterangan/notes:**  
 Persetujuan etik ini berlaku selama satu tahun sejak tanggal ditetapkan.  
*This ethical clearance is effective for one year from the due date.*  
 Pada akhir penelitian, laporan pelaksanaan penelitian harus diserahkan ke Komisi Etik Penelitian Kesehatan.  
*In the end of the research, progress and final summary report should be submitted to the Health Research Ethics Committee.*  
 Jika ada perubahan atau penyimpangan protokol dan/atau perpanjangan penelitian, harus mengajukan kembali permohonan kajian etik penelitian.  
*If there be any protocol modification or deviation and/or extension of the study, the Principal Investigator is required to resubmit the protocol for approval.*  
 Jika ada kejadian serius yang tidak diinginkan (KTD) harus segera dilaporkan ke Komisi Etik Penelitian Kesehatan.  
*If there are Serious Adverse Events (SAE) should be immediately reported to the Health Research Ethics Committee*

Appendix 2 . Letter Confirming Research Approval from Disabled Children Development Foundation



## Appendix 3. Raw Data

Characteristics table			
gender	male	female	
	9	4	
age	16	15	12
	15	14	10
	17	15	22
	17	19	11
cause	cp	scoliosis	
	12	1	

	Academic		Developmental	
	Sem 1	Sem2	Sem1	Sem2
Religion	76	80,2	72,5	75
Civics	74	81	68,75	74,5
Bahasa	74	82	70	74,5
Math	74	76	66,9	73,25
Science	74	82	68,75	74,5
Social	73	78	68,75	73,25
Art	76	74	71,25	73
Physical Education	79	79	66,25	70,1
Sundanese	78	77	63,3	70,7
<b>Special Program for Activities of Daily Living</b>				
Academic Class (5)		Developmental Class (8)		
Feeding:4		Fully need support:8		
Feeding by help:1				
Dressing by help:5				
Toileting by help:1				
Special Program for Motoric Capability				
	Academic Class		Developmental Class	
	Sem 1	Sem 2	Sem1	Sem2
Could not follow The Instruction			I	
Only Responded by Sound/Not Specific Movement			IIII	II
Followed The Instruction Partially	I		IIII	IIII
Followed The Instruction	IIII	IIII		I

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