Journal Of Nursing Practice
https://thejnp.org/
ISSN: 2614-3488 (print); 2614-3496 (online) Vol.8 No.2. January 2025. Page.448-454

Effect of ATNR (Asymetrical Tonic Neck Reflexs) Primitive Reflexs on Postural Control and Focus of Children Aged 5-8 Years at the Touch Care Mataram Physiotherapy Clinic

Muji Murtiningsih[1*], Yuly Peristiowati[2], Agusta Dian Ellina[3], Nurwijayanti[4], Ratna Wardani[5]
[1,2,3,4,5] *Universitas STRADA Indonesia, Indonesia*
**Corresponding author: murdadil@gmail.com*

ABSTRACT

Background: Primitive reflexes affect emotional development, because in a healthy and well-developed brain, the baby will slowly integrate primitive reflexes naturally into a mature developed reflex pattern. In early childhood, children have begun to enter early childhood education, and the occurrence of postural disorders can occur due to the use of the wrong backpack, various types of movement behavior, physical activity and sports including genetic factors.

Purpose: Analyze the effect of ATNR primitive reflex on postural control and focus of children aged 5-8 years at Touch Care physiotherapy clinic.

Methods: Quantitative design with a cross sectional approach. This study was conducted at the Touchcare Mataram Physiotherapy clinic with a population of children aged 5-8 years who came to the TouchCare physiotherapy clinic to examine / consult. Sample determination using purposive sampling with the results of 102 children.

Results: The results of the study based on hypothesis testing were 0.011 for postural control, which means that there is an effect of ATNR primitive reflexes on postural control in children aged 5-8 years. The focus variable has a significance level of 0.647, which means that the ATNR variable has no effect on the focus of children aged 5-8 years. The posture variable has a significance level of 0.155, which means that the ATNR primitive reflex variable has no effect on the posture of children aged 5-8 years.

Conclusion: There is an influence between ATNR primitive reflex with postural control, posture and focus of children aged 5-8 years at Touchcare Mataram Physiotherapy clinic.

Keywords: ATNR, focus, postural control, posture

Received November 10, 2024; Revised December 12, 2024; Accepted January 3, 2025
DOI: https://doi.org/10.30994/jnp.v8i2.733

ISSN: 2614-3488 (print); 2614-3496 (online) Vol.8 No.2. January 2025. Page.448-454

BACKGROUND

In infancy, growth and development proceeds very rapidly from month to month. The movements made in the first month of life are reflex movements. Reflexes are stereotyped responses to certain stimuli and are performed without the involvement of the brain that controls consciousness. The first reflexes known as primitive reflexes (fetal reflexes), such as holding objects touched by the baby and sucking reflexes, are gradually taken over by the brain, developing in the first six months of life and will be integrated into postural reflexes. The integrated reflexes will provide the basis for postural control, coordination and balance(Puspita, 2014).

Primitive reflexes are necessary during labor, and are key to the baby's survival in the first year. The baby instinctively responds to the world through primitive reflexes. Primitive reflexes help babies move through the birth canal, take their first breath, protect themselves from danger, urinate, crawl, grasp, raise their head, open their mouth, search, suck, swallow, and kick. Each primitive reflex has its own benefits and is the foundation for the baby's increasingly complex movement patterns, and how he perceives the world through the senses. Therefore, primitive reflexes also influence emotional development. In a healthy and normally well-developed brain, the baby slowly begins to integrate these primitive reflexes naturally, into a well-developed pattern of reflexes called "Postural Reflexes".

When ATNR (asymmetrical tonic neck reflex) is not integrated, it will cause a number of problems in the development of gross motor, fine motor, auditory processing, visual, vestibular, focus and concentration in children. Examples of ATNR (asymmetrical tonic neck reflex) that are not integrated in children include: difficulty rolling, crawling, lack of coordination, lack of balance, difficulty in writing, difficulty in grasping well, difficulty in spelling and reading, difficulty in following movements (McDonald, 2020).

Where in the kindergarten stage and advanced childhood stage, focus, postural control and good and optimal posture are needed so that children are ready to face all academic activities at the age of 5 to 8 years. In children, developing and improving motor conditions is the best way to realize postural control. The trick is to provide several exercises that support the strengthening of muscle performance and coordination of complex sensory systems. This exercise serves to trigger psychomotor movements that emphasize physical responses in the form of body movements.

OBJECTIVE

In general, this study was conducted to analyze the effect of ATNR primitive reflex (asymmetrical Tonic neck reflex) on postural control and focus of children aged 5-8 years at Touch Care physiotherapy clinic.

METHODS

This research is a quantitative design with a cross sectional approach. This research was conducted at the Touchcare Mataram Physiotherapy clinic on May 02, 2023 to June 02, 2023 with a population of children aged 5-8 years who came to the TouchCare physiotherapy clinic to examine / consult. The population in this study were all pediatric patients aged 5-8 years at the Touch Care Physiotherapy clinic with a total of 136 respondents (average patients every month, 2022). Determination of the sample using purposive sampling with the results of 102 children.

The instrument used is an instrument using pictures to conduct tests, where this instrument has been standardized to analyze the effect of ATNR primitive reflexes on postural control and focus of children aged 5-8 years at the Touch Care Physiotherapy clinic.

The data that has been collected is then processed (editing, coding, scoring, and tabulating). In this study after the data is tabulated, then processed which includes research problems, then testing research problems using "Logistic Regression" where the calculation process is assisted using Statistic Product And Solution Servis (SPSS). Research ethics in this study are by providing informed consent, anonymity, and confidentiality.

RESULTS

Model Summary

Table 1. Model Summary Posture Control Variable

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	118.575[a]	.105	.145

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Based on the results of the postural control variable, the R square value is 0.105, it can be concluded that the independent variable studied (ATNR primitive refractoriness) is able to explain the variation of postural control by 14.5% and there are 85.5% explained by other factors outside the model that explain the postural control variable.

Table 2. Model Summary of Child Focus Variable

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	122.204[a]	.106	.145

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Based on the results of the Child Focus variable, an R square value of 0.106 was obtained, it can be concluded that the independent variable studied (ATNR primitive reflex) was able to explain 14.5% of the variation in the dependent variable (Child Focus) and the remaining 85.5% was explained by other factors. outside the model explaining the child focal variable.

Table 3. Model Summary Posture Variable

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	135.459[a]	.057	.075

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Based on the results of the child posture variable, the R square value is 0.57, it can be concluded that the independent variable studied (ATNR primitive refractoriness) is able to explain the variation of the dependent variable (child posture) by 7.5% and the remaining 92.5% is explained by other factors outside the model that explain the posture variable.

Classification Table

Table 4. Classification Table Postural Control Variable

Observed			Predicted		
			Kontrol Postural		Percentage Correct
			Uncontrolled	Controlled	
Step 1	Kontrol Postural	Uncontrolled	56	12	82.4
		Controlled	17	17	50.0
	Overall Percentage				71.6

a. The cut value is ,500

The resulting logistic regression model, in this case the postural control model, has an accuracy of 71.6%.

Table 5. Classification Table Focus Variable

Observed			Predicted		
			Fokus		Percentage Correct
			Unfocusable	Focusable	
Step 1	Fokus	Unfocusable	54	11	83.1
		Focusable	19	18	48.6
	Overall Percentage				70.6

a. The cut value is ,500

The resulting logistic regression model, in this case the child focus model, has an accuracy of 70.6%.

Table 6. Classification Table Posture Variable

Observed			Predicted		
			Postur		Percentage Correct
			Abnormal	Normal	
Step 1	Postur	Abnormal	42	9	82.4
		Normal	31	20	39.2
	Overall Percentage				60.8

a. The cut value is ,500

The resulting logistic regression model, in this case the child focus model, has an accuracy of 60.8%.

DISCUSSION

Based on the significance test, a significance value of 0.001 was obtained, which shows a value less than the significance level (Sig. <0.05). This shows that ATNR primitive reflex (X) has a significant influence on postural control of children aged 5-8 years (Y1). The Odds Ratio obtained is 4.667, which means that children with integrated ATNR primitive reflexes are 4.667 times more likely to have good postural control.

It is known that postural control involves a complex relationship between sensory information and motor activity, which means that children need to learn how to adjust their bodies muscularly to achieve good postural control (Hazzaa et al., 2021). To improve children's functional abilities, postural control exercises can be given, good motor skills are accompanied by good functional improvement. So that there is a need for motoric improvement for functional improvement. Posture control exercises both statically and dynamically are able to improve and improve posture control must be trained continuously consistently and patience is also needed in training it (Dewar et al., 2015).

This is supported by research from Triyulianti, 2020 which explains that postural control exercise intervention involves several things, namely neuromuscular, representation, adaptive mechanisms, anticipatory mechanisms, sensory and musculoskeletal. In children with motor disorders, there is a deficit in one or more, this intervention is also able to increase muscle strength although not significantly, because postural control exercise is more focused on motor and sensory improvements (Yulianti, 2020).

ISSN: 2614-3488 (print); 2614-3496 (online) Vol.8 No.2. January 2025. Page.448-454

ATNR primitive reflexes that are not integrated indicate that the postural control system is not mature. The research is in line with this study which shows that most children in the ATNR reflex examination found unintegrated reflexes so that they have poor postural control. In this study it was found that as many as 71.57% of subjects had unintegrated ATNR primitive reflexes, which research by Gieysztor, et al also showed that unintegrated primitive reflexes were found to be the most ATNR reflexes in the pre-school population (Gieysztor et al., 2020).

Based on the significance test, the significance value is 0.001, which shows a value less than the significance level (Sig. <0.05). This shows that ATNR primitive reflexes (X) have a significant influence on the focus of children aged 5-8 years (Y2). The Odds Ratio obtained is 4.651, which means that children with integrated ATNR primitive reflexes tend to be 4.651 times more likely to have good focus.

The effects of persistent ATNR primitive reflexes can include poor visual tracking and difficulty in crossing the visual midline. The occurrence of these reflexes can cause difficulties in learning to read, telling time and also confusion between left and right(Gieysztor et al., 2020). The ATNR primitive reflex affects children's cognitive focus ability in doing things to completion without procrastinating. Focus is needed during the learning process, with adequate focus sometimes the results obtained will be better than learning for a long time but not supported by adequate focus. Factors that affect a person's learning focus can come from the environment and factors that come from within themselves. Children's focus is influenced by physical-motor abilities, physical-motor development is an aspect of development that focuses on Education for Early Childhood in addition to religious and moral values, social-emotional, art development, language development and cognitive development (Rusmini et al., 2022). Gross motor and fine motor are part of physical-motor development in children. Fine motor skills require coordination of most of the child's body and these movements require more energy because they are performed by larger muscles such as arms, legs and muscles throughout the child's body. While fine motor only involves certain parts of the body consisting of small muscles (*View of Implementasi Model ATIK Untuk Meningkatkan Motorik Halus Anak Dalam Kegiatan Menggambar Menggunakan Crayon Di PAUD Saya Anak Indonesia*, n.d.). Movement in fine motor requires hand-eye coordination to be careful and perfect rather than strength.

Research on children with learning disabilities found 100% for persistent ATNR primitive reflexes. About 57% of children had no eye focus due to the ATNR reflex. The study also found that 50% of the children had problems identifying between right and left, which was confirmed by 86% of the study subjects often having problems with identification of the dominant hand, which may indicate a reflection of ATNR. All children in the study (100%) had problems sitting and staying still as well as focusing (Bilbilaj et al., 2017).

Based on the significance test, a significance value of 0.018 is obtained, which shows a value less than the significance level (Sig. <0.05). This indicates that ATNR primitive reflexes (X) have a significant influence on the posture of children aged 5-8 years (Y3). The Odds Ratio obtained is 3.011, which means that children with integrated ATNR primitive reflexes are 3.011 times more likely to have normal posture. Then H0 is rejected and H1 is accepted.

Non-integrated STNR can lead to poor posture, making it difficult to keep the back straight. This causes the child to exhibit a downward-slouched posture. This posture can obstruct breathing, and cause the stimulus from the Reticular Activating System (RAS) to the neocortex and prefrontal cortex to not be maximized. This can lead to problems in attentional skills (Blomberg, n.d.).

Active primitive reflexes can cause posture and motor skills of children who appear clumsy (Pecuch et al., 2021). In posture, spinal deformities caused by ATNR can be seen, which is not only a problem for one's health but also a high cost to society (Gieysztor et al., 2017).

Head movement in a person with an active ATNR induces movement or muscle contraction in the legs and trunk. This is especially evident in close chain activities. Head rotation triggers extension activity in the limb and trunk muscles on the facial side and flexion muscle activity on the occipital side of the body. The degree of response depends on the degree of primitive reflex activity. The more vital the reflex, the more active the response is seen with increased muscle tone, even causing movement in the limbs and trunk (Gieysztor et al., 2020).

Research showed that the persistence of primitive reflexes such as ATNR has a significant influence on the symmetry of pelvic kinematics during walking. Based on this study, the symmetry of pelvic obliquity depends on the level of ATNR activity. Children with a higher ATNR index had a lower pelvic oblique symmetry index. Sedentary primitive relaxes, such as ATNR, may co-occur with impaired motor and postural development (Gieysztor et al., 2020).

CONCLUSION

There is an influence between ATNR primitive reflex with postural control of children aged 5-8 years at Touchcare Mataram Physiotherapy clinic. b. There is an influence between ATNR primitive reflex (Asymmetrical tonic neck reflex) with focus of children aged 5-8 years at Touchcare Mataram Physiotherapy clinic. c. There is an influence of ATNR primitive reflex (Asymmetrical tonic neck reflex) with posture of children aged 5-8 years at Touchcare Mataram Physiotherapy clinic.

REFERENCES

Bilbilaj, D. S., G, D. A., & S, D. F. (2017). Measuring Primitive Reflexes in Children with Learning Disorders. *European Journal of Multidisciplinary Studies*, *5*(1), 285. https://doi.org/10.26417/ejms.v5i1.p285-298.

Blomberg, H. (n.d.). *(Harald Blomberg)*. 2–4.

Dewar, R., Love, S., & Johnston, L. M. (2015). Exercise interventions improve postural control in children with cerebral palsy: A systematic review. *Developmental Medicine and Child Neurology*, *57*(6), 504–520. https://doi.org/10.1111/DMCN.12660.

Gieysztor, E., Pecuch, A., Kowal, M., Borowicz, W., & Paprocka-Borowicz, M. (2020). Pelvic symmetry is influenced by asymmetrical tonic neck reflex during young children's gait. *International Journal of Environmental Research and Public Health*, *17*(13), 1–12. https://doi.org/10.3390/ijerph17134759.

Gieysztor, E., Sadowska, L., & Choińska, A. (2017). The degree of primitive reflexes integration as a diagnostic tool to assess the neurological maturity of healthy preschool and early school age children. *Nursing and Public Health*, *7*(1), 5–11. https://doi.org/10.17219/pzp/69471.

Hazzaa, N., Shalaby, A., Hassanein, S., & Naeem, F. (2021). *ASSESSMENT OF BALANCE FUNCTIONS AND PRIMITIVE Online ISSN : 2735-3540*. *72*(4), 97–103.

McDonald, K. G. (2020). *Integrating primitive reflexes through play and exercise : an interactive guide to the moro reflex for parents, teachers, and service providers*. 127. https://books.google.com/books/about/Integrating_Primitive_Reflexes_Through_P.html?hl=id&id=gxWPzQEACAAJ.

Pecuch, A., Gieysztor, E., Wolańska, E., Telenga, M., & Paprocka-Borowicz, M. (2021).

Primitive reflex activity in relation to motor skills in healthy preschool children. *Brain Sciences*, *11*(8). https://doi.org/10.3390/brainsci11080967.

Puspita, W. A. (2014). PENGEMBANGAN PROGRAM STIMULASI GERAK UNTUK MENGOPTIMALKAN PERKEMBANGAN MOTORIK KASAR BAYI USIA 0-<12 BULAN BPPAUDNI Regional II Surabaya, Jawa Timur THE DEVELOPMENT OF MOTOR STIMULATION PROGRAM TO OPTI-MIZE THE DEVELOPMENT HARD MOTOR FOR BABY 0-<12 MONTHS. *Jurnal Ilmiah Visi*, *9*(1), 36–36.

Rusmini, R., Ningsih, M. U., & Emilyani, D. (2022). Ten Percent Red Ginger Gel Relieves Knee Joint Pain on the Elderly with Osteoarthritis. *Open Access Macedonian Journal of Medical Sciences*, *10*(B), 1164–1169. https://doi.org/10.3889/oamjms.2022.8891.

View of Implementasi Model ATIK untuk Meningkatkan Motorik Halus Anak dalam Kegiatan Menggambar Menggunakan Crayon di PAUD Saya Anak Indonesia. (n.d.). Retrieved October 6, 2023, from http://www.jiip.stkipyapisdompu.ac.id/jiip/index.php/JIIP/article/view/477/390.

Yulianti, S. T. (2020). Pengaruh Hippotherapy Terhadap Peningkatan Kontrol Postur Anak Dengan Kondisi Cerebral Palsy Spastik Diplegi. *Jurnal Ilmiah Fisioterapi*, *3*(1), 28–34. https://doi.org/10.36341/jif.v3i1.1227.