IMPLEMENTATION of ADAPTED LEARNING MODEL for OPTIMIZING PHYSICAL BRAIN CHILDREN MENTAL RETARDED: PHYSICAL THERAPY AND NEUROSCIENCE REVIEWS

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ABSTRACT

The purpose of this study was compiled packages Adaptive Physical model study of children tunagrahita on CD and book reviews of study guides Neuroscience and Physical Therapy and implications for the implementation of the Adaptive Physical model study on the ease, safety, comfort and their emergence to the development of the brain function of children tunagrahita. The purpose achieved in two stages, for two years with the research design research and development.

In phase I've done on literature review, research and development of learning packages in the Adaptive Physical Lab. Adaptive Physical and Lab. Physical Therapy. Study and development was conducted on the determination of the motion pattern, a series of motion, and rhythm and lyrics of the song that is suitable for optimizing the brain. Draft model of adaptive learning material produced in the form of motion exercises and songs that combined with circuit activity. The whole lesson lasted 40 minutes, with 9 minutes of the first and last form of gymnastics and track movement and shaped the rest of circuit activity which consisted of 6 stations, namely jumping on the trampoline, climbing blocks, face down on the medicine ball, crawling in the hallway, crawl with legs and hands next appointed, and ran / walked the ramp. The results of Phase I be an input to the design of phase II.

The results of stage II is the drafting of model learning Adaptive Physical tunagrahita children who validated and tested in a CD and User Guide. Validation is done in terms of Neuroscience, Physical Therapy, and Adaptive Physical Education by asking the opinions of experts and practitioners in the field of Education Children's incredible, Adaptive Physical Education, and nerve specialists in the forum group discussion (FGD). The FGD results of technical improvements and CD packaging were considered sufficient to lead to substantially and safely, while testing the ease, safety, convenience and expediency is done by testing on special-ed students in DIY. Action Research Methods used in trials involving special-ed teachers. Action research carried out in 2 cycles for 6 weeks. Usefulness of test results obtained significant improvement in brain function that consists of cognitive function, affective, and psychomotor. Cognitive function seen from the element the ability to read, write, count and concentration. All these elements gave $p < 0.05$. Meanwhile, the affective function assessed from the elements of emotional control, empathy, cooperation, and cheerfulness. All elements generate $p < 0.05$. Psychomotor function assessed from activities of daily living (activity of daily living) which produces the z score of -3, 557 with $p = 0.000$.

Keywords: Implementation Model, Brain Function, mental retarded

A. Introduction

Tunagrahita child is one child with special disabilities major disruption in the brain, especially the cognitive and emotional function. Number of students SLB according to Education Ministry data 2001 is 38,827 students (Irwanto, 2006), while prevalence tunagrahita children aged 5-14 years according to the National Health Survey 2001 was 2.4% (Irwanto, 2006). This amount is large enough to be handled with a better program so that the quality of children's self increases. This is in accordance with the Declaration of Salamanca in 1994 and the National Education System Law which suggests that children with special needs should receive equal education with other children.

Tunagrahita child suffered brain abnormalities are known in many parts of the brain. According to Spencer (2005), several anatomical abnormalities in the brains of children tunagrahita namely the lateral ventricle have abnormal shape and enlargement, there was a widening of the third ventricle, and enlargement of cortical sulcus and subarachnoid space in cerebral cortex. In substansia alba have thinning corpus callosum, a point the largest axons in the brain, which is important in the transfer of information between both hemispheres. While in the temporal lobe, particularly in hipocampus experiencing abnormalities shape and has a smaller size. Willis (2008), explains that hipocampus major role in memory processing. Hipocampus capture and integrate sensory input with related patterns of memory previously stored to form the new information. Therefore, it can be understood why children tunagrahita difficulties in the learning process, because in most children have abnormalities tunagrahita hipocampusnya shape and size smaller than normal children.

Decade 1990-2000 was a time when the study of anatomy and function of the brain develops very rapidly. This period is called Brain Age and the development of the brain into the limelight. Many inventions related brain function, such that when the brain is the organ being treated, preserved, and maintained seriously to survive more than a hundred years. The brain can be established and continuously changing, within a millisecond after millisecond according to life experience of each person.

The advantage lies in the nature plastisnya brain, namely brain capacity to change and develop (Taufiq Pasiak, 2002).

The brain is not a static organ, but a dynamic that continues to grow and develop to form between cells of the nervous tissue. The growth of nerve tissue between cells is influenced by stimulation from the environment. This is in line with research William Greenough (2006), which states that when learning new things a child's brain structure changed dramatically, more connection between neurons, glial cells that support neuron function increases, and blood capillaries meyuplai blood and oxygen to the brain become more dense. Exposure to a supportive environment has many positive effects on brain structure and function, including increasing the number of dendritic branches, multiplying synapses (nerve cell to cell connection), increasing the number of nerve cell advocates, and improve performance on tests of spatial memory (Rosenzweig & Bennett, 1996 .) Jason Brown (2003) suggested that exposure to a supportive environment, accompanied by physical activity may increase neurogenesis in the gyrus cells hipocampus dentata. It also can improve the performance of the hippocampus in the learning process (Jason Brown, 2003; Kempermann, 1998; van Praag, 1999).

Children tunagrahita disturbance in several brain functions, particularly cognitive function and emotion. The principle of handling these problems is to provide stimulation to the brain disorder as directed, intensive, frequent, and enough time. This is in line with the findings of Glenn Doman (1997) in Dennison (2004), which applies specific stimulation of the brain of children with brain injury and get positive results. When the normal pathways are damaged it is necessary to make new pathways in the brain to restore function lost.

Sidiarto (2006) suggested that the areas in the brain need to work together in sync to produce a particular function. There are four levels of brain development is essential and important, namely:

a. formation of early brain stem and spinal marrow. This phase is intended to move the body, arms, and legs without moving the spot (movement without motility).

b. formation of brain stem and subcortical areas early. This phase serves to crawl with the stomach.

c. formation of midbrain and subcortical areas. This phase serves to crawl.

d. formation of the cortex so that children can walk and run well. In the cortex there are six functions, namely the ability to walk upright, object identification, understanding verbal language, speaking, reading, and pinch objects with thumb and forefinger. If there is damage to the cortex, then one function or all functions of the cortex will be disrupted.

In children with impaired brain function necessary to determine the extent of brain damage that can be intervened by training phase impaired brain development in order to function optimally. One intervention that can be done is to mempolakan movement. Movement patterns of cross-done if the location of the disturbance in the central and subcortical brain areas, while the movement pattern of one side (homolateral) done when the disturbance in the brain stem or subcortical areas of early (Sidiarto, 2006).

The brain needs to be preserved both structurally and functionally. Maintenance is structurally carried by flowing blood, oxygen, and enough energy to the brain. With the maintenance of brain structure, brain function would be more optimal. Maintenance of a functional brain can be performed by any process of learning, including learning movement, learn to remember, learning to feel, learn to see, and so forth.

All of the learning process will always stimulate the brain centers. Therapy is structured and programmed motion is useful to stimulate a variety of learning centers in the brain. Movement that causes the function of the left and right hemispheres work together will strengthen the relationship between the two hemispheres of the brain. Movements crossed the midline of the body to integrate the two hemispheres of the brain so the brain can organize itself. When students perform cross motion activity, blood flow increased in all parts of the brain, so as to reinforce the learning process. This is possible because the event will bring together motor and cognitive areas in the brain, the cerebellum, basal ganglia, and corpus kalosum which can stimulate the production of neurotropin which can increase the number of synaptic connections (Jean Blaydes, 2001). Eye movements that follow the hand movements will train the relationship between the visual center and the center of the movement.

Balance exercise will stimulate some parts of the brain that regulate balance, such as the cerebellum, the center of the movement in the area of the forehead (frontal lobe) in the cerebrum, the center of a sense of attitude and sense of movement in the crown area (parietal lobe). In addition, exercise the function of the balance of influence both to control emotions, which in children tunagrahita also susceptible to interference. Caterino & Polc, 1999 in Jean Blaydes (2001) examined the cognitive benefits of physical exercise found that the concentration and mental focus children increased after physical activity is structured. These exercises have an effect on the frontal lobes of the brain that is useful for mental concentration, planning, and decision making. The findings are in line with the opinion of the presidential Council of Fitness that doing 30 minutes of physical activity each day can stimulate the brain. Kinoshita (1997) in Jean Blaydes (2001) suggests that exercise can trigger the release of BDNF (brain-derived neurotrophic factor), which enables one neuron to communicate with other neurons. Movement therapy to optimize the alignment function of the brain is the motion, respiratory, and central thinking (memory, imagination). The series of movements that have been prepared involving muscle movement centers in the brain (homunculus cerebri), corpus callosum, which connects the two hemispheres of the brain in the form of cross movement, and control centers higher in the brain.

Children tunagrahita impediment in the learning process associated with memory (memory). Disorders can occur in the intake process (input) information, information processing, storage, and expenditure information. In children with learning difficulties as experienced by patients tunagrahita, information received by the brain the back, but can not be disclosed by the forebrain. In other words, there is an inability to explain what was learned. Learning to use the whole brain, through the renewal of the pattern move is a way out so that children can master the parts of the brain that were previously blocked (Dennison, 2004).

Movement therapy to optimize a child's brain tunagrahita expected to overcome problems faced related to brain function of children tunagrahita. This is in accordance with the opinion Soemarmo Markam (2005) that exercises the muscles and other motion devices are intended for the vitalization of the brain to stimulate the brain antarbelahan cooperation and inter-sections of the brain so that all areas of brain

function will increase, which will then be followed by increasing blood flow into the brain. Increased blood flow to the brain along with a better breathing means increasing oxygen to the brain so that it will improve brain function. According to Dennison (2004), optimization activities structured to stimulate the brain (lateralitas dimension), relieve (focusing dimension), and relaxes the (dimensional convergence). Dimensions lateralitas directed to the right and left brain hemispheres, focusing dimension to the back of the brain (brain stem) and the front of the brain (frontal lobe), and the dimensions of convergence for limbic system (midbrain) and big brain (cerebral cortex).

Principles for optimizing brain exercises are:

a. slow motion. This is to align the pattern of muscle movement, breathing movement, and metabolism of brain parts are stimulated.

b. movement from bottom to top. This is consistent with the systematics of motion in order to train the parts smaller muscle until the muscle is greater. The benefits to be gained so that disturbances are especially fine and gross movements can be repaired.

c. movement crosses the midline of the body. This is to align both left and right brain hemispheres.

d. repetitive movements. This is very important for stimulation of movement can be recorded in the brain through jaras proprioceptive (sense of joint training.)

e. involving the eye. Every movement carried out the hands and feet always involve the eye. It is associated with impaired visual concentration and ability visuospasial (known space.)

f. full motion. Movement must be made up to a maximum limit of the joints.

g. involves the movement of respiratory control. In practice, breathing is always done regularly in every movement. It is important to achieve optimal oxygenation to the brain and for relaxation.

h. impregnated movement. This is to achieve harmonization between the motion (muscles and joints), brain, and emotion, because the ultimate goal the optimization of brain exercises is to achieve a balance between brain function, muscle work, and emotional stabilization.

Tunagrahita Children can also have problems in sensory, motor, learning, and behavior. This is because most of the Child tunagrahita impediment in responding to environmental stimuli given to make the motion, mimicking the motion and even some who are physically impaired so that he can not perform movements that are oriented correctly. According Irham Hosni (2004), Physical Education for children in addition to health tunagrahita also contain elements of physical correction. Adaptive physical education is a service delivery system that is comprehensive (comprehensive). Adaptive Physical learning model adapted to the type and characteristics of student disorders, and aimed at assisting and correcting abnormalities that carried by the student. Various modifications done as a form of adjustment of physical activity for children with special needs, including children tunagrahita. These modifications can be in the form of adjustments to the rule of physical activity, skill and technique of execution, as well as environmental modifications, namely in terms of space, facilities, and equipment. During this learning Adaptive Physical still emphasize how to develop and improve the physical abilities of individual children with special needs by adjusting the type and characteristics of their students, while learning model Adaptive Physical specifically intended to optimize brain function has not been done.

With this description it needs adaptive learning model that focuses on the physical brain stimulation, especially in children tunagrahita. With such stimulation, brain function is expected to be more optimal, physical fitness and health equipment to be achieved. Models that have been made subsequently need to be validated and tested for can then be applied.

B. Method.

The design of this study is the Research and Development (Gay, 1981). Temporal adaptive learning model to optimize a child's brain tunagrahita based on a review of physical therapy and neuroscience that have been prepared on the next phase I Phase II study will be validated by experts and tested before the final result. Validation is performed by asking the opinions of experts and practitioners in the field of Education Children's incredible, nerve specialists, and instructional media specialists, followed by trials in special-ed teachers in DIYdan then tested on special-ed students

in DIY. Validation of experts through focus group discussions that get inputs and further revise the model I. Next is validated by the special-ed teachers, especially in terms of convenience, the display model, and the possibility of integration in the learning of adaptive physical education. Next, the tests on SLB students in DIY with action research. Validation and test results are used to refine the draft that has been made in I, so that structured physical adaptive learning model to optimize a child's brain tunagrahita equipped with manual and CD / DVD.

Data results of focus group discussions were analyzed by descriptive qualitative, while the validation results were analyzed by descriptive quantitative model. Data model test results were analyzed by descriptive and qualitative benefits of the test results were analyzed with z test Overall flow chart is shown in the scheme below.

In the scheme described the flow of research and relevance of research activities from one phase to the next. What will be done in multiyears can be traced from the scheme.

First year research flowchart

Preliminary Research: Influence of brain gym in learning and memory performance

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Outcome Year I:

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Establishment of draft learning model for optimizing brain Adaptive Physical Child tunagrahita: draft CD and the draft manual

Flow Chart Research Year II

The results first year
(Draft Adaptive Learning Model for Optimizing Physical Brain Tungrahita)

↓

Socialization into special-ed teachers in seminars, as well as to get input and willingness to help in testing models of learning

↓

Validation of experts with a focus group discussion
(Expert PLB, adaptive physical education specialist, nerve specialist, and expert instructional media)

↓

Revised Model

↓

The test model in the special school

↓

Finalization of temporal adaptive learning model to optimize a child's brain tunagrahita
Equipped with CD and manuals

Results and Discussion.

Result Analysis Focus Group Discussion (FGD) Focus group discussions held in an effort to formulate a joint model of adaptive learning material to optimize the child's brain tunagrahita appropriate. FGD participants were experts in related fields, namely exceptional education experts, teaching adaptive physical and neurological specialists. From the results of FDG is finally formulated as the following matters: 1. The principle of motion exercises that are used are (1) movement patterns are slow to align muscle movement, breathing movement, and metabolism of brain parts are stimulated. The draft motion, especially on songs Jaranan is still considered too fast. (2) The movement crosses the midline of the body to harmonize the two hemispheres of the brain. The design is adequate contains motion crossing the body. (3) repetitive motion, (4) involving the eye to increase the concentration of visual and visuospatial ability, (5) movement includes joint management, (6) motion involves the respiratory control to achieve optimal oxygenation, and (7) impregnated motion to achieve harmonization between the motion, brain, and emotion. The design should be adjusted with the movement lyrics for easy impregnated.
2. The element of motion should be simple, easily understood, and fun.
3. More circuit activity involving motion more severe and complex than gymnastic

movements. As is known, which are aerobic physical exercise is very good for improving blood circulation and oxygenation of the brain. Exercise balance copied because it is useful to stimulate the center of balance in the cerebellum, the center of the movement in the cerebrum, the center of a sense of attitude and sense of movement in the crown area (parietal lobe). In addition, this contributes to exercise emotional control, which in children tunagrahita also susceptible to interference. For circuit activity already seen enough in terms of expediency, convenience, safety, and comfort.

4. Indicators on the usefulness test should be emphasized in the areas of affective, because the model more touching the amygdala.

The formulation of input when FGD is used to compile the revised physical model of adaptive learning. The revised model is validated again by the expert. According to experts who assess, adaptive learning model to optimize the brain physically impaired and mentally retarded children in terms of the content is good enough and can be used in learning in school. However, there is input from specialists nerve to include elements of behavior change in the assessment of the benefits of learning model. In addition, instructional media experts warned of the limitations of the CD player on the field so that the possibility of the CD can not be operated.

Model Validation Results Analysis by Users.

Socialization into special-ed teachers in seminars, as well as to get input and willingness to help in testing models of learning Validation of models by users conducted by special-ed teachers through seminars as well as to get input and willingness to assist in the test model. The results validate the model by users can be summarized as follows:

1. The movement is still considered too fast
2. The movement is suggested to more simplified
3. Deuteronomy movement needs plus
4. Rhythm of the music was too fast
5. Switching between the movement is less subtle.

Results validation experts and users are used to compile the revised physical model of adaptive learning and further test physical models of adaptive learning to optimize a child's brain tunagrahita. Test of Adaptive Learning Model for Optimizing Physical Brain Physical learning model adaptive test was conducted using action research. Learning conducted during September to October 2010, conducted by special-ed teacher of physical education. Laptop LCD equipment and CD player as supplied by the researchers. During the learning take place, involving a technician who helps operational equipment and other teachers who helped to observe and record the course of learning in the classroom.

Cycle I.

1. Planning .Will apply the adaptive learning model that has been physically validated by experts and users. Learning duration 40 minutes, with 9 minutes of the first and last form of movement and song, and 22 minutes in the middle of circuit activity with 6 stations. Overall learning activity conducted under the guidance of teachers (instructors).
2. Implementation With the help of a CD teacher gives examples and instructions to the students to imitate the movement, followed by circuit activity. Activities conducted by the "conveyor belt", which consists of movement jumping on trampoline, walking down the beam bridge, face down on a medicine ball and move, creeping, crawling, and running.
3. Monitoring.

   From the field notes (field notes), revealed that at the initial meeting of the students were still not familiar with the learning model. This is evident from the focus of attention is still not good. Students still having trouble following the movements should be, especially the movements between-song transitions and cross movements. Almost all students (90%) movement conducted not in accordance with the example. In the circuit activity, students look still trouble at stations medicine ball, because students are required to balance the body with the prone position. Students seemed still need help to find a balance, because the nature of the ball is very unstable. In addition, the trampoline station there are 5 students who are experiencing difficulties because of fear of

falling. Apparently this is also influenced by factors that are less good balance and power antigravitasi less.

4. Reflection. Therefore there are perceived barriers to the learning process, if done well in a series, it was decided to open a second cycle.

Second cycle

1. Planning. Based on the first cycle of reflection, then arranged the delivery of lesson plans in a way melatihkan movement parts, little by little. Moreover, replications for each movement propagated. Originally submitted without using the accompaniment of songs. After the students can easily follow the example of the movement, then accompanied with song. For circuit activity students are given more opportunities in medicine ball to train station balance.
2. Implementation. Students are invited to sing the song while doing the movements. This is done so that students feel happy and not bored in the following movements. In the circuit activity, conducted with the model 'conveyor belt' and for a specific station (medicine ball) when copied and the number of replications performed 3 sets.
3. Monitoring. Further learning can take place more smoothly, even at the end of the lesson students would like learning model tested. Students aged elementary school level really like the songs that accompany the child Dolanan movements in the learning, because they can understand the meaning of the song with customized content movement songs. The atmosphere of learning come alive and enthusiastic students to follow. As for junior high and high school students are less like movements accompanied by songs Dolanan children, they are more like the kind of pop or dangdut rhythm. This is evident from their lack of enthusiasm in doing the movement. Circuit activity carried out between the movement and song in the process of adaptive learning material. The road circuit activity is much more smoothly. Students have a better understanding of what to do. Nearly 85% of students did not encounter any obstacles in conducting activities that are instructed, for both elementary students and students for junior high and high school.

4. Reflection. Because of the learning process was able to walk well with the methods applied, it was decided that this method is most appropriate. Number of students who master the movement of the longer growing. At this early stage, both students and teachers are still adapting to the learning model. However, after subsequent meetings took place, students begin to fit in and love of learning models tested.

Test usefulness.

Benefit test is done by design one group pretest-posttest design. In accordance with a nerve specialist advice, the benefits will be seen from the indicators of cognitive function, affective, and psychomotor with elements of a simplified and easily observed. Factor viewed from the elements of cognitive ability to read, write, count and concentration. Affective factors were observed consisting of elements of emotional control, empathy, cooperation, and cheerfulness, while psychomotor function viewed from the activities of daily living (activity of daily living).

Based on statistical analysis can be seen that the temporal adaptive learning model developed can be useful for improving cognitive function, affective, and psychomotor tunagrahita students with significant ($p < 0.05$). This is in line with the theory put forward by Paul (2004) which says that physical exercise can optimize the function of the cortex and the limbic system which deals with emotion. Spencer (2005) found that the brains of children tunagrahita known to have abnormalities in many parts of the brain. Lateral ventricles and enlargement of experience abnormalities. On the third ventricle dilation, occurs in the cerebral cortex and enlargement of cortical sulcus subarachnoid space. While in the temporal lobe, particularly in the hippocampus have abnormal shape and smaller size. In substansia alba have thinning corpus callosum, a point the largest axons in the brain, which is important in the transfer of information between both hemispheres. Willis (2008), explains that hipocampus major role in memory processing. Hipocampus capture and integrate sensory input with related patterns of memory previously stored to form the new information. Therefore, it can be understood why children tunagrahita difficulties in the learning process, because in most children have abnormalities tunagrahita hipocampusnya shape and size smaller than normal children.

With these disorders tunagrahita brain child needs to be preserved both structurally and functionally. Maintenance is structurally carried by flowing blood, oxygen, and enough energy to the brain. In the adaptive learning model generated physical lets blood flow and oxygen to the brain more smoothly. With the maintenance of brain structure, brain function would be more optimal. Maintenance of a functional brain can be performed by any process of learning, including learning movement, learn to remember, learning to feel, learn to see, and so forth. All of the learning process will always stimulate the brain centers. Temporal adaptive learning model which includes the packaging of motion generated crosses the midline of the body, good for both hands and both feet to stimulate cooperation between the left and right hemispheres. These stimuli will strengthen relations between the two hemispheres of the brain, and improve the ability of the brain organizes itself. When students perform cross motion activity, blood flow increased in all parts of the brain, so as to reinforce the learning process. This is possible because the event will bring together motor and cognitive areas in the brain, the cerebellum, basal ganglia, and corpus kalosum which can stimulate the production of neurotropin which can increase the number of synaptic connections (Jean Blaydes, 2001).

In the adaptive learning model produced physical involve eye movements that follow the movement of hands, either to the right, left, top, or bottom. It will train the relationship between the visual center and the center of the movement that will enhance the ability of visual concentration and ability visuospasial (Sidiarto, 2006).

Activities designed circuit which involves a lot of balance exercises, good character and vestibular equilibrium so that it will stimulate some parts of the brain that regulate balance, such as the cerebellum, the center of the movement in the area of the forehead (frontal lobe) in the cerebrum, the center of a sense of attitude and sense of movement in the area crown -crown (parietal lobe). In addition, exercise the function of the balance of influence both to control emotions, which in children tunagrahita also susceptible to interference. Cross on gymnastic movements reinforced with circuit activity, especially in the movement to a crawl. This movement is emphasized to improve the function of midbrain and subcortical areas.

Caterino & Polc, 1999 in Jean Blaydes (2001) examined the cognitive benefits of

physical exercise found that the concentration and mental focus children increased after physical activity is structured. These exercises have an effect on the frontal lobes of the brain that is useful for mental concentration, planning, and decision making. The findings are in line with the opinion of the presidential Council of Fitness that by doing 30 minutes of physical activity each day can stimulate the brain. Kinoshita (1997) in Jean Blaydes (2001) suggests that exercise can trigger the release of BDNF (brain-derived neurotrophic factor), which enables one neuron to communicate with other neurons.

Movement therapy to optimize the alignment function of the brain is the motion, respiratory, and central thinking (memory, imagination). The series of movements that have been prepared involving muscle movement centers in the brain (homunculus cerebri), corpus callosum, which connects the two hemispheres of the brain in the form of cross movement, and control centers higher in the brain.

Balance exercises which are designed on circuit activity intended to stimulate some parts of the brain that regulate balance, such as the cerebellum, the center of the movement in the area of the forehead (frontal lobe) in the cerebrum, the center of a sense of attitude and sense of movement in the crown area (parietal lobe). In addition, according Caterino & Pole in Jean Blaydes (2001), exercise the function of the balance of influence both to control emotions, which in children tunagrahita impaired.

Children tunagrahita impediment in the learning process associated with memory (memory). Disorders can occur in the intake process (input) information, information processing, storage, and expenditure information. In children with learning difficulties as experienced by patients tunagrahita, information received by the brain the back, but can not be disclosed by the forebrain. In other words, there is an inability to explain what was learned. Learning to use the whole brain, through the renewal of the pattern move is a way out so that children can master the parts of the brain that were previously blocked (Dennison, 2004). Movement therapy to optimize a child's brain tunagrahita expected to overcome problems faced related to brain function of children tunagrahita. This is in accordance with the opinion Soemarmo Markam (2005) that exercises the muscles and other motion devices are intended for the vitalization of the brain to stimulate the brain antarbelahan cooperation and inter-

sections of the brain so that all areas of brain function will increase, which will then be followed by increasing blood flow into the brain. Increased blood flow to the brain along with a better breathing means increasing oxygen to the brain so that it will improve brain function. In this adaptive learning model bodily functions seem more affective than the first stimulated psychomotor and cognitive function. By giving the opportunity and encourage children to move more actively with the learning model is not impossible that in the long term will improve children's ability to receive information, store, and reuse knowledge (cognitive function). Based on statistical analysis it can be concluded that the learning program can improve students' affection tunagrahita very significantly. This is in line with the theory put forward by Paul (2004) which says that physical exercise can optimize the dimensions of convergence for limbic system which deals with emotion. Spencer (2005) found that the brains of children tunagrahita, there are anomalies in the limbic system abnormalities, especially the shape and size of the hippocampus is smaller. In the gymnastic movement and song, there are cross-movement and crossing the center line of the body in every song. It is deliberately designed to integrate both hemispheres of the brain so the brain can organize itself. When students perform cross motion activity, blood flow increased in all parts of the brain, so as to reinforce the learning process. This is possible because the event will bring together motor and cognitive areas in the brain, the cerebellum, basal ganglia, and corpus kalosum which can stimulate the production neurotropin and to increase the number of synaptic connections (Jean Blaydes, 2001). This is reinforced by Spencer (2005) who argued that one of the child's brain anomalies tungrahita is thinning corpus callosum which is the largest axon paths in the brain, which is important in the transfer of information between the two hemispheres of the brain. Cross movement reinforced the circuit activity, especially in the movement to a crawl. This movement is emphasized to improve the function of midbrain and subcortical areas. This is related to the element of emotional control on affective function. Balance exercises which are designed on circuit activity intended to stimulate some parts of the brain that regulate balance, such as the cerebellum, the center of the movement in the area of the forehead (frontal lobe) in the cerebrum, the center of a sense of attitude and sense of movement in the

crown area (parietal lobe). In addition, according Caterino & Pole in Jean Blaydes (2001), exercise the function of the balance of influence both to control emotions, which in children tunagrahita impaired. In this adaptive learning model bodily functions seem more affective than the first stimulated psychomotor and cognitive function. By giving the opportunity and encourage children to move more actively with the learning model is not impossible that in the long term will improve children's ability to receive information, store, and reuse knowledge (cognitive function). Based on the above description it appears that the temporal adaptive learning model which is applied to optimize brain function, both in cognitive, affective, and psychomotor. Learning model is expected to be done with greater frequency increased so that benefits for children tunagrahita felt more optimal.

C. Conclusion and Suggestions.

From the results of research and discussion, it can be concluded that:

1. Learning model consists of range of motion: circuit-gym-gymnastics. The duration of the motion: 9 '- 22'-9'. Circuit activity there are 6 stations, namely: jumping on the trampoline, climbing the bridge beams, on his stomach on a medicine ball, crawled down the hallway, crawling with the raised hands and feet, and ran or walked the ramp has been validated and tested.
2. CD and book guide has been produced can be used to support teachers in learning adaptive physical, especially in optimizing brain function of children tunagrahita.

D. Suggestion.

From the results of this research can be suggested such things as follows:

1. Needs further research to prove the benefits of this adaptive learning model physical experiment design RCTs (randomized contolled trial).
2. Development requires a more valid instrument to measure brain function in terms of cognitive, affective, and psychomotor.

E. References

Dennison, P.2004. *Complete Handbook of Brain Gym*. Grasindo, Jakarta..

Gay, LK. 1981. *Educational Research Competencies for Analysis & Applicati Columbus*. Charles E. Merrill Publishing.

Irham Hosni, 2004. *Adaptive Learning Directorate of Special Education*, Jakarta.

Irwanto. 2006. *Growth irregularities. Continuing Education*. Capita Selekta IKA VI, Surabaya.

Jason Brown. 2003. *Enriched Environment and Physical Activity Stimulate Hippocampal but not olfactory Bulb Neurogenesis*. Aeropean Journal of Neurosciences, Vol.7..pp 2042-2046.

Jean Blaydes. 2001. *A Case for Daily Quality Physical Education*, www. Action Based Learning. com. Retrieved on March 30, 2008.

Kempermann. 1998. *Experiences-induced neurogenesis in the senescent dentate gyrus.* J. Neurosci, 18, 3206-3212.

Rosenzweig, MR & Bennett, EL. 1996. *Psychobiology of plasticity: effects of training and experiences on brain and behavior*. Behav. Brain Res, 78, 57-65.

Sidiarto.2006. *Horizon to Optimize Potential Intelligence Toddler, Child Hope For Brain Injury*. Rainbow Hope Education Foundation.

Soemarmo Markam. 2005. *Brain Exersices Vitalization.* Grasindo. Jakarta

Spencer, M.D. 2005. *Qualitative Assessment of Brain Anomalies in Adolescents Whit Mental Retartadi*on. AJNR Am.J. Neuroradiol 26: 2691-2697)

Taufiq Pasiak. 2002. *Revolution IQ/EQ/SQ: Between Neurosience and the Koran.* Mizan. Bandung.

Van Praag, Gage FH. 1999. *Ontogency Running Increases Cell Proliferation and Neurogenesis in the Dentate Gyrus Adult Moyse*. Nature Neuroscience 2 (3): 266-270

William Greenough. 2006. *Prespective: Rich Experiences, Physical Activity Healthy Brains. National Scientific Council on the Developing Child*. www. Developing child.net

Willis, J. 2008. *How Your Child Learns Best*. Sourcebooks Inc, Naperville, Illiois

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