Abstract

The purpose of this study was to examine implementation processes in elementary classrooms during a 2-year (Fall 2014 to Spring 2016) pilot intervention program, Partnerships for Active Children in Elementary Schools (PACES). We examined (a) the effect of PACES on the extent of movement integration (MI) and (b) changes in teachers’ perceptions regarding MI. Purposively selected classrooms (grades 1-3) across four schools (3 intervention, 1 control) participated in the study. The sample included classroom teachers (N=12) in Fall 2014 and Spring 2015, but the number of participants dropped to eight in Fall 2015 and Spring 2016. PACES consisted of three partnership approaches (a virtual community of practice, community-based participatory research, and university service learning) intended to increase the extent of MI in the intervention classrooms. We collected process data using the System for Observing Student Movement in Academic Routines and Transitions (SOSMART) and teacher interviews. PACES did not significantly impact the extent of observed MI. Interviews indicated that the intervention had both strengths and limitations. Building interpersonal support for teachers is important to their use of MI. A different measurement schedule (e.g., collecting MI data each day of the school week) may be required to more thoroughly capture MI instances.

**Key Words:**Movement integration, classroom physical activity, comprehensive school physical activity program, intervention

Two-Year Process Evaluation of a Pilot Program to Increase Elementary Children’s Physical Activity During School

The majority of elementary-aged children in the United States do not meet the current national guideline of accruing at least 60 minutes of mostly moderate-to-vigorous physical activity (PA) each day.(Troiano et al., 2008) Schools provide a natural setting for increasing children’s daily PA, given that nearly all children attend school and the school environment has an existing infrastructure (e.g., space, equipment, teachers, programs) that can be used to support children’s PA (Wechsler, Devereaux, Davis, & Collins, 2000). The Society of Health and Physical Educators (SHAPE) America (SHAPE America, 2013) recommends that schools use a comprehensive school physical activity program (CSPAP) to help all children achieve the national PA guideline. A CSPAP is a multicomponent, coordinated approach to PA promotion, which includes PA opportunities before, during, and after school. The Institute of Medicine (IOM, 2013) suggests PA opportunities during school should allow children to accumulate 30 minutes of PA (half of the recommended 60 minutes per day), while opportunities before and after school should allow children to accumulate the remaining 30 minutes of PA.

**Purpose**

This study measured the implementation of a two-year pilot intervention program – Partnerships for Active Children in Elementary Schools (PACES) – designed to increase PA promotion during school, and in turn, increase the number of elementary children who accumulate 30 minutes of school-based PA. The main PA outcomes have been reported elsewhere (Author, in press[A]; Author, in press [B]). This study focuses on the implementation of PA opportunities within general education classrooms. PACES targeted the general education classroom as a primary school context to increase PA promotion given that the majority of elementary teachers are classroom teachers, classroom-based approaches to increase children’s PA are often effective (Erwin, Fedewa, Beighle, & Ahn, 2012; Webster, Russ, Vazou, Goh, & Erwin, 2015), and classroom teachers feel children’s PA is important (Parks, Solmon, & Lee, 2007) but also perceive barriers to providing PA opportunities during scheduled classroom time (Webster, et al., 2015). The research questions addressed in this study were:

1. What was the effect of PACES on the extent and nature of observed MI in each group (i.e., school)?
2. How did the intervention teachers’ perceptions of MI change over the course of the study? Specifically, what changes occurred in the teachers’ perceived advantages and disadvantages of MI; perceived factors related to using MI; and preferred MI strategies?

**Methods**

**Design**

We used an explanatory sequential mixed-methods research design (Thomas, Silverman, & Nelson, 2015) for the present study. This design enabled the evaluation of the PACES program using both quantitative and qualitative methods, specifically by first analyzing the quantitative data to describe the extent and nature of MI in participating classrooms and then analyzing interview data with the teachers to explain the quantitative results.

**Sample**

Participants for this study included intact classes of children and their classroom teachers from four elementary schools in the greater Columbia, South Carolina area. Details of the participants and the schools are provided in separate articles (Author, in press [B]; Author, 2017). In brief, two of the intervention schools were magnet schools (companion campuses) from one school district and the other two schools (one intervention and one control) were public schools from a different school district. The two magnet schools were similar to each other in terms of student enrollment, students’ ethnic/racial makeup, and school resources. The two public schools also were similar to each other.

Three classes (1st-3rd grade) were purposively selected from each school (total of 12 classes), based on teachers’ self-reported use of movement integration (MI), defined as infusing PA, at any level of intensity, into regularly scheduled classroom time (Webster, et al., 2015) Examples of MI include providing short movement breaks during academic instruction, infusing PA into academic lessons, and incorporating PA during transitions (e.g., transitioning from one work station to another). Teachers’ self-reports of MI were collected via a survey, based on established instruments.(Elmakis, 2010; Webster, et al., 2013) Classes were identified for participation in the study if teachers’ self-reported use of MI was lower than other teachers at the same grade level and at the same school. Where teachers refused to participate, we subsequently invited teachers whose self-reports showed they were the next lowest MI users. This process continued until three teachers from each school agreed to participate. In the first year of the study, teacher participants included eight teachers identified as the lowest MI users and four additional teachers. Four of the teachers dropped out of the study in Year 2 due to two of the teachers relocating and two of the teachers opting to withdraw from participating. Therefore, the sample for Fall 2015 and Spring 2016 included five intervention teachers (including three of the self-reported lowest MI users) and five control teachers (including two of the self-reported lowest MI users; see Table 1).

**Measures**

Prior to data collection, we obtained approval to conduct this study from the institutional review board at the first author’s university and the participating school districts. In addition, all participating teachers and parents of participating children provided informed consent. We collected quantitative data on MI by videotaping regularly scheduled classroom time on 2-3 nonconsecutive days in each classroom during each semester of the study. This resulted in 113 videos that ranged from 26 minutes to 199 minutes (M=103, SD=31.16). The System for Observing Student Movement in Academic Routines and Transitions (SOSMART) (Russ, et al., 2016) was used to code the videos. Semi-structured, individual interviews with the teachers provided us with qualitative data to better understand the SOSMART results.

**SOSMART.** SOSMART is a systematic observation instrument for assessing the nature and extent of MI used in elementary school classrooms that has been shown to produce valid and reliable data (Russ, et al., 2016). Variables targeted in this intervention included Reward/Incentive, Opening Activity, Teacher Directed Transition, Other Movement Non-academic, Other Movement Academic, Physical Environment, and Non-Teacher Directed Transition. A 20-second continuous interval-recording format is used to code observed MI variables. We trained five research assistants to use SOSMART until each assistant reached at least 80% reliability for all MI variables against an expert-coded video. During data collection, 30% of the videos were randomly selected to test for inter-rater reliability using the scored interval method (Table 2).

**Interviews.** We chose to individually interview the teachers who participated in our study since we designed and implemented PACES as a classroom-level program. A semi-structured interview format was appropriate for this investigation given it was a pilot study and we wanted flexibility in our interview protocol to explore and pursue topics that we were unable to anticipate in our predesigned interview questions (Glense, 2016). The main areas of focus in the interviews were the teachers’ perceived advantages and disadvantages of MI; perceived factors related to using MI; and preferred MI strategies. Example questions included, “What, if any, are the advantages of providing children with physical activity opportunities during normal classroom time?” “What factors do you think influence the extent to which you provide physical activity opportunities to children in your classroom?” and “What are your favorite strategies to get your students active or reduce sedentary time in your classroom?” Prompts were also built into the interview guide to elicit more detailed participant responses, when needed. For example, the question above that focuses on the teachers’ perceived factors related to MI was followed by numerous prompts to specifically explore potential factors such as the teachers’ personal experiences outside of school (e.g., sports/physical activity participation), professional experiences (e.g., professional preparation/training related to MI), classroom environment (e.g., students, materials, space), school environment (e.g., other teachers, administrators, facilities), and policies. Relevant theoretical and empirical literature informed the interview questions (see Author, 2017 for details). We conducted interviews at the end of each semester. Interviews lasted between 13.46 and 54.57 minutes (M =35.85).

**Intervention**

Following one semester of baseline data collection (Fall 2014), PACES was implemented for three consecutive academic semesters (Spring 2015, Fall 2015, and Spring 2016) in the intervention schools. The program was designed to increase school-based PA promotion, and in turn, the number of children who accumulate 30 minutes of PA during school. Within the CSPAP model, two school contexts were identified for PA promotion: (a) physical education and (b) the general education classroom (please refer to Author, in press [A] and Author, in press [B] for descriptions of the physical education component of PACES). The general education classroom component of PACES drew upon three recommended CSPAP partnership approaches( Webster, Beets, Weaver, Vazou, & Russ, 2015) to increase the extent of MI provided in participating classrooms. These approaches, which are detailed elsewhere (Author, in press [B]) included a virtual community of practice (CoP), engaging teachers in community-based participatory research (CBPR), and using university service learning (SL) as a way to provide additional MI opportunities in each intervention classroom.

Intervention classrooms received different levels of PACES support by school and intervention semester. In Spring 2015, School 1 received only the CoP orientation, School 2 received both the CoP orientation and CBPR, and School 3 received all three partnership approaches. In the subsequent two semesters, all three schools continued to receive the partnership approach(es) they started with but School 1 also received CBPR (in Fall 2015 and Spring 2016) and SL (in Spring 2016), while School 2 also received SL (in Fall 2015 and Spring 2016). In accordance with Webster et al.’s ( 2015) CSPAP partnership model, we hypothesized that receiving more PACES support would result in larger increases in the extent of MI. For reporting purposes, we refer to School 1 as the “low support group” in this study, given the participating classrooms at that school received the least overall PACES support (CoP for three semesters, CBPR for two semesters, and SL for one semester), whereas we refer to School 2 as the “medium support group” (CoP and CBPR for three semesters and SL for two semesters) and School 3 as the “high support group” (CoP, CBPR, and SL for three semesters).

**Analysis**

**Quantitative analysis.** To examine the effect of PACES on the extent of MI during the two-year study, we first calculated an MI implementation score for each classroom by data collection time point, including Fall 2014 (Baseline), Spring 2015 (Time 2), Fall 2015 (Time 3), and Spring 2016 (Time 4) using the SOSMART data. Specifically, we calculated the percent of scans for the MI variables to determine the percent of time each variable was observed (Table 2). Three of the variables (Physical Environment, Reward/Incentive, and Opening Activity) did not appear in the video records and we therefore excluded these variables for data analysis. We then summed the percent of time each variable was observed for each classroom to create an implementation score for each time point. Finally, we calculated the mean implementation score at each time point for each group (low support, medium support, high support, and control).

We conducted descriptive techniques to graphically depict MI implementation scores for each level of support across the four data collection time points. Next, we calculated means and standard deviations for each level of support across each time point. Afterwards, we conducted four separate one-way ANOVAs at each time point to examine between-group differences in MI by level of support. Finally, we conducted a 4-group x 4-time repeated measures ANOVA to examine main effects between-groups and within-groups as well as between-within group interactions across the two years. Given the lack of power present within this study, we report means and mean differences. We also report *p*-values and effect sizes, although readers should interpret these results with caution due to an inflated risk of Type-II error associated with lack of power.

**Qualitative analysis.** We transcribed each teacher interview verbatim for analysis (Glense, 2016). The first and third author (both of whom are trained qualitative researchers) independently read the four interviews for one of the intervention teachers and, for each interview, created a list summarizing the teachers’ perceived advantages and disadvantages of MI; perceived factors related to using MI; and preferred MI strategies. The researchers then met to compare their lists, reach consensus about the analytic approach (i.e., researcher triangulation) (Yin, 2013) and assemble a comprehensive list. Next, the third author completed lists for the other four intervention teachers who remained in the study throughout all four semesters of the study. Both researchers subsequently met to compare the lists across semesters, for one of the teachers, to identify and list changes in the teacher’s perceptions. The third author then completed lists of changes for the remaining four teachers. Finally, the two researchers met to compare the lists of changes for all five teachers, identify commonalities and consistencies, and develop categories that eventually led to themes (Glense, 2016) representing the major changes reflected in the data.

**Results**

**Quantitative Results**

Descriptive results including means and standard deviations are presented in Table 3 and Figure 1. Between-group analyses showed no significant differences among the four groups at any time point (*F*[1,3] = 4.21, *p =* .099; Table 3); however, this may be due to power issues (β = .44; Table 4). While not significant, differences between groups were most pronounced at Time 2 when comparing the medium group to the control group and the low group. The medium group’s mean MI score was 18.90 points greater than the control group and 15.13 points greater than the low group. The largest difference between the medium and the high group occurred at Time 3, when the medium group’s mean MI score was 9.51 points greater than the high group.

Regarding within-group analyses, the main effects for time (*F*[3,9] = 2.03, *p =* .164, β = .39; Table 5), as well as the group-by-time interaction (*F*[3,9] = 2.26, *p =* .094, β = .63; Table 5) were not significant. Lack of power may result in an increased likelihood for Type II error. Despite starting the project with relatively high MI at baseline, MI for the high group receded the most by Time 4 (-10.74) whereas the medium group dropped by 3.12 and the low group dropped by .39. The control group increased MI from Baseline to Time 4 by 5.88 (Table 3; Figure 1).

We also conducted follow-up between- and within-group analyses without the four intervention teachers who dropped out of the study in Year 2. The results demonstrated the same trends as shown with the entire study sample.

**Qualitative Results**

The teacher interview data revealed changes in the intervention teachers’ perceptions related to MI during the study. Perceived advantages that emerged during the intervention, which were not apparent at baseline, focused on advantages of MI for children. Although the teachers discussed several advantages of MI for children during the interviews conducted in the baseline semester (e.g., increases focus, increases enjoyment for learning, improves health), the teachers identified additional advantages during the subsequent interviews conducted in the intervention semesters. For example, Ms. Golden discussed the leadership opportunities MI provides for her students: “One thing that I guess is a change in perspective…in a positive way…has been I have seen the kids enjoy having the leadership role of being able to choose or select a physical activity or just quick motion or movement in-between our work stations times” (Spring 2015). Other examples of new perceived advantages of MI identified in the interviews from the intervention semesters include helping children learn better, allowing children to be themselves (i.e., movement is natural for children), and reducing children’s stress.

Despite perceiving new advantages to using MI, the teachers also expressed disadvantages they hadn’t mentioned before participating in the intervention. The focus of these disadvantages was logistical. The most commonly cited issues were management challenges and MI taking too much time. For example, although he felt he learned new MI strategies from the service learners, Mr. Chulkas indicated SL took too much time, stating, “the problem is there wasn’t really a time frame for how long [the service learner] had; the first [visit] was about 15 or 20 minutes long” (Spring 2016). The following quote illustrates how time and management concerns were sometimes intertwined: “…it takes time [after using MI] to pull [the children] back down and get them settled again…they might lose their focus…some of them would still be into silliness” (Spring 2015). Other logistical issues included limited space and difficulty incorporating movement opportunities into academics (e.g., having to give directions for both the academic and movement aspects of an activity).

In examining changes in the factors teachers perceived to be influential in their use of MI, we found a social-ecological perspective(McLeroy, Bibeau, Steckler, & Glanz, 1988) was useful in framing our analysis. The focus of these factors shifted from multiple levels of influence to mainly interpersonal factors, especially related to the PACES partnership approaches. For example, teachers identified reading other teachers’ comments on the Move for Thought website (CoP); the collaborative goal-setting with the researchers, data-driven feedback, and the weekly reminder emails they received (both parts of the CBPR approach); and the strategies they learned from watching the service learners as having a positive influence on their use of MI. However, the teachers also made suggestions as to how these factors could be taken advantage of to increase their positive impact. The teachers indicated they did not use the CoP as much as they would have if they had more planning time, such as during summer vacation. Additionally, MI goals were more useful for the teachers when the goals focused on the number of movement opportunities per day or week as opposed to the amount of total movement time provided.

Finally, the teachers’ preferred MI strategies changed during the study. At baseline, the teachers discussed a wide range of strategies they preferred to use, but the interview data from the intervention semesters revealed that the teachers’ preferences narrowed to mainly include strategies that could be easily incorporated into their classroom routines, and strategies that involved the use of technology. For example, Ms. Corsa said, “mostly I use a movement activity during a transition or for a transition…I think that’s because it’s the easiest way to get [my children] to move” (Fall, 2015). Similar to using natural transition time to integrate movement, Mrs. Johnson said she preferred activities “that are easily implemented with what I am already doing” (Spring 2016). Regarding the use of technology, Ms. Corsa said, “little dance videos like [from] Go Noodle…those are the easiest things to do” (Fall 2015).

**Discussion**

The purpose of this study was to conduct a process evaluation of the PACES pilot intervention program, which lasted for two years. Process evaluations are important because they provide information about why a program was or was not successful (Saunders, Evans, & Joshi, 2005). Implementation data showed that there were no statistically significant increases in MI during the study. The trend for the intervention groups was either to maintain or decrease levels of MI over time. These results conflict with the main outcomes that showed increases in children’s PA during general education classroom lessons over the 2-year project (Author, in press [B]). The discrepancy between outcome and process data may be partly attributable to the measurement schedule employed to collect SOSMART data. In their interviews, two of the intervention teachers indicated that they did not implement MI opportunities during the scheduled observation periods because SL visits had just occurred. For this study, SOSMART data collection visits were scheduled to coincide with SL visits, and the teachers indicated that, because of the SL visits, they used their own MI strategies at different points in the school day before or after our data collection visits. Thus, while MI appeared to decrease over time, this trend could have been a function of the measurement schedule and not a true indicator of declines in MI. Indeed, declines in MI opportunities were observed when SL was introduced to the medium group (i.e., measurement Time 2 to Time 3) and when SL was introduced to the low group (i.e., measurement Time 3 to Time 4). As this was an unfunded study, we did not have the resources to increase the number of days and times for collecting SOSMART data.

Previous research has shown that each PACES partnership approach (CoP, CBPR, and SL) can support the work of frontline staff and school professionals in youth PA promotion contexts.(Beets et al., 2014; Carson & Raguse, 2014; Rosenkranz, 2012; Vazou, Hutchinson, & Webster, 2015) The qualitative findings in this study provide further evidence of the benefits of these approaches for those who directly interact with children and adolescents to promote PA. The intervention teachers’ perceptions of MI changed in a number of favorable ways, which included recognizing new advantages of MI, gaining a heightened appreciation for interpersonal sources of support for MI, and learning to see how movement opportunities can be most efficiently integrated into classroom routines. Yet, the data also reveal several aspects of the intervention that could be strengthened in future implementation efforts. Teachers should be encouraged to engage in the CoP at times they identify as key planning periods during the year. Additionally, the goal-setting aspect of CBPR should be framed based on the kinds of activities and outcomes teachers can easily track, such as the number of movement opportunities provided as opposed to the amount of time the teacher devotes to MI or the students spend in PA. In regard to SL, priority objectives of classroom visits should include ensuring the visits last no longer than an agreed upon time and demonstrating strategies to quickly calm students down following movement activities.

This is one of the first intervention studies to use systematic observation to track changes in MI. In future studies with more available resources, researchers should consider scheduling MI data collection for one full school week with each classroom at each time point (baseline, Time 1, etc.) to more thoroughly capture instances of MI. Additionally, observations need to be scheduled around special events, such as field trips, fundraisers, and academic testing. We also recommend the use of teacher interviews to complement classroom observations, as this strategy helped us to identify the strengths and limitations of the PACES partnership approaches that were not well reflected in the quantitative data. We feel confident in our evaluation of PACES due to our use of both quantitative and qualitative data collected at each of the four time points during this two-year study. Overall, this study provides us with useful information about how to move forward with PACES so that we can give classroom teachers the support they need to maximize MI, and we can best document the results of our programming on implementation processes.

**Lessons Learned**

Classroom teachers are essential to a CSPAP. However, not all teachers have the same motivation, training or resources to integrate movement opportunities for students during scheduled classroom time. This study shows that providing interpersonal support for teachers is an important intervention strategy for promoting their positive perceptions about MI. Teachers will likely feel most supported when they can collaboratively plan, set easily measureable MI goals, receive continual feedback on their MI, and access ideas from other teachers. This is also one of the first studies to measure MI using systematic observation. However, different teachers prefer using MI in different ways, at different times of day, and on different days of the school week. In future interventions, researchers will need to take these variances into consideration when developing the data collection schedule to measure changes in the extent of MI.

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Table 1

*Teacher Demographics\* and Initial Survey Results*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Teacher | School | Age | Gender | Grade | Years Teaching Experience | Highest degree earned | Highest teaching credential | Number of students | Teaching assistants | Preservice training for MI | In-service training for MI |
| Garcia- | 1 (I) | 31 | M | 2 | 1 | Masters | Regular | 20-24 | No | No | No |
| Zorn\*\* | 1 (I) | 54 | F | 1 | 33 | Masters | Regular | 20-24 | No | No | Yes |
| Chulkas | 1 (I) | 24 | M | 3 | 2 | Bachelors | Regular | 20-24 | No | Yes | No |
| Johnson | 2 (I) | 30 | F | 2 | 7 | Masters | Regular | 15-19 | No | Yes | No |
| Corsa\*\* | 2 (I) | 24 | F | 1 | 3 | Bachelors | Regular | 15-19 | No | Yes | No |
| Sugden-\*\* | 2 (I) | 26 | F | 3 | 2 | Bachelors | Regular | 20-24 | No | Yes | No |
| Brady- | 3 (I) | 40 | F | 3 | 14 | Masters | Regular | 15-19 | No | No | No |
| Allen- | 3 (I) | 45 | F | 2 | 23 | Masters + | NB\*\*\* | 15-19 | No | Yes | No |
| Golden | 3 (I) | 30 | F | 1 | 8 | Bachelors | Regular | 15-19 | No | Yes | Yes |
| Tynan\*\* | 4 (C) | 25 | F | 1 | 25 | Masters + | NB\*\*\* | 15-19 | No | Yes | No |
| Bishop | 4 (C) | 26 | F | 3 | 3 | Bachelors | Regular | 15-19 | N0 | Yes | No |
| Kehl | 4 (C) | 23 | F | 1 | 2 | Bachelors | Regular | 15-19 | No | Yes | No |

\*Demographic information at baseline

\*\*Were not the lowest MI users in their grade at their school

\*\*\*National Board

- Withdrew at end of Year One of the Study

+ Masters Plus

I = Intervention

C = Control

Table 2

*SOSMART Definitions \*and Reliability Scores*

|  |  |  |
| --- | --- | --- |
| SOSMART Variable | Definition [6] | Reliability  Score % |
|  |  |  |
|  | | |
| Teacher Directed Transition | Teacher gave directive for students to be active and students moved from point A to point B | 90.6 |
| Other Movement Non-academic | Movement directed by teacher within or between lessons followed by student movement that DOES NOT include academic content | 82.8 |
| Other Movement Academic | Movement directed by teacher within or between lessons followed by student movement that DOES review or teach academic content | 83.0 |
| Non-Teacher Directed Transition | Teacher DOES NOT give a directive for students to be active but students still engaged in physical activity (e.g., getting supplies, sharpening pencil) | 88.61 |

\*Definitions from Russ et al. (2016)

Table 3

*Means and Standard Deviations by level of support and time*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Baseline | Time 2 | Time 3 | Time 4 |
|  | (*N =* 12) | (*N =* 12) | (*n =* 8) | (*n =* 8) |
| Support |  |  |  |  |
| High | 49.64  (22.53) | 50.73  (19.46) | 39.47  (0) | 38.90  (0) |
| Medium | 50.90  (1.65) | 54.27  (7.86) | 48.98  (4.72) | 47.78  (.09) |
| Low | 44.00  (9.50) | 39.14  (14.20) | 44.03  (11.94) | 43.61  (9.02) |
| Control | 36.30  8.86) | 35.37  (11.25) | 37.77  (2.54) | 42.18  (8.41) |

Table 4

*One Way ANOVA assessing movement integration differences by support at baseline, time 1, time 2, and time 3*

*Baseline*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *df* | *SS* | *MS* | *F* | *p* | *ηp2* | *β* |
| Intercept | 1 | 24525.52 | 24525.51 | 144.50 | .001 |  |  |
| Support | 3 | 398.38 | 132.79 | .782 | .536 | .23 | .15 |
| Error | 8 | 1357.81 | 169.73 |  |  |  |  |
| Total | 12 | 26281.71 |  |  |  |  |  |

*Time 2*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *df* | *SS* | *MS* | *F* | *p* | *ηp2* | *β* |
| Intercept | 1 | 24165.19 | 24165.19 | 125.77 | .001 |  |  |
| Support | 3 | 737.70 | 245.90 | 1.28 | .345 | .32 | .23 |
| Error | 8 | 1537.15 | 192.14 |  |  |  |  |
| Total | 12 | 26440.03 |  |  |  |  |  |

*Time 3*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *df* | *SS* | *MS* | *F* | *p* | *ηp2* | *β* |
| Intercept | 1 | 12421.44 | 12421.44 | 279.78 | .001 |  |  |
| Support | 3 | 164.65 | 54.88 | 1.24 | .407 | .48 | .16 |
| Error | 4 | 177.59 | 44.40 |  |  |  |  |
| Total | 8 | 14689.57 |  |  |  |  |  |

*Time 4*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *df* | *SS* | *MS* | *F* | *p* | *ηp2* | *β* |
| Intercept | 1 | 12746.27 | 12746.27 | 229.06 | .001 |  |  |
| Support | 3 | 62.98 | 20.99 | .38 | .775 | .22 | .08 |
| Error | 4 | 222.59 | 55.65 |  |  |  |  |
| Total | 8 | 15440.11 |  |  |  |  |  |

Table 5

*Repeated Measures ANOVA assessing movement integration differences by support and time*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | *df* | *MS* | *F* | *p* | *ηp2* | *β* |
| Intercept | 1 | 59437.97 | 504.99 | .001 |  |  |
| Support | 3 | 495.55 | 4.21 | .099 | .76 | .44 |
| Between Error | 4 | 117.70 |  |  |  |  |
| Time | 3 | 126.47 | 2.03 | .164 | .34 | .39 |
| Support x Time | 9 | 141.13 | 2.26 | .094 | .63 | .63 |
| Within Error | 12 | 62.43 |  |  |  |  |

Figure 1. Graphical depiction for movement integration minutes within four groups of classrooms varying based upon amounts of external support.

**Figure Captions**

Figure 1. Graphical depiction for movement integration minutes within four groups of classrooms varying based upon amounts of external support.