

SEATING AND TIME ON TASK

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Abstract

This study was used to show the importance of the use of stability balls in place of regular chairs in the classroom. The students who have trouble paying attention, completing their work, and sitting still can use these stability balls to improve concentration, posture, and test scores. The research was conducted to see that if sitting on a stability ball increased student performance. The study looked at student achievement of a first grade math assessment and compared the two variables. The study was done by first bringing the stability balls into the classroom and introducing the students to them. After many days of discussing the expectations and rules with the use of stability balls the students were allowed to use them. The students really enjoyed the stability balls and seemed to “try” to pay more attention at first. But, before the use of the stability balls all the students in class were given the same test while sitting in regular classroom chairs. The conclusion was that most of the first grade students scored the same score or a little higher or lower while sitting on the stability balls. There was a significant increase in scores from the regular classroom chairs to the stability balls.

Introduction

Background, Issues and Concerns

To increase student time on task and how it relates to student achievement a study is being done to show that. There have been quite a few studies done that have shown that student achievement is related to a student being focused and on task. To improve time on task and student achievement for diverse learners, stability balls will be used instead of the regular classroom chair.

An issue that interferes with student achievement would be the student's time on task and ability to focus. If student time on task can be improved, student achievement should show an increase. It is very important to increase subgroup performance, expand culturally diverse teaching, and meet the specific needs of all learners.

This study will focus on the concerns of student time on task and the issues with behavior and management.

Practice Under Investigation

The students took a four-minute addition and subtraction pre-test, while sitting in a traditional classroom chair. The following day the students were given the same four minute addition and subtraction post-test, while sitting on the stability ball. Each test consisted of 20 mixed addition and subtraction problems. The scores of the pre-test/regular classroom chair and the post test/stability ball were analyzed based on a comparative method of research using a T-Test. The data was graphed in order to see any consistencies or inconsistencies.

School Policy to be Informed by Study

The district, school, and teachers have classroom management plans already in place. Each teacher is expected to show diversity in planning and teaching lesson plans. The use of the stability balls in the classroom represents teachers looking at diverse learning situations and the different behaviors of each student. It is important to note that school policy does not state that all students must sit in a regular classroom chair, but that the needs of each diverse learner should be met as best as possible.

Conceptual Underpinning

The variables that will be studied within this research include student pre-test and post test scores, while sitting in a regular classroom chair versus sitting on a stability ball. The analysis of the research question does the use of stability balls, in the classroom, improve student time on task, will identify if stability balls have an impact on student growth. The research question will be answered based on test scores. Therefore, the null states that stability balls do not improve time on task. In theory, as time-on-task increases, the student's achievement will also increase. The stability balls may increase the time-on-task.

Statement of the Problem

The study will compare the use of regular classroom chairs and stability balls. It will show the relation to student gains and success.

Purpose of the Study

The purpose of this study is the use of stability balls, in place of regular classroom chairs, for students who find it hard to focus on completing their work, staying focused, and sitting somewhat still in their seat.

Research Question

Is there a difference in student time-on-task between students who sit on stability balls in class and students who do not use stability balls in class?

Null Hypothesis

The null states that the use of stability balls in the classroom does not improve student achievement, time on task, and/or student behavior.

Anticipated Benefits of the Study

This research study is important because teachers want to improve student learning, test scores and behavior in the classroom. If the use of stability balls in the classroom is effective, then more teachers will want to use them for differentiating instructions in all classrooms. The use of stability balls will increase in classrooms all over.

Definition of Terms

Achievement~ the quality and quantity of student work

Chair~ a raised surface used to sit on, commonly for use by one person. Chairs are most often supported by four legs and have a back; however, a chair can have three legs or could have a different shape

Educational assessment~ the process of documenting, usually in measurable terms, knowledge, skills, attitudes and beliefs

Pre-Test~ preliminary test

Stability Ball~ any sized larger balls used for doing exercises and for physical therapy.

Time on task~ student time spent actively engaged in learning.

Summary

The analysis of the research question does the use of stability balls, in the classroom improve student time on task, helped teachers gain the knowledge and choice of using stability balls instead of regular classroom chairs in the classroom. The use of stability balls in the classroom could be a more of an interruption than helpful intervention, but may be useful for certain individuals as a reward incentive. The variables were studied within this research include student pre-test and post test scores, while sitting in a regular classroom chair verses sitting on a stability ball. The research question was answered based on test scores. The null stated that stability balls do not improve time on task, but it was found that, as time-on-task increases, the student's achievement increased. The stability balls increased the time-on-task.

Review of Literature

In several articles research shows that the use of stability balls in the classroom in place of regular chairs has been used as therapeutic tools and for classroom behavior management. In an article about Kassie Hanger's first graders at Three Creeks Elementary School showed that the use of stability balls was an educational tool meant to help students focus better on their classroom work. The students do not play with stability balls, the students sit on them. (Times Staff 2012)

"First off, they are a fun diversion from the typical seating that students are used to, so they are initially excited to use them," Hanger said. "We then discussed the correct way to sit and how posture affects their academics and the health of their bodies in general. (Hanger 2012, p. 1)

"After the first week, the students became more accustomed to them and you can look around and see who your bouncers are, who your students are that are going to always sit still, and the students that do a bit of bouncing and sitting still," Hanger (2012 p.1)

The article went on to state that positive results come in the form of improved posture and balance, better handwriting, less distractions, more awareness of their body, and better attention and focus during the day. (2012)

In another article research stated that many children spend an enormous amount of time sitting in their classroom chairs during the day. So for this reason a teacher by the

name of Barbara Hutson (2010) decided to require her students to sit on the stability balls during classroom instruction. (Emerson, 2010) The idea of using stability balls in the classroom instead of chairs was to try and help students with attention deficit hyperactivity disorder. Hutson (2010) wanted to see if using the stability ball would help the child with ADHD focus better since he was not taking medication. And it worked. Hutson (2012) had so much success she researched that stability balls are very helpful and resourceful and was able to get stability balls for all students in her classroom.

In an article written on the [livestrong.com](http://www.livestrong.com) website found that teachers and students who have used stability balls report an enhanced ability to concentrate. According to Harvard professor Ratey, (2010) this seems to be a result of the tiny movements kids make while balancing. The small movements stimulate their brains, which helps them focus.

Tiffany Miller is another teacher that really supports the use of stability balls in the classroom. Miller states that use of stability balls makes of active, yet attentive sitting. The students sitting on stability balls are able to move their bodies when reading, writing, and/or listening. It also allows the students to “get their wiggles out”. (Wyatt, 2009) The students in Miller’s class stated that they likes sitting on stability balls because they helped them focus better and improved their concentration and attention. The students also stated that they were able to fallow along with the teacher better and that their focus was directed toward the teacher. (Wyatt, 2009)

Research Methods

Research Design

A pre-test and post-test assessment was given to one group of eighteen first grade students. The pre-test assessed student achievement with sitting in a regular classroom chair. The post-test assessed student growth while sitting on the stability ball. The alpha level was set at 0.25. The study compared the use of stability balls to regular classroom chairs, with relation to student achievement. The information gained from the research understood by the data that was collected regarding student growth. If student learning is improved by a student's time on task, then the use of stability balls had an optimistic effect on classroom learning. The independent variable is the sitting arrangement, either regular classroom seats or stability balls. The dependent variable is the student test scores.

Study Group Description

The study consisted of eighteen first grade students. Each student was taught the same math lesson and objectives. The lesson was based on addition and subtraction facts. The assessment tested objectives appropriate for first grade learning. Data was collected from a group of 18 first graders, 10 girls, and 8 boys. The school district has varied demographics. The students are mostly middle class, white, and come from family oriented homes. Over the last five years there has been an increase in Free and Reduced Lunch students. The school Free and Reduced Lunch percentage is at 44%. and the demographics are changing regularly. Fox Hill is not a title one school.

Data Collection and Instrumentation

The students were given a four minute timed addition and subtraction pre-test, while using regular classroom chairs. The students once again were given the same four minute addition and subtraction assessment as a post test using stability balls. Each test consisted of twenty addition and subtraction problems.

Statistical Analysis Methods

The scores from the pre-test and post-test were analyzed on a comparative method of research using a T-Test. The data was also analyzed using graphs. The analysis of the research question does the use of stability balls in the classroom improve student time on task, identify if stability balls have an impact on student growth. Therefore, the null states that stability balls do not improve student time on task.

Findings

An analysis of the pre test and post-test data was conducted using ASP software.

Table 1

t-Test Analysis Results between Pre Test (Regular Classroom Chair) and Post Test (Stability Balls)

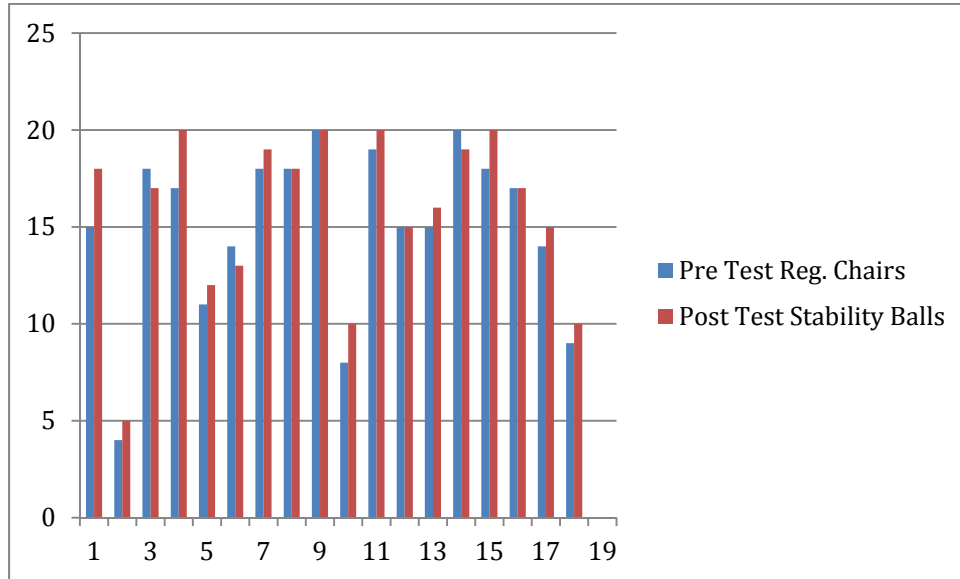
Source	Mean	Mean D	t-Test	df	P-value
Pre	15				
Post	15.777	-0.777	-2.715	17	0.014

Note: Significant when $p < 0.25$

The t-Test on Table 1 indicates a difference between the use of stability balls in place of regular classroom chairs. There was a significant difference (t-Test= -2.715; P-Value= 0.014; Mean D -0.777) in mean scores that was found between pre and post-tests. The P-Value shows that there is a difference there because the P-Value is less than 0.25. Students (Pre Mean= 15 was significantly less Post Mean= 15.777) Therefore, the null will be rejected based on the P-Value with the alpha level. Therefore stability balls do show enough of an improvement in testing to warrant making them the seats in the classroom on a full time bases.

Graph 1

Regular Classroom Chairs VS. Stability Balls

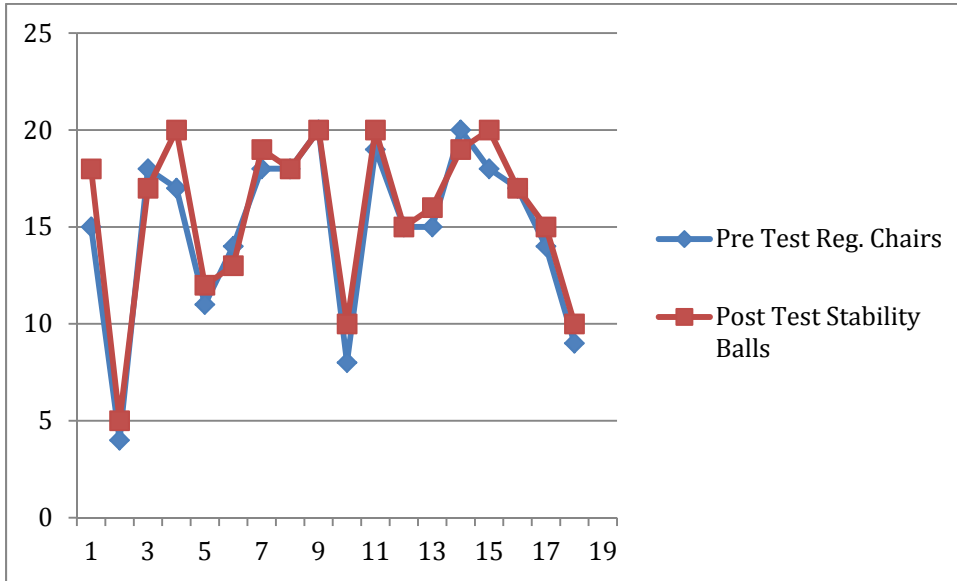


Students

The above graph shows there is a significant difference in the math assessment between first graders sitting in regular classroom chairs or sitting on a stability ball. The blue represents the pre test, while sitting in regular classroom chairs. The red represents the post test, while sitting on stability balls.

Graph 2

Regular Classroom Chairs VS. Stability Balls



The above line graph shows that there is a significant difference in the math assessment between first graders sitting in regular classroom chairs or sitting on a stability ball. The blue represents the pre test, while sitting in regular classroom chairs. The red represents the post test, while sitting on stability balls.

Conclusions and Recommendations

The variables in this research project were that of pre-test scores, while sitting in regular classroom chairs compared to post-test scores, while sitting on a stability ball. The research question, does the use of stability balls in the classroom, improve student gains and success was answered. The research question was answered based on the pre and post test data. The null stated that stability balls do not improve student achievement, and the research showed that the null is rejected and there is a significant difference.

The data collected from this study did show a significant increase in student performance on this one pre/post assessment, while sitting on the stability ball. This of course was just one assessment created and conducted and does not prove or show that stability balls can not help or improve student achievement in other settings and used and studied for an extended period of time. Many of the articles read and researched showed and proved that stability balls helped students tremendously with academic gains, student time on task, focusing, and staying engaged for extended periods of time.

The variables that were studied within this research included student pre-test and post test scores, while sitting in a regular classroom chair verses sitting on a stability ball. The findings state that there is a significant difference that proves the use of stability balls, in the classroom, improves student time on task. The research question was answered based on test scores. The study found an increase in student performance on the post-test when sitting on the stability balls. Therefore the conceptual underpinning and the findings of the study were the same. The pre-test taken while sitting in regular classroom chairs was lower than the post-test taken while sitting on the stability balls.

The graphs and t-test created show the growth of student performance while sitting on the stability balls.

To do this study again the class would be divided in half for one semester and half of the class would be taught while sitting in regular classroom chairs and the other half while sitting on stability balls. The students would be taught the same way and the same things and the assessments would all be the same. Doing this research project would show more gains and successes when conducted over an extended period of time.

It would also be beneficial to observe the use of stability balls in special needs classrooms. The reading classes, resource classes, and speech classes taught at school all use stability balls instead of regular classroom chairs. It would be interesting to sit in on several lessons and observe the students in a small setting, sitting on stability balls. It would also be beneficial to ask those teachers questions and what their thoughts on stability balls and student achievement and time on task it.

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