

THE EFFECTS OF MOTOR THERAPY FOR THE INTELLECTUAL DISABILITY: A SYSTEMATIC REVIEW

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Abstract

This study aims to obtain an overview of the effect of motor therapy for children with mental retardation that has been empirically proven. The research approach uses the PRISMA systematic review and uses Harzing's Publish or Perish 7 application in article search. Eleven articles were found that aim to improve gross and fine motor skills in mentally retarded children. A total of approximately 84 mentally retarded children who became the subject of the study. The result is that there are 10 interventions that are proven to improve the motor skills of mentally retarded children and 1 intervention has no effect on increasing the motor skills of mentally retarded children.

Keywords: mental retardation, motor occupation, systematic review.

INTRODUCTION

Mentally disabled according to Grossman, which is officially used by AAMD (American Association on Mental Deficiency) is a general intellectual function that is significantly below the average (normal) along with deficiencies in self-adjustment behavior and all of this takes place (manifested) during its development (Grossman & Begab, 1983). It should be noted that children with intellectual disability have a general intellectual function below average, are less able to do work according to their age, and occur at the age of development, namely from conception to the age of 18 years. (Rochyadi, 2012).

According to Government Regulation of the Republic of Indonesia Number 72 of 1991 concerning Special Education, the type of mental disorder of mentally disabled is divided into 2, namely mild tunagrahita and moderate tunagrahita (bphn.go.id). A score of approximately two standard deviations below average represents a significant cognitive deficit. These scores would occur about 2,5% of the population. Or stated differently 97,5% of people of the same age and culture would score higher. The tests used to measure IQ must be standardized and culturally appropriate. This is typically an IQ score of 70 or below. Down Syndrome (Mongoloid), have a face like a Mongol with narrow and slanted eyes, thick tongue likes to stick out, small ears, rough skin, and poor tooth structure. Cretin (Midget), fat and short, short and crooked legs and hands, dry, thick, and wrinkled skin, dry hair, tongue and lips, eyelids, palms and feet thick, late tooth growth. Hydrocephal, large head, small face, imperfect vision and hearing, occasional squint. Microcephal, small head size. Macrocephal, a child with a larger than normal head size.

We can recognize children with tunagrahita by looking at the following general characteristics: (1) Slow in learning new things, (2) Difficulty in generalizing new things, (3) The ability to speak is very lacking for severe category tunagrahita, (4) Physical defects and movement development, (5) Experiencing deficiencies in the ability to help themselves, (6) Unusual behavior and interactions, and (7) Unnatural behavior is shown continuously. The psychological characteristics are (1) Ability to focus attention; Able to sit quietly and pay attention but lacks understanding of the task given, (2) Memory; the more complex and in-depth the task given, the more difficult it is to remember, (3) Language; difficulty in imitation and unclear articulation, (4) Academic; lacking in academic ability, and (5) Personality; experiencing social-emotional problems, low self-concept, self-esteem resulting in distraction and inattention, having high expectations of failure, external locus of control resulting in lack of confidence.

One of the therapies that can be given to children with tunagrahita is occupational therapy. Therapy that aims to help someone master and improve skills better is also called occupational therapy. According to Santoso (in Evi Hasnita 1, 2019) occupational therapy is carried out to help

strengthen, improve coordination and muscle skills in children with autism in other words to train children's fine motor skills. Physical skills that move small muscles, and coordinate between the eyes and hands are also called fine motor learning. With regular and continuous stimulus, fine motor nerves can be developed (Christiana, 2013). Indriyani (2014) defines motor skills as a person's skill when performing basic and simple movements to more complex movements (Indriyani, 2014). Fine motor skills are skills that require control of small muscles, and require a high level of accuracy. Gross motor is a body movement that uses most of the large muscles or all limbs that are influenced by the maturity of the child himself including basic locomotor, non-locomotor, and manipulative movements. (Gustiana, 2011).

This research wants to get an overview of the effect of occupational therapy to improve gross and fine motor skills for children with disabilities from various empirically proven studies.

METHODS

This study uses the Preferred Reporting Items for Systematic and Meta Analyses (PRISMA) *Systematic Review method*, where the research uses systematic and explicit methods to identify, select, and critically appraise relevant research. Furthermore, we collected and analyzed data from studies included in the review according to predetermined criteria. (Moher et al., 2010). The source of electronic scientific literature is *Google Scholar* using *Harzing's Publish or Perish 7* application (Figure 1) in selected articles according to the title keywords: tunagrahita and motor, article keywords: children, tunagrahita and therapy, and article novelty limitations from 2010 to 2021

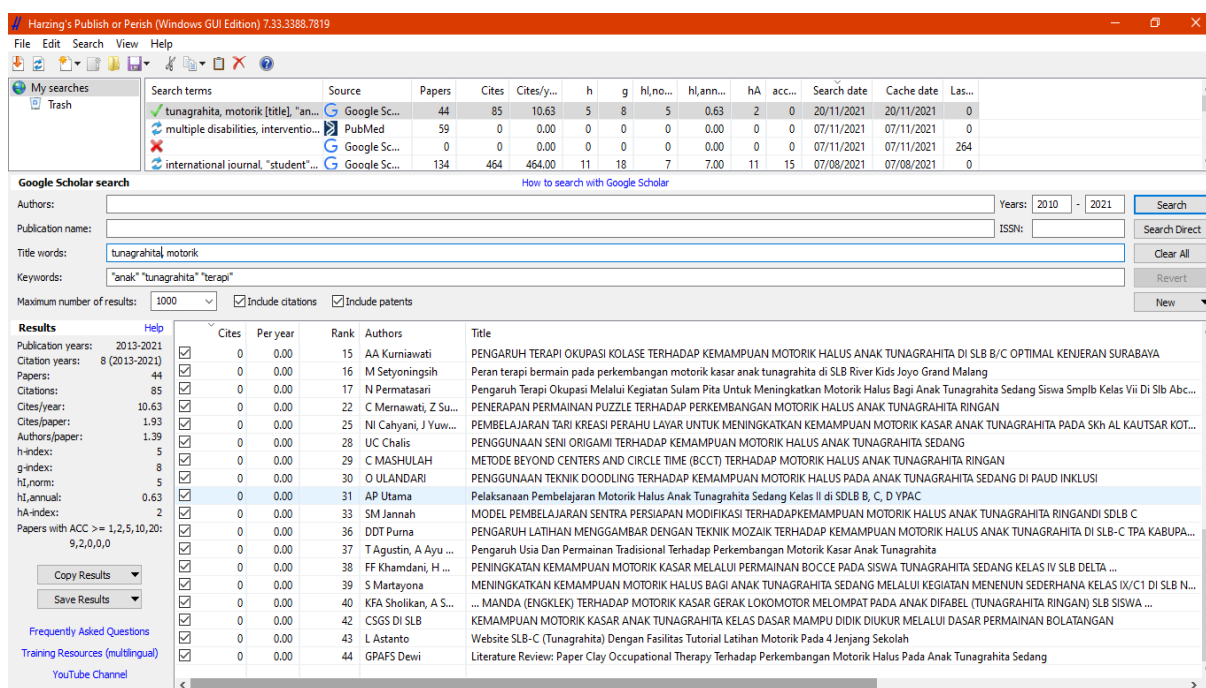
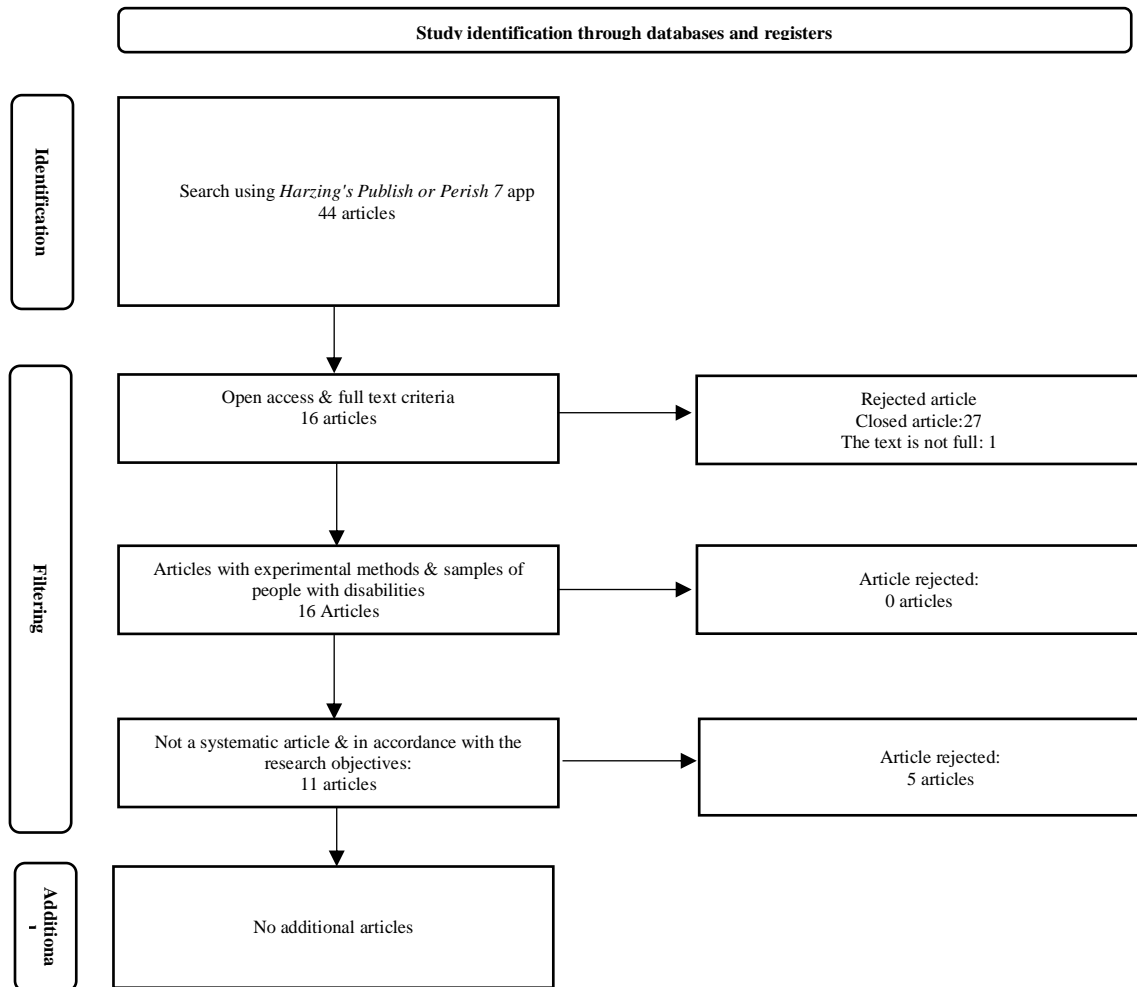


Figure 1.

The article selection process was based on the inclusion criteria: (1) Articles with open access, (2) Articles with full text, (3) Using experimental research methods, and (4) research samples are children with disabilities. Exclusion criteria: (1) Articles with systematic review and (2) Not in accordance with the research objectives. This process can be seen in Figure 2.



Flow of article selection

RESULTS AND DISCUSSION

The results of the article selection found eleven articles that fit the criteria systematically. The results of the article can be seen in table 1.

Table 1. Results of the article.

NO	Number of Subjects	Types of Tunagrahita	Motor Type	Intervention Model	Motor Test	Sig.
1	7	Lightweight	Rough	Kasti Game	Walk	.000
					Running	.005
					Jump	.356
					Jump	.356
					Throwing	.003
					Catch	.004
					Spanking	.001
	Kick	.200				
2	-	Lightweight	Rough	Balance Training	Board & Line Tracing	.879
3	1	Lightweight	Rough	Dance Creations	Dance with instructions	+3.58%
4	6	Lightweight	Smooth	Tie-Dyeing	Batik	Zh=2.04 (greater than the critical value of 1.96)
5	1	Medium	Smooth	Making necklaces	Meronce	+17,65%
6	6	Medium	Smooth	Sticking collage	Sticking	Zh=2.20 (greater than the critical value of 1.96)
7	41	Medium	Smooth	Putting on Shoelaces	Putting on Shoelaces	.003
8	15	-	Smooth	Playing with Lego	Playing with Lego	.005
9	3	Lightweight	Rough	Sailboat Creation Dance	Dance Creations	Zh=1.60 (greater than the critical value of 0.45)

					Inserting thread into needle	+3
					Installing the boundary carton	+4
10	1	Medium	Smooth	Simple embroidery	Thread cutting	+1
					Assembling strands of yarn	+4
					Tying the end of the bag	+3
11	3	Lightweight	Smooth	Embroider	Embroider	.002

The first article used a quasi-experimental method with 7 samples of mild category tunagrahita children at SLB N Ungaran. The research in this article aims to determine the improvement of gross motor skills with the repetition of dynasty games in children with tunagrahita. Gross motor assessment is carried out before and after the game runs on aspects: throwing, hitting, catching, running, jumping, jumping, and kicking . The method of assessment is that each element is given a score assessment, if it is right it gets a score of 3, if it is less precise it receives a score of 2, and if it cannot do it, it is given a score of 1. The results of the study showed that there were four aspects that were proven to improve gross motor skills with baseball, namely : Hitting, catching, running, and throwing. The elements of jumping, jumping, and kicking did not improve. (Indardi, 2010).

The second article conducted experiments on children with disabilities at SLB N 2 Yogyakarta which were divided into age groups under 10 years and over ten years. The exercises given were balance training on the board and on a straight line with two data collection times, before and after training. The results of the study found that there was no significant effect on gross motor skills of children with disabilities using balance training, both in children under 10 years old and children over 10 years old. (Hakim et al., 2013).

Research on a single case was conducted by the researcher in the third article. The subject is a 13-year-old 1st-grade student at Special Elementary School Putra Jaya Malang who has a high interest in dancing. The subject was measured in three conditions; before intervention, during intervention and after intervention using a stimulus test instrument in the form of verbal instructions and action responses from the subject. The results of this study found that the subject's gross motor ability in the pre-intervention condition was 45%. Furthermore, motor skills increased to 73% during intervention and the final condition after intervention was 62.86%. This indicates that there is an increase in gross motor skills with the application of creative dance learning. (Ratnayanti & Kustiawan, 2014)..

Fine motor skills of six SLB Siti Hajar Sidoarjo students with mild tunagrahita category are proven to increase by applying ikat batik skills with a value of $Z_h = 2.04$, found in the fourth article (Putri & Ahmad, 2017). Specific aspects that improve are the ability to pull and spread the fabric, tie the fabric and cut the fabric. The assessment was carried out before treatment and after treatment to the subject. The role of the teacher in demonstrating each step of batik well greatly influences the improvement of the subject's motor skills.

The fifth article uses necklace-making skills as an intervention to improve the fine motor skills of fourth grade moderate category tunagrahita children at SLB N 2 Padang. Using a single case experimental research method with 15 days of observation. The assessment was carried out in two conditions, the condition before the intervention and the condition after the intervention. Observations before intervention were carried out on the first to fifth day, with the results of the fifth day's ability of 52.94%. Furthermore, the intervention session was carried out on the sixth to fifteenth day and the final result of fine motor skills was 76.31%. The results of this study prove that the skills of making necklaces have an effect on improving the fine motor skills of children with disabilities. (Roza, 2016).

Research in the sixth article, using collage pasting activities as an intervention in improving the fine motor skills of 6 moderate tunagrahita children at SLB C Dharma Wanita Lebo Sidoarjo. Using pre-experimental methods with assessments carried out before treatment and after treatment by means of observation on the aspects of holding, grasping, pinching, tearing and sticking. A total of 14 meetings, with two meetings before treatment, then 10 meetings with treatment and finally two meetings after treatment. The results of the initial assessment of fine motor skills amounted to 55.53, and increased to 90.48 after treatment. This indicates an increase in the significance of the effect with a value of $Z_h = 2.20$. This proves that collage pasting activities can improve the fine motor skills of children with disabilities. (Solichah & Mahmudah, 2016).

Heri et al's research proves that shoelace therapy has an effect on the development of fine motor skills of children with disabilities. (Heri et al., 2020). By using pre-experimental research methods on 41 subjects of moderate category tunagrahita children at SLB N 1 Badung Bali. Interventions are carried out continuously and routinely for one month with 13 meetings. The final result obtained a significance value of 0.003, which indicates that shoelace therapy affects the improvement of fine motor skills of children with disabilities.

The eighth article uses a fine motor development assessment instrument in the form of an observation sheet by filling in the value score, if the child can do it alone, the child gets a score of 4, if the child can do it with a little help then get a score of 3, if the child can do it with the necessary help then get a score of 2, get a score of 1 if the child does it with full help, and if the child cannot do anything then it will get a score of 0. The subjects were 15 children with tunagrahita in TKLB Wiyata

Bhakti Tuban using a pre-experimental research design approach to the initial test before therapy and the final test after therapy. The results of the *Wilcoxon* test obtained a significance value of 0.005, which proves that there is an effect of increasing the fine motor skills of children with tunagrahita by using lego play therapy. (Astuti, 2020).

The article then conducted pre-experimental research for three weeks on 3 mild category tunagrahita children at Skh Al Kautsar Kota Cilegon Banten. The intervention was to provide gradual learning of Perahu Layar creation dance. Starting from 4 movements in the first week, six movements in the second week and added music in the third week. The results obtained are the value of $Z_h = 1.60$ greater than the critical value, thus proving that the layer boat creation dance has an effect on improving the gross motor skills of children with disabilities. (Cahyani et al., 2018).

The tenth article is an experimental research conducted on a single subject. The subject is a 20 year old student of class IX with moderate tunagrahita category in SLB N 1 Padang. The intervention provided is a simple weaving activity with the aim of improving the subject's fine motor skills. Data collection using test instruments and direct observation, on baseline conditions and conditions after intervention. Observation of the baseline condition was carried out for 7 meetings and continued with the condition after getting the intervention for 10 observations. The aspects that were observed changes were: inserting the thread into the needle, installing the dividing cardboard, cutting the thread, arranging the strands of thread, and tying the ends of the thread. The result is a level change in all aspects of the assessment, proving that simple weaving activities can improve the fine motor skills of children with disabilities. (Martayona, 2014).

The last article used embroidery therapy on 3 subjects of mild tunagrahita students at SLB Yapenas using a measuring instrument for the motor ability twig scale filled in with observation techniques. The motor aspects observed are attaching, piercing or inserting and pulling, with an assessment score of 3 if the student does without assistance, score 2 if the student does with a little help and score 1 if the student does with assistance. Observations were made in two stages, before getting the intervention and after getting the intervention. The role of the therapist during the process before and during the intervention by providing examples of assistance and direction is very helpful for the subject. The results of the correlation coefficient test amounted to 0.1000 with a significance of 0.002, proving that embroidery therapy can improve the fine motor skills of children with disabilities. (Islamiyah & Widyana, 2017).

The motor development of children with tunagrahita is also delayed due to their condition. These motor skills can be trained using the right methods (Hakim et al., 2013). Interventions on the motor skills of children with deafblindness can train and strengthen their muscles. According to Sumartiningsih (2015) the musculoskeletal system in the body system function can be increased by

physical exercise. The strength of the tendon span, the link between muscles and bones, will improve. (Sri Sumartiningsih, 2015). Exercise interventions for children with motor impairment can strengthen their muscles and are proven to improve their motor skills. In addition, physical exercise can help children's brain development. Physical exercise improves brain performance, cognitive function, as well as learning and memory skills (Furqaani, 2017). (Furqaani, 2017).

In addition, there were also several things that supported the success of motor therapy for children with disabilities. First, the support of therapists who provide examples and motivation to their students. The therapists provide good examples, assistance and direction. (Islamiyah & Widyana, 2017). The role of the teacher in demonstrating each step of batik well greatly influences the improvement of the subject's motor skills. (Putri & Ahmad, 2017). Second, the duration of repetition of techniques and therapies also has an influence on the success of children's motor skills. The experimental session was carried out 14 times, proven to provide a significant increase in children's motor skills. (Solichah & Mahmudah, 2016).. Repetition in providing techniques to children, proven to help children improve motor skills (Indardi, 2010). (Indardi, 2010). Matoryana (2014) conducted 17 observations before and after the intervention got good results in improving motor skills. (Martayona, 2014). Also in Roza's experiment, with 15 days of observation with the results of the experiment increasing children's motor skills (Roza, 2016). (Roza, 2016). Third, fun and happy exercises help children with disabilities in improving their motor skills. In Ratnayanti's (2014) experiment, the subject also had the same hobby as the intervention/exercise provided. This helped the subject's motor skills to improve (Ratnayanti & Kustiawan, 2014).

CLOSING

Conclusion

Delayed development also affects motor skills, so intervention and training in both gross and fine motor skills is helpful. In addition to improving motor skills, continuous training can also strengthen the muscular system and stimulate the brain. This gross and fine motor occupational stimulus will be more optimal in improving children's abilities with full support from therapists or teachers. Furthermore, the therapy is expected to be carried out continuously until the child can be trained sustainably. And activities that are fun for children will be faster for children to imitate with a happy heart.

Suggestion

As much as possible, children with disabilities should be introduced to various therapies that improve the child's motor skills. It would be better if the therapy is continued at home by parents. For further researchers, it can be examined more specifically on each category of conditions of mentally disabled and on one of the motor therapies; fine motor or gross motor.

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