"Reducing challenging behaviours in "at-risk" adolescents with Brain Gym®"

Abstract

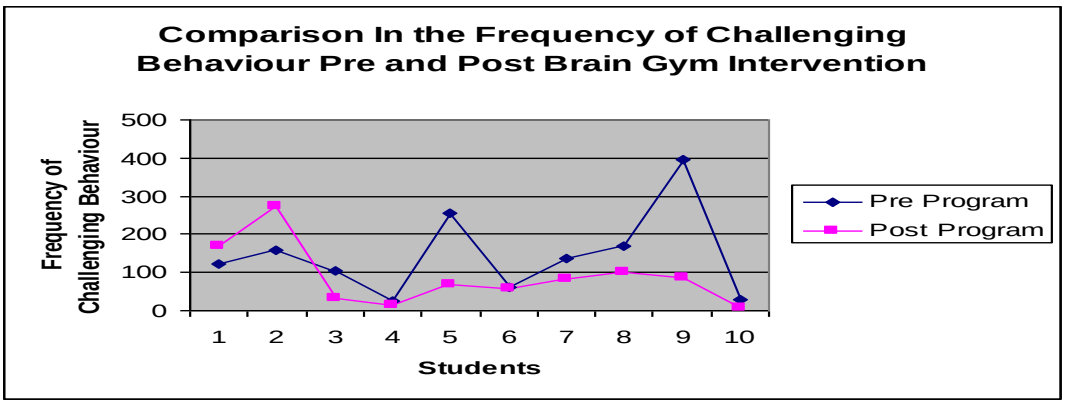
The purpose of this study is to test the hypothesis that: By training "at-risk" adolescents demonstrating emotional disturbances / behavioral disorders and staff at a series of workshops / staff meetings about the positive effects movement has on behaviour and learning, both groups will be motivated to participate in daily practice of a physical training program called Brain Gym can reduce the frequency of their challenging behaviours. As a direct result, students' self –esteem and well- being will improve social – psychological health, impacting on decreasing the frequency of challenging behaviours.

Brain Gym® is a series of specific movements to improve the physical skills (rather than the mental skills) of learning, introduced by Paul Dennison that activate the brain and body for particular skills of learning i.e. focus, organization and communication (2006).

Subjects for the study were Year 8-10 students were is a special education tutorial centre in Western Sydney in the state of NSW in Australia. The investigation employed surveys, intervention, base-line data and re-surveys in an action research design.

Before the project, at the start of the school day students were reluctantly participating in 10 minutes of group exercises of their own choosing which ranged from stretching, mobilization and some strength work which was generally completed very poorly and with little motivation. During the project Brain Gym® was implemented at the start of every school day to replace the old program again for the same duration of 10 minutes. After one term (10 weeks) of practicing Brain Gym ®**,** 80 per cent of students participating in the program had demonstrated a significant reduction in the frequency of their challenging behaviours. See chart below

Frequency of Challenging Behaviours Base-line



The aim of the project was to build a whole school approach to inclusion of all students with additional support needs, who requite accommodations and adjustments to their learning in a supportive school community, fostering a high achievement for all staff and students. The evaluator's interest was to examine the effects of an exercise program called Brain Gym® on the frequency of challenging behaviours in adolescents and to investigate to what extent changes in social relations result in change in the school community as a function of the exercise intervention.

A number of studies supports the developing area of investigation in the relationship between exercise and physical functioning, and demonstrates having a stronger psychophysical system promotes better coping with stress and mental health. Secondly, the shift in focus on the physical to the psychological benefits of exercise represents the growing recognition of the importance of self-esteem in problematic behaviour. Finally, what is strongly evident is that when intervention programs did not address the movement problems, individuals continued to deteriorate and other psychological problems developed as a consequence.

In Australia, up to one in three children and young adolescents suffer from diagnosable mental health problems, which include behaviour problems, anxiety, depression, drug and alcohol use and delinquency (McInerney & McInernery, 2002). Social, emotional and behavioural difficulties impact on student motivation and the ability of individuals to benefit from schooling. Consequently, students then fall behind scholastically and the emotional, social and behaviour problems may become further exacerbated. This indicates a reciprocal relationship between mental health and schooling (Roeser et al., 1998).

The view that exercise is beneficial for the human body, has been commonly accepted and has widespread support (Trembley, 2000). Studies have shown that improving children's movement competence, results in a parallel improvement in aspects of behaviour (Henderson & Sugden, 1992; Tammelin, 2003). The effects of regular physical activity or exercise training on social-psychological health have been extensive. The primary outcomes most studied include depression, stress, anxiety, self-concept and self-esteem (Norris, 1992; McMahon, 1988; Brown, 1986). The overlap that exists between mental health and learning difficulties is well documented (Hazell, 1997). Research indicates that the number of students at risk of educational failure is increasing (Minskoff, 2005; Clay 1995; Goddard, 2002).

It has been hypothesised that physical activity improves social and moral development, as well as academic performance (Dwyer et al. 2001, Stewart 2005). Children with developmental delays are vulnerable to unhappiness throughout adolescence which can contribute to a chain of mental health complications, including depression, various adjustment reactions, conduct disorder to serious social maladjustment and lifelong under achievement (Loose et al., 1991; Pearce, 2002; Hannaford, 2002; Goddard, 1996; Levine, 1984). Despite evidence linking physical activity during childhood to improved health, Physical Education in Australia is not as highly rated as reading, writing and arithmetic (Lyons, 2003). Therefore it competes with the six other key learning areas for the afternoon time slot (Evans, 2003; Corbin, 2001; Kelly et al., 1989). The most important feature of outcomes

based education is that all students are expected to be successful (Killen, 1998). However if students are not successful in the early stages of their education they often remain unsuccessful for their entire school career, and any success is replaced by failure, depression and social isolation (Losse et al., 1991).

There is strong body of research and evidence to suggest that physical exercises can make a difference to how students act, think and feel. However, there are obstacles which are inhibiting the access of students to the right types of physical exercise which enhance neurological and psychological development. Firstly, mainstream educational communities are still regarding thinking and action as separate functions, assigning them different priorities. But as brain studies probe deeper into the relationship between body and mind, the impact of exercise on challenging behaviour disorders and learning becomes more apparent (Sousa, 2006; Goddard, 2002; Diamond, 2003; Thelan, 2001).

Rowe & Rowe (1999) investigated the link between students' disruptive behaviour problems at school (particularly inattentiveness-ADD/ADHD) and their poor achievement progress in literacy. This overlap is problematic to the extent that what is essentially in an education issue has become a major health issue. The findings suggest that intervention strategies targeting both domains are required. If a student has failed to benefit from teaching strategies dealing with the cognitive domain, then it is time to examine the motor skills of the child, to see if there is a physical basis underlying the poor academic performance (Goddard, 1996; Cohen, 1993; Lyons, 2003).

Strategies and processes that are highlighted as being effective interventions in teaching and behaviour are not working, due to the increasing need for behaviour settings and challenging behaviours escalating (Zirpoli, 2005). Motor activities are typically part of the curriculum in early childhood special education programs. However less attention is placed on the role of motor development for older children (Lerner, 2003). Adolescence seems to be a high-risk period for developing sedentary habits and is therefore of special interest in research (Tammelin, 2003)

Much has been written about the value of motor development to behaviour and learning. Physical exercise and motor experiences are crucial for human development (Lerner, 2003). It is therefore essential, from a preventive aspect to ensure the quality and quantity of exposure to correct fundamental movement skills, that are necessary goals of teachers, coaches and parents (Landy & Burridge, 1999; Walkley et al., 1993). Concerned Mothers, Fathers and carers have heard about a link between crawling, or rather not crawling and difficulties (Reich, 2001).The children who cannot cross the saggital midline that divides the right and left side of the body have problems with communication across the corpus callosum between the motor areas (Ayres, 1971; Cohen, 1993; Goddard, 2002; Dennison, 2006; Dennison & Dennison, 1994; Diamond, 2003; Hannaford, 1995; Walther, 1981; Hannah, 1994; Goodheart, 1970).

Dennison & Dennison (1994) related motor skills to brain function and began looking at Dennison laterality, which is the ability to move easily across the

front midline of the body between the left and right hemispheres and how it affects our ability to process information. This motor skill is to access the mid-line of the body by touching their left hand on their right knee, then reversing the movement to touch their right hand on their left knee. The inability to perform this movement is called a homolateral pattern. Dennison & Dennison, 1996; Johnson & Johnson, 1996; Doman-Delacato, 1960; Goodheart , 1970; Eyestone, 2000; Sifft and Khala, 1991; Camissa, 1994; Hannaford, 1995; Goddard, 2002 ; Cohen, 1993; Pheloung, 2006; Bullus & Coles, 1998; Spalding, 2005 are all researchers who have used the lateral check as a measure for assessing developmental patterns and neurological concerns.

Dennison built his work on Goodheart (1970), Thie (1989) and Walther (1981), and their studies of Applied Kinesiology as chiropractors. Walther and Thie found that a normally functioning and well organised human brain has significant integration between the left and right hemispheres via the corpus callosum. This communication is necessary for an individual's optimum function. The term integration refers to children bringing various opposing muscle and sensory systems into co-ordinated interaction with one another (Gallahue & Ozmun, 2002). Goodheart (1970), discovered a type of patterning he called 'homo-lateral' (same side arm and leg), where people were unable to cross pattern - in other words, had an inability to access the midline of the body. Goodheart associated this with schizophrenia, as 'every' person with this diagnosis he observed had a homo-lateral pattern. In his paper he wrote:

"Every patient with a previously validated diagnosis of schizophrenia, had a variety of muscle imbalances with the usual weakness causing hypertonicity of the opposite or contra lateral antagonistic muscle"(pp.G).

From 1987 to 1990, Robert Eyestone M.S., Educational Psychologist with the Weber County Mental Health Department in Weber, Utah, conducted three studies using the Edu-K repatterning pre-checks to determine whether specific populations were using one-sided or cross-lateral processing of visual and/or motor information. Out of a group of one thousand and twenty-six students who were "at risk", nine hundred and ninety of them were homo-lateral (Fig. 1). In comparison four hundred and seven that were not defined "at risk" three hundred and sixty-nine could do contra-lateral movements and only thirty-seven were homo-lateral.

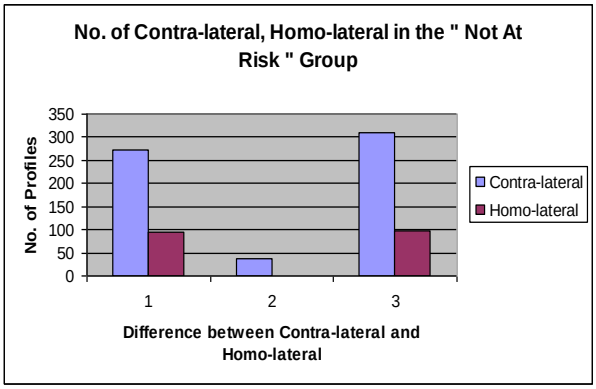


Figure1

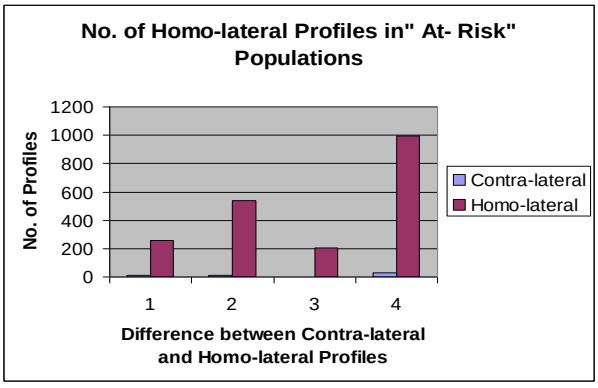
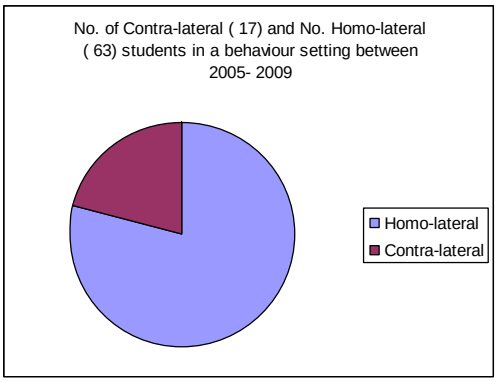


Figure 2

Robert Eyestone (1990) – 'Correlates of Educational Kinesiology re-patterning pre-checks with at- risk populations

The study was conducted specifically for the purpose of measuring the effectiveness of the screening device to determine ease of processing. Highly significant correlates were found between those tested using homolateral processing and those in Resource, Handicapped, or Juvenile Detention Centres. Results suggest that the Dennison test for laterality may be an effective tool for screening individuals for further testing (Eyestone, 1990).

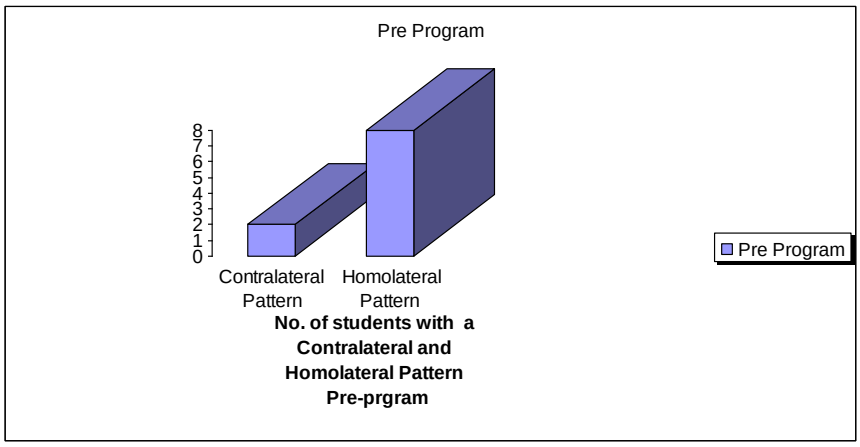
The researcher found similar patterns in the educational setting which supported Eyestones findings that a significant % of students were presenting at the school with Homo-lateral patterns. During 2005-2009, 80 students were enrolled and only 17 presented with a contra –lateral pattern with the other 73 students presenting with a Homo-lateral pattern. See diagram below



In the study similar patterns presented.

Contralateral and Homolateral Patterns Pre- Program

Students	Contralateral Pattern	Homolateral Pattern
10	2	8



Contralateral and Homolateral Patterns Post- Program

Contralateral Pattern	Homolateral Pattern
10	0

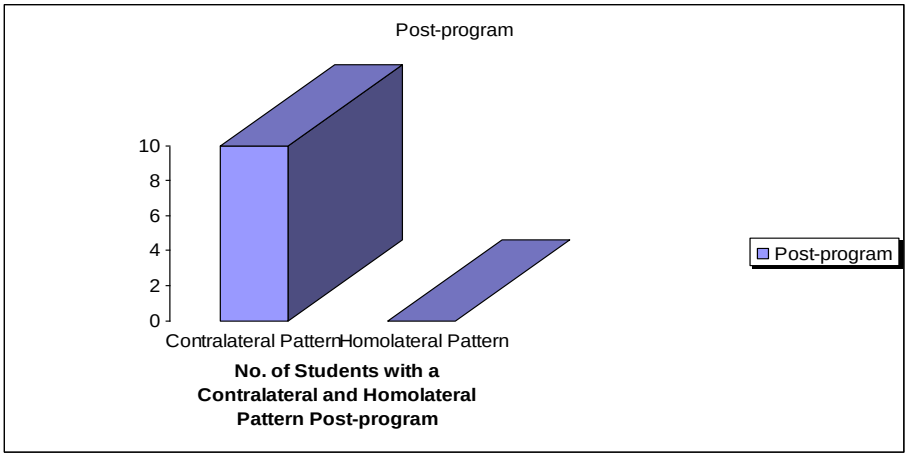


Fig 1: No. of student who could perform a Contralateral and Homolateral Patterns Pre and Post program

This study investigates the hypothesis that the daily practice of a physical training program called Brain Gym® with "at-risk" adolescents demonstrating emotional disturbances and behavioural disorders, can reduce the frequency of their challenging behaviours. Movement, either directly or indirectly, has a positive effect on affective and cognitive problems.

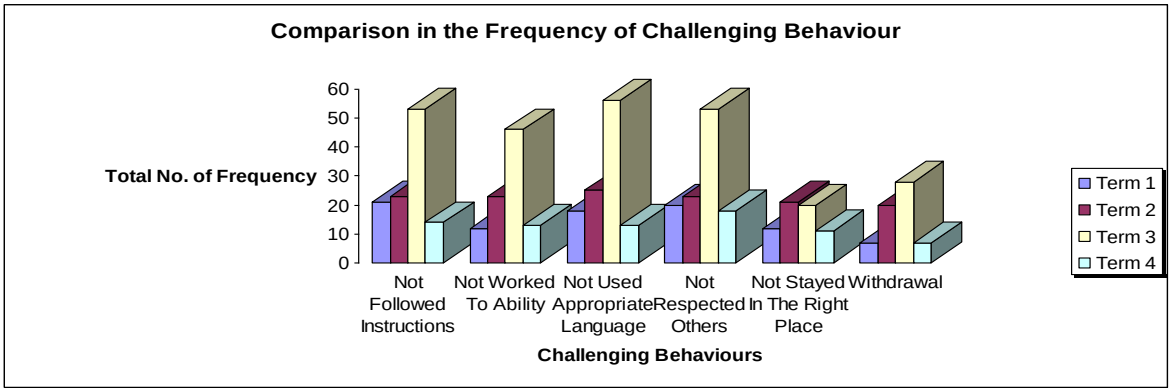
Individual children with "definite or "moderate" motor problems could be further assessed to identify the exact nature of their difficulties. An interdisciplinary approach that identifies the exact nature of the difficulties is vital, as one individual's difficulties and the behavioural/social milieu created around this individual as a result, can affect the learning of all the children in his/her classroom. It can also impinge on the teacher's role and confidence unless the teacher is provided with skills and support to manage the individual child's difficulties within a classroom setting. Brain Gym® training could offer this skill/support base to teach.

This paper has set out to assess the validity of an exercise program called Brain Gym®. Whilst a lot more research is required into the benefits of Brain Gym ® and other similar programs, the author purports that consistent daily practice of Brain Gym®, in conjunction with an array of classroom strategies, can help to alleviate challenging behaviours and assist students to achieve better results.

Sample of Base –Line Data

Student 5: Reduced her challenging Behaviours – Brain Gym® implementation between Term 3 and Term 4

Comparison in Base – Line Data Student No. 5



Reasons For Checks Total	*Term 1*	Term 2	Term 3	Term 4
Not Followed Instructions	21	23	53	14
Not Worked To Ability	12	23	46	13
Not Used Appropriate Language	18	25	56	13
Not Respected Others	20	23	53	18
Not Stayed In The Right Place	12	21	20	11
Withdrawal	7	20	28	7
Total	90	135	256	69

Workshop Feedback

Student No. 5 is a 14 year old girl with anger management issues and an eating disorder, who in the past had only resolved issues through physical violence. Her feedback about what she learnt in the workshop was “that you should eat before you move around”. The workshop achieved “well”. She felt that movement is important in learning and positive behaviour, and that the school had helped improve her learning. She started the workshop with the words “tired, dirty and confused”, which later resulted into “sick, bored and tired”. She rated that her tension levels dropped from a 7 to a 5, and level of calmness improved from a 3 to a 5. Her challenging behaviour has reduced by more than 50%.

Results :Student 5 reduced her challenging behaviours by 50 %

Focus References

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