

Classroom teachers and daily student physical activity requirements: A study of capacity building through Traditional Indigenous Games (TIG)

Abstract

This study investigated the facilitation of daily physical activity for primary school students by regular classroom teachers. The existing practices of teachers and their perceptions of barriers to facilitating daily physical activity with their students were explored. Initial investigations revealed the need to build the capacity of classroom teachers so that they could provide effective, fun and inclusive experiences for their students. When reviewing the fun and inclusive nature of Traditional Indigenous Games (TIG) it was postulated that TIG may assist teachers to overcome their perceived barriers and thereby contribute positively to the health and well-being of students. The study employed a quasi-experimental mixed methods research design. A teacher intervention program was created which incorporated TIG and provided an effective avenue to examine the impact of playing TIG on teachers' capacity to facilitate daily physical activity. Eleven teachers from five primary schools participated in the intervention program. Teacher surveys used a 5-Point Likert scale which measured classroom climate and relationships, as well as teachers' perceptions and attitudes toward student enjoyment and participation in TIG. Descriptive statistics were used to compare pre and post-test data from the teacher surveys to identify any specific changes over time within each variable. Pre and post interviews were conducted with teachers and the *nVivo* software package was used to analyse the qualitative data and allowed the presentation of both the frequency supporting the strength of the theme (TAG clouds) and the illustrative evidence (quotes) that lay behind it. The study found that TIG assisted teachers to facilitate regular daily physical activity with their students. Overall, teachers felt the TIG intervention program had been a worthwhile investment of their time, and all were keen to continue with TIG after the twelve-month study concluded. All teachers developed sustainable ways to continue with TIG, and indeed have become advocates of TIG within their wider school community. The findings from this study suggest the need to provide professional development for teachers in physical activity through TIG and to engage teachers in a variety of integrated, cooperative, inclusive and culturally sensitive programs in order to achieve successful and sustainable learning outcomes for students.

Introduction

The importance of investigating ways to increase physical activity and the health and well-being of children becomes apparent through the findings of the World Health Organisation (WHO), regarding children and physical activity:

Globally in 2010 the number of overweight children under the age of five is estimated to be over 42 million, more than double the figure of 20 million estimated in 2005 ... Childhood obesity is one of the most serious public health challenges of the 21st century ... one of the fundamental causes behind the rising levels of childhood obesity is a trend towards decreased levels of physical activity. (World Health Organisation, 2011)

Schools have been urged to lead the fight against the obesity epidemic that threatens the health of our nation's children. Many government initiatives have been developed within schools to promote

participation in physical activity. The “Smart Moves” initiative in Queensland; the “Healthy Kids Eat Well Get Active” program in New South Wales; the Victorian government’s “Physical Activity Innovation Challenge”; and the Australian national “Go for 2 and 5” campaign, are all examples of the efforts of both state and federal governments in Australia to promote physical activity. A great deal of emphasis has been placed on teachers, sporting associations and community groups through such programs, to provide physical activity for children, both within and outside of schools.

The current rationale for Health and Physical Education (HPE) in the Australian Curriculum further demonstrates the importance of physical activity in the growth and development of children by stating “movement is a powerful medium for learning, through which students can acquire, practise and refine personal, behavioural, social and cognitive skills” (Australian Curriculum: Health and Physical Education F-10, 2014). HPE is a core element in the Australian National Curriculum (ACARA, 2012b). Classroom teachers across Australia are expected to teach HPE to students in a way which promotes confident individuals. However, some studies have found HPE to be a source of chronic stress on children’s self-esteem (Chase, 2001; Gerber, 2009). These studies identify the need for further research into providing a variety of positive experiences for children in HPE to enhance their participation, skill and enjoyment levels. The SHAPE paper for HPE (ACARA, 2012a) focuses on inclusion and maximising participation in physical activity.

The research reported in this paper is derived from a much wider Primary School intervention study which used TIG to support teachers in achieving specific outcomes for students related to physical activity, embedding Indigenous perspectives across the curriculum, enhancing cultural awareness, enabling teamwork and cooperation and generating student self-efficacy with respect to physical activity. The TIG teacher intervention program developed for this larger study also considered Government policy regarding health, physical activity, Indigenous knowledges and reconciliation, along with the development of fundamental motor skills and facilitating cooperative learning within the classroom. Unlike other studies where TIG has been conducted in schools as a stand alone carnival day to showcase TIG, this program involved facilitating daily TIG within the school curriculum and context to achieve outcomes related to student well-being.

This paper focuses on the primary school teachers involved in the study and how they implemented daily physical activity with their students. The intervention program provided classroom teachers with the knowledge and skills to facilitate quality physical activities that promote participation and inclusion, hence maximising the opportunity for all children in their class to succeed at, and enjoy, participating in physical activities. Since TIG promote inclusion and cooperation, it was theorised that if playing TIG can improve children’s participation in physical activity through promoting inclusive and cooperative practices, then it may assist teachers to achieve the student learning outcomes of the National Curriculum within Australia with respect to physical activity.

Background and Literature Review

Since the time of the Ancient Greeks, scholars have been keenly aware of the interrelationship between a healthy mind and body (Queensland Health, 2008), and the opportunity for social interaction that athletic events provide (Swaddling, 1980). Participating in regular physical activity benefits psychomotor, cognitive, affective and behavioural domains of our being, and hence impacts our overall *wellness* (Hastie & Martin, 2006; Bailey 2006). In addition to these studies, an academic review by Bailey, Armour, Kirk, Jess, Pickup, Sandford and BERA (2009) found similar benefits in these four domains which were associated with regular participation in physical activity. Logically, it follows HPE in schools is important for our children’s wellness, and therefore government initiatives

to promote good nutrition and regular exercise place greater demands on our teachers to ensure these health benefits for students.

National, state and local government policies and initiatives designed to increase the physical activity levels of school children focus on several common key areas, namely:

- 1) required time for daily physical activity,
- 2) improved access to resources for physical activity,
- 3) increased capacity to deliver physical activity,
- 4) the provision of professional development in physical activity,
- 5) the building of community partnerships to enhance physical activity, and
- 6) schools' accountability for physical activity.

The responsibility for the implementation of *Smart Moves* (Queensland Government Department of Education Training and the Arts Local Government Planning Sport and Recreation, 2006) in Queensland schools was the task of school principals, who were to develop an action plan and report annually to demonstrate how the school was addressing the policy. Primary schools experienced a number of problems as they lacked the specialist knowledge, resources and facilities to support daily physical activity for students (Louth, 2011). A lack of teacher specialist knowledge in facilitating physical activity has similarly been identified in an Australian study by Begg, Bright and Harper (2008), as a major determinant which contributes to overweight and obese children. Another study by Hands, Parker & Larkin (2002) in Western Australia, identified the attitude and personality of the students' HPE Teacher as a major influence on their regular participation in physical activity. That is, if the teacher was enthusiastic and made the session's fun, then the students were more likely to enjoy physical activity. These and other studies supported the theory that children and young people participated more often and more willingly in sport when the coach emphasised mastery of skills rather than winning or losing (Brady, 2004; Cumming, Smoll, Smith & Grossbard, 2007; Miller, 1989; Smith, Smoll & Cumming, 2007). Using this approach provided children with positive experiences and encouraged continued participation in sport and games. These studies reflect the crucial role of the teacher in generating a positive motivational climate in order to capitalise on student motivation and enhance student participation in physical activity.

Since TIG emphasise task mastery rather than winning and competition they can provide greater opportunities for individuals to achieve success and thereby provide a positive student experience. The enjoyment gained from these positive experiences could enhance motivation, promote fun and further the participation of the students in physical activity. The original aim of Indigenous games was to develop competence in physical skills within the tribe, so that all became skilled hunters and gatherers (Harrison, 2011). The survival of each Indigenous tribe was directly dependant on the ability of all tribal members to be skilled in gathering food and resources. For example, if one member of the tribe was an outstanding hunter with the boomerang, then it was his duty to teach others to be as good as he. In that way, if anything ever happened to him, it would not jeopardise the survival of the tribe, since there were others who continued to hunt, which ensured the continued existence of the tribe. The ability to share skills and help one another to improve was crucial to the continued survival of the tribes, so the games they developed to hone their physical skills reflected communication, support and cooperation, to achieve a common goal (Harrison, 2011). This cooperative, collaborative rather than competitive approach to physical activity was identified by the researcher as a possible pedagogical technique for enhancing student involvement in physical activity in mainstream schools.

A teacher intervention program incorporating the Yulunga [TIG] resource (Edwards, 2008) and ongoing professional development for teachers aimed to facilitate a change in the level of knowledge and expertise of teachers to embed regular physical activity through TIG. The intervention program was designed to support classroom teachers to implement TIG on a daily basis. The program began by

providing a series of professional development (PD) workshops to introduce teachers to the individual games within the Yulunga collection. The teacher PD sessions within the intervention were conducted with the same focus on communication, support and cooperation, and where the spirit and intent of the games were task orientated and team members had to work together to achieve success. The PD sessions occurred in phases throughout the six month study and is demonstrated pictorially (in Figure 1).

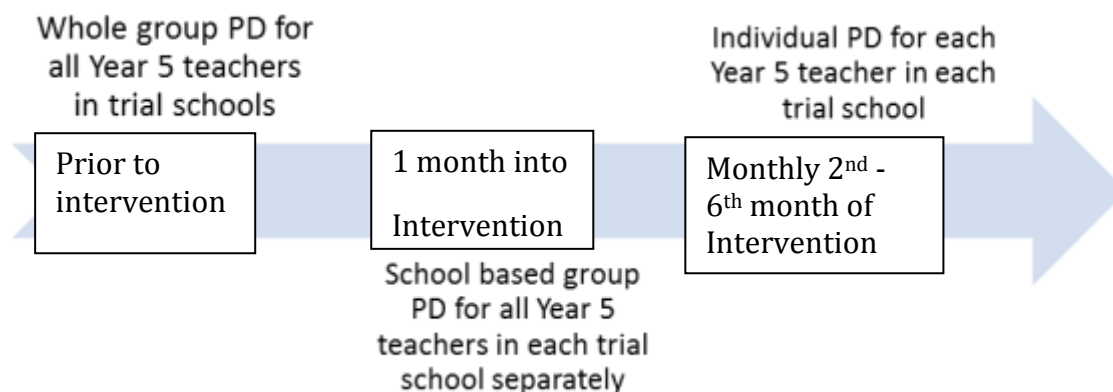


Figure 1. Flow chart of teacher professional development activities in the trial schools

In the initial whole group PD session, teachers were introduced to TIG and reflected historically on the context and purpose of the games. Teachers played the games and identified the safe and inclusive strategies they could use to introduce TIG to their students. Teachers worked in groups to teach TIG to their peers and in doing so gained real world experience facilitating TIG to others.

One month into the intervention program, school group professional development workshops were held to further support the facilitation of TIG within each school. This involved refinement of teaching strategies and inclusive practices, along with experience in playing further games. After this phase, the PD provided was through individualised assistance in facilitating TIG in specific classroom contexts and was used to inform and support teachers who were involved in the intervention trial group, and ensured consistency and reliability of the program. The whole group and school by school workshops also allowed teachers to network with one another and promoted the concept of collaboration within and across schools.

By establishing a sense of cooperation and skill mastery when participating in TIG, as opposed to competitive games, which often create winners and losers, a more supportive team environment was generated. For this reason, the TIG teacher intervention program was geared towards task mastery, fun, inclusion and cooperation in order to ultimately increase student participation in physical activity. The specifics of the individual traditional Indigenous games can be found in the Yulunga resource (Edwards, 2008).

Methodology

The research took place in seven primary schools on the Central Queensland coast of Australia, around

Hervey Bay and Maryborough. The overall strategy employed in this study was to locate the research within nearby schools, easily accessible to the researcher. The teacher participants involved in this study at the pre-intervention phase consisted of 20 Year 5 teachers from seven schools. The 20 teachers at pre-intervention comprised 9 from trial schools and 11 from control schools. The pre-intervention data were used to statistically reduce the survey items. The demographic data collected from the teacher surveys indicate the majority of teachers in the study were female (70%). Approximately 70% of teacher participants were over 40 years of age, and over half had taught for more than 15 years (55%). Post-intervention there were seven Year 5 teachers across five trial schools, of whom 57% were female. Two teachers from the trial schools, who completed the pre-intervention survey, left their respective schools prior to the conclusion of the intervention, hence only seven as opposed to nine teachers responded post intervention. The 11 teachers from control schools were asked to complete the post intervention survey, but due to other events taking place within these schools, they did not complete the final survey. Table 1 displays the demographic data collected from teacher participants through the survey.

Table 1. Demographic Characteristics of Teacher Participants (N=20)

Characteristics	Pre intervention (n=20)		Post intervention (n=7)	
	n	%	n	%
<i>Gender</i>				
Male	6	30	3	43
Female	14	70	4	57
<i>Age range</i>				
< 30 years old	1	5	0	0
30-39 years old	5	25	1	14
40-49 years old	8	40	2	29
50-59 years old	6	30	4	57
<i>Number of years teaching experience</i>				
< 5 years	4	20	1	14
5-9 years	4	20	1	14
10-14 years	5	25	5	72
15-19 years	7	35	0	0

The study used a quasi-experimental between groups mixed methods approach. Teacher surveys and interviews, at pre and post intervention, were used in conjunction with teacher anecdotal notes throughout the duration of the intervention, reflecting the use of multiple instruments to collect data, measuring similar constructs at multiple and overlapping times, demonstrating both data and methodological triangulation (Janesick, 1994; Kanter, 2006).

The items on the teacher pre and post intervention electronic surveys were created to identify the frequency, duration and type of participation in physical activity afforded to students. In addition to this, items were constructed to measure teacher's perceptions and attitudes to physical activity and included the following: teacher's observations of students' enjoyment and engagement, teacher's knowledge, and teacher's confidence in facilitating physical activity. Items connected to attitudes involved how teachers felt about teaching physical activity, difficulties they may have experienced, and assistance they may have received to facilitate opportunities for regular physical activity with students.

The teacher survey used two response formats; a closed scale and a five point Likert scale. The closed

scale was used to identify time, type and barriers (select the appropriate response) with the opportunity for respondents to elaborate if they chose. The data obtained from both closed and scaled responses were analysed using descriptive statistics which involved calculating the number (n) and representing this information as a percentage of the total group. Comparisons of percentages were conducted at pre and post-tests to identify any specific changes over time for each variable. The use of descriptive statistics for the analysis of the teacher survey data was considered most appropriate due to the small sample size of teacher participants ($N=20$).

Teacher semi-structured interviews (Ary, Jacobs & Sorensen, 2010) were a useful data collection tool in that they allowed teachers to describe how the TIG intervention was implemented in each class. The interview format allowed the interviewer to explore teachers' perceptions of and attitudes towards their students' physical activity and allowed teachers to clarify their perception of student involvement in TIG which added to the richness and detail of the data. The interview questions asked teachers to describe how they conducted daily physical activity sessions; how they felt their students responded to these sessions; and if they valued these sessions.

Anecdotal notes allowed the researcher a valuable insight into what was happening in the classroom in response to the TIG program on a continuous basis, as first hand observations were not possible. Teachers from trial schools were asked to make anecdotal notes at the end of each week for the duration of the study to share in the post-trial interview sessions. These notes were completed on a one page summary sheet which teachers gave to the researcher at the completion of the study. The anecdotal notes followed Edward de Bono's six thinking hats (1990) and used icons to prompt the teachers for information, positives, negatives, feelings, new ideas and their overall comments. This evaluation strategy allowed teachers to reflect in a structured way, through multiple lenses, and perspectives so that they could highlight particular instances where TIG had directly affected their class, particular students or themselves, which afforded more depth to the analysis of the intervention program.

All qualitative data collected from interviews and anecdotal notes were transcribed and imported into the *nVivo 10* (QSR, 2012) software package. The analysis of the qualitative data was based on an iterative approach (Bassett, 2010), where specific themes emerged as a result of continuous meaning making and progressive focusing of the data. In the coding of data, a repetitive sequence of actions occurred, where data were read multiple times and then tagged with a meaningful code. For example, when a teacher stated "students really had fun playing TIG and wanted to play all the time" this was tagged with the key word "fun". This sequence was executed multiple times for all of the interview data. These key words were then ascribed to a group where the context of the comments related to a theme, in the case of the above example, the theme, termed "node" was participation. This method of coding data and ascribing it to a group is supported by Maddern (2011), Ary, Jacobs and Sorensen (2010) and Dey (1993).

Using *nVivo 10*, a word frequency query was used to explore what words were used in each context from each theme (node) and commonly used terms within the node were identified and ranked. The word frequency analyses were represented visually in the form of TAG clouds, where the greater the size and boldness of the font, the more often these words were used by teachers. For example, the word "increased" was bolded and had a font size of 32, while the word "shy" had a font size of 11 and was not bolded. This would demonstrate the much more frequent use of the word "increased" from within the qualitative data. Perception checks were conducted on the 8 most common words, by going back to the raw data to ensure the original context of the teacher statements was maintained. Direct quotes were then used to demonstrate the context and validity of the analysis.

Results

Quantitative Data

As the control group did not complete the post-survey, the following discussion focuses on changes over time for the trial teacher group in relation to TIG enabling regular classroom teachers to facilitate daily physical activity for their primary school students.

Based on the statistical evidence from the surveys, finding the time to conduct class physical activity was the most common barrier to providing regular physical activity for students that teachers from the trial group experienced in both pre and post intervention phases. At pre intervention, curriculum, knowledge and equipment were also common obstacles to implementing regular physical activity. At post intervention, these factors were no longer considered to be obstacles. These results are demonstrated in Table 2 below.

Table 2. Obstacles to Regular Daily Physical Activity

Obstacles	Pre intervention		Post Intervention	
	<i>n = 7</i>	%	<i>n = 7</i>	%
<i>Time</i>	7	100	7	100
<i>Curriculum</i>	5	71	4	57
<i>Knowledge</i>	5	71	2	28
<i>Equipment</i>	4	57	0	0
<i>Negative attitudes</i>	1	14	0	0
<i>Disruption/ noise</i>	1	14	0	0
<i>Weather</i>	1	14	1	14

When examining the results of the teacher surveys of the trial group at pre and post- intervention there appears to have been no change in teachers' perceptions of their ability to find time to conduct physical activity with their students. However, teacher enjoyment for the trial group who liked or loved promoting physical activity with students at pre-intervention was recorded at 58% and it soared to 100% post-intervention. The percentage of teachers who had reported having quite a bit to a great deal of knowledge of physical activity, rose markedly from 14% pre-intervention, to 57% post-intervention. Furthermore, 14% of trial teachers reported being confident to very confident teaching physical activity pre-intervention, and this increased to 71% post-intervention. In summary, although trial teachers reported spending a similar amount of class time on physical activity at pre and post intervention, there were marked increases in their levels of enjoyment, knowledge and confidence relating to promoting and teaching physical activity with their students following the intervention program. Table 3 displays these results.

Table 3. Teacher Responses to Physical Activity – Trial Group

Characteristic	Pre intervention (n=7)		Post intervention (n=7)	
	n	%	n	%
<i>Time</i>				
0-10 mins	3	42	3	42
11-20 mins	2	29	2	29
21-30 mins	2	29	2	29
31-45 mins	0	0	0	0
46-60 mins	0	0	0	0
<i>Teacher enjoyment</i>				
Indifferent	3	42	0	0
Like	2	29	5	71
Love	2	29	2	29
<i>Teacher knowledge of physical activity</i>				
A little	2	29	0	0
An adequate amount	4	57	3	43
Quite a bit	1	14	3	43
A great deal	0	0	1	14
<i>Confidence in teaching physical activity</i>				
Not confident	1	14	0	0
A little hesitant	1	14	0	0
ok	4	58	2	29
Confident	1	14	3	43
Very confident	0	0	2	28

Qualitative Data

The qualitative data indicated students liked or loved the physical activity sessions provided through TIG. Teachers reported TIG helped their students to cooperate more during the physical activity sessions. When teachers' perceptions of the impact of TIG on students' physical activity were analysed, the words used most frequently, described TIG as having had a positive impact on the physical activity participation levels of their students. The word frequency analysis of the qualitative data relating to the 'physical activity' node demonstrated that teachers were confident that the TIG intervention program helped to increase student involvement in physical activity. This is demonstrated in the tag cloud for the physical activity node (See Figure 2). Specific statements teachers made during the interview, for example "Everyone was involved" (Teacher 6, School 4); "Students definitely played more often" (Teacher 8, School 4); and, "Increased the amount of physical activity during school hours" (Teacher 2, School 1) highlight the teachers' confidence that the TIG intervention enhanced student involvement in physical activity.

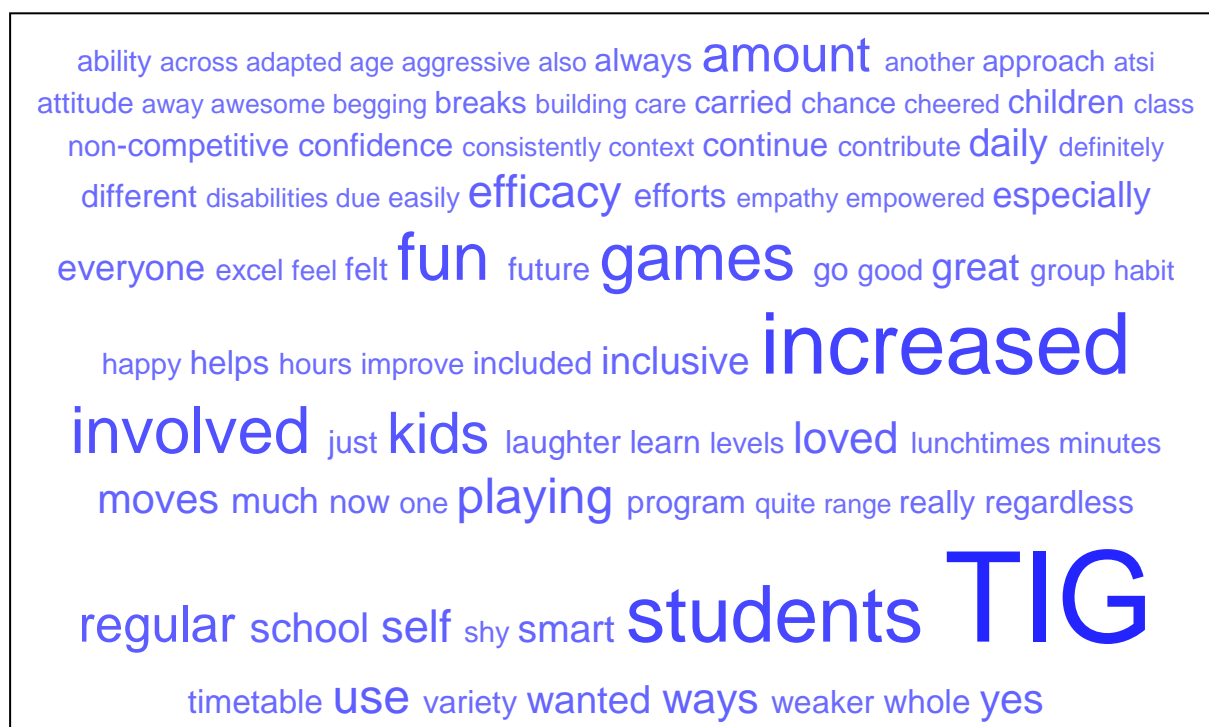


Figure 2. Tag Cloud of Teachers' Perceptions of the Impact of TIG on Physical Activity

Summary of results

The teacher surveys and interviews conducted at pre and post intervention provided quantitative data which demonstrated teachers no longer perceived the curriculum, their knowledge and use of equipment as barriers to providing daily physical activity for their students. Results indicate post intervention teachers reported an increase in physical activity during class time, along with an increase in teacher enjoyment, knowledge and confidence incorporating daily physical activity in their programs. A word frequency analysis generated from the physical activity node, reflected teachers were very positive about the contribution TIG made to increasing students' physical activity levels. Teachers reported TIG had helped to increase their level of confidence to increase student engagement in daily physical activity.

Implementing the national curriculum

A central theme which emerged during the teacher interviews was one which related to the *sustainability* of TIG at the end of the intervention period. All teachers in the trial schools discussed ways in which they would continue to facilitate TIG with their students. All teachers commented that their reasons for continuing to play TIG with their students, and indeed with other students throughout the school, was because it helped them to conduct daily inclusive physical activity, to embed Indigenous perspectives, and to help students to cooperate more with one another.

A lack of time was noted as a major barrier for teachers when implementing physical activity, cooperative learning and Indigenous perspectives in their daily classroom activities. Yet it seems with the support given to teachers within the intervention in the form of ongoing professional development and the TIG resource package, teachers found the time to facilitate TIG with their students.

Furthermore, teachers from the intervention schools planned to continue to facilitate TIG; to introduce TIG to other year levels within the school; and to integrate TIG into other key learning areas. At the

conclusion of the intervention program teachers continued to invest their time and energy facilitating TIG in their schools with other year levels and teaching staff. Once teachers had participated in the intervention program they all found time to expand TIG within their school communities. The TIG intervention study allowed teachers to observe first-hand the positive outcomes that increasing physical activity, encouraging cooperative learning and embedding Indigenous perspectives had on their students. By witnessing these successful learning experiences, teachers were no longer focused on barriers, but on ways to share TIG within their school communities. Their commitment post-intervention, strongly indicated the teachers believed TIG provided worthwhile learning opportunities which assisted them to achieve key deliverables from Australia's national curriculum.

The results of this study provide conclusive evidence that prolonged use of TIG assisted teachers to meet the Australian national curriculum requirements with respect to regular physical activity. However, to achieve these results, TIG must be played in accordance with the original philosophy of TIG, which focused on cooperation, inclusion, participation and enjoyment, and ideally, on a daily basis.

Teacher participants in this study reported difficulties meeting the requirements of the national curriculum relating to facilitating daily physical activity. These teachers reported the main barriers to achieving these targets as time and curriculum demands, coupled with a lack of specialist knowledge in these areas. It is pertinent for TIG to be used to integrate the requirements of the national curriculum, into a more manageable, time efficient and enjoyable learning experience for both students and teachers.

Discussion

Encouraging Regular Physical Activity

HPE was a key learning area the TIG intervention program targeted. Results specifically demonstrated teachers felt the TIG intervention program encouraged them to conduct regular, daily physical activity with their students. Teachers felt TIG increased students' involvement and attributed this to the fun students had playing the games. These findings support the literature regarding the reciprocal influence of enjoyment and participation in physical activity (Glover & Midura, 1992; Orlick, 2006; Taylor & Wilson, 2005). Teachers also enjoyed the positive atmosphere TIG created and this similarly encouraged teachers to conduct more regular, daily physical activity with their students.

The results of the TIG teacher intervention program demonstrate teachers felt more confident and enjoyed teaching TIG, and since they could see how much the children enjoyed playing TIG, then they were more motivated to conduct daily physical activity sessions. This reflects the theory put forward by McAuley (1985) and supported by Taylor and Wilson (2005), on the upward spiral of confidence and performance that is created when one experiences success. Since teachers were more motivated and confident to conduct daily physical activity sessions, their actions boosted their students' levels of participation in physical activity.

The commitment each teacher had towards the program, along with their enthusiasm for implementing the program, would definitely affect the learning outcomes and experiences of the learners, and ultimately influence the results of the study. Previous research indicates very strongly that the single, most important factor which influences learning outcomes for the learner is their teacher (Chetty, Friedman & Rockoff, 2011; Hanushek, 2011; Harris & Sass, 2011; Leithwood, Patten & Jantzi, 2010; Supovitz, Sirinides & May, 2010).

Conclusion

The TIG teacher intervention program and in particular the teacher professional development used in this study provide an original approach to establishing a platform for teachers from which they can facilitate the physical, social and emotional growth and therefore contribute to supporting the health and well-being of students.

Ideally, teachers were encouraged and assisted to facilitate daily TIG sessions with their students, but realistically, not all teachers followed the study's guidelines. Some teachers had difficulties running sessions each day, and scaled the number of sessions down to three per week. Even under these circumstances, the results of the study still demonstrated the effectiveness the TIG intervention program had on achieving the main aims of the study.

Furthermore, the evidence of the success of the TIG teacher intervention program was generated from a relatively small sample of five trial schools. If a larger study was conducted on a national scale, which employed the PD model used in this study, it may add further weight to the findings within this study with respect to the benefits TIG achieves with students and teachers alike.

The positive outcomes for the participants in this study demonstrate the potential for TIG and programs like it, to enhance the health and well-being of children and youth. The production of a teachers' guide to assist them to implement TIG may well be an effective way to disseminate this positive intervention program, both within and outside of Australia.

It is essential for schools to support teaching staff to facilitate HPE by providing ongoing professional development in how to implement physical activity to have a positive impact on promoting children's regular participation. If the TIG program and teacher professional development as undertaken in this study were built into the Australian National Curriculum then the practical implications this would have for students and teachers would be numerous. The program could give direction and support to teachers, while nurturing physical activity, cooperation and self-efficacy in children, the future leaders of our society.

An aspect of this study which may be considered a limitation is that the results were dependant on the level of enthusiasm for the project by the teachers at each school. In the case of this research, it is acknowledged that a limitation of the study is that the level of commitment and enthusiasm each teacher brought to the intervention program varied. However, overall, at post-intervention the teachers were more positive about embedding regular physical activity than they were pre-intervention.

Since teachers are one of the most important factors influencing curriculum content and delivery, a follow up study investigating the sustainability of TIG in the trial schools from this research would be useful. This type of investigation may give an indication into the transferability and permanency of teacher intervention programs and the uptake of these programs by the wider school community.

References

- Ary, D., Jacobs, L. C., & Sorensen, C. (2010). *Introduction to Research in Education* Belmont, CA: Wadsworth Cengage Learning.
- Australian Bureau of Statistics. (2011). *Census of Population and Housing*. Canberra: Australian Bureau of Statistics.
- Australian Curriculum Assessment and Reporting Authority. (2014). *Health and Physical Education F – 10*. Retrieved 15 August, 2015, from <http://www.australiancurriculum.edu.au/health-and-physical-education/rationale>
- Australian Curriculum Assessment and Reporting Authority. (2012a). *Draft Shape of the Australian Curriculum: Health and Physical Education*. Sydney: ACARA.
- Australian Curriculum Assessment and Reporting Authority. (2012b). *The Shape of the Australian Curriculum: Version 3*. Sydney: ACARA.
- Bailey, R. (2006). Physical education and sport in schools: A review of benefits and outcomes. *Journal of School Health, 76*(8), 397-401.
- Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., Sandford, R. & BERA. (2009). The educational benefits claimed for physical education and school sport: an academic review. *Research papers in education, 24*(1), 1-27.
- Bassett, B. (2010). Iterative. In Albert J. Mills, G. Durepos, & E. Wiebe (Eds), *Encyclopedia of Case Study Research*. (pp. 504-506). Thousand Oaks, CA: SAGE Publications Inc.
- Begg, S., Bright, M., & Harper, C. (2008). *Smoking, nutrition, alcohol, physical activity and overweight: Indicators for Health Service Districts in 2006*. Brisbane: Queensland Health.
- Brady, F. (2004). Children's Organized Sports: A developmental perspective *JOPERD, 75*(2), 35 - 53.
- Chase, M.A. (2001). Children's Self-Efficacy, Motivational Intentions, and Attributions in Physical Education and Sport. *Research Quarterly for Exercise and Sport, 72*(1), 47-54.
- Chetty, R., Friedman, J. N. & Rockoff, J. E. (2011). *The long-term impacts of teachers: Teacher value-added and student outcomes in adulthood* (No. w17699). National Bureau of Economic Research.
- Cumming, S. P., Smoll, F. L., Smith, R. E., & Grossbard, J. R. (2007). Is winning Everything? The relative contributions of Motivational Climate and Won-Lost Percentage in Youth Sports. *Journal of Applied Sport Psychology, 19*, 322 - 336.
- De Bono, E. (1990). *Six thinking hats*. London: Penguin.
- Dey, I. (1993). *Qualitative Data Analysis*. New York: Routledge.
- Edwards, K. (2008). Yulunga Traditional Indigenous Games: Years 4-6. Retrieved March 15, 2010, from www.ausport.gov.au/isp
- Gerber, M. (2009). *Changes in motivation and satisfaction with PE as a function of chronic stress experiences in PE classes*. Paper presented at the 26th ACHPER International Conference: Creating active futures Brisbane.
- Glover, D., & Midura, D. (1992). *Team building through physical challenges*. Champaign, IL: Human Kinetics.

- Hands, B. P., Parker, H., & Larkin, D. (2002). *What do we really know about the constraints and enablers of physical activity levels in young children?* Paper presented at the Australian Council for Health, Physical Education and Recreation Inc (ACHPER), 23rd Biennial National/International Conference: Interactive Health & Physical Education. Launceston, TAS, 3-5 July 2002.
- Hanushek, E. A. (2011). The economic value of higher teacher quality. *Economics of Education Review*, 30(3), 466-479.
- Harris, D. N., & Sass, T. R. (2011). Teacher training, teacher quality and student achievement. *Journal of public economics*, 95(7), 798-812.
- Harrison, N. (2011). *Teaching and Learning in Aboriginal Education. 2nd Ed.* Sydney: Oxford University Press.
- Hastie, P., & Martin, E. (2006). *Teaching Elementary Physical Education: Strategies for the classroom teacher.* San Francisco CA: Pearson Benjamin Cummins.
- Janesick, V. J. (1994). The dance of qualitative research design: Metaphor, methodolatry and meaning. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications.
- Kanter, S.B. (2006). *Embodying research: A study of student engagement in research writing.* (Doctoral dissertation). Retrieved from IUP dspace. (Accession no. 2006-07-20T11:30:04Z)
- Leithwood, K., Patten, S., & Jantzi, D. (2010). Testing a conception of how school leadership influences student learning. *Educational Administration Quarterly*, 46(5), 671-706.
- Louth, S. (2011). *Promoting Healthy Communities Through an Active Curriculum.* Paper presented at the 27th ACHPER International Conference: Moving, Learning and Achieving, Adelaide, South Australia.
- Maddern, R. (2011). NVIVO 10 Two Day Workshop with Research Assist. Sydney NSW: Research Assist.
- McAuley, E. (1985). Modelling and self-efficacy: A test of Bandura's model. *Journal of Sport Psychology*, 7, 283-295.
- Miller, R. (1989). Effects of Sports Instruction on Children's Self-Concept. *Perceptual and Motor Skills*, 68, 239 - 242.
- Orlick, T. (2006). *Cooperative games and sports.* Champaign, IL: Human Kinetics.
- QSR International. (2012). *nVivo 10 software package.* Doncaster, VIC: QSR International Pty Ltd.
- Queensland Government Department of Education Training and the Arts Local Government Planning Sport and Recreation. (2006). *Smart Moves: Physical Activity Programmes in Queensland State Schools.* Brisbane: Queensland Government.
- Queensland Health. (2008). *Healthy Bodies Healthy Minds.* Brisbane: The State of Queensland.
- Smith, R. E., Smoll, F. L., & Cumming, S. P. (2007). Effects of a Motivational Climate Intervention for Coaches on Young Athletes' Sport Performance Anxiety. *Journal of Sport & Exercise Psychology*, 29, 39 - 59.

Classroom teachers and daily student physical activity requirements: A study of capacity building through Traditional Indigenous Games (TIG)

Author Name: Louth, S. & Jamieson-Proctor, R.
Contact Email: louths@usq.edu.au

Supovitz, J., Sirinides, P., & May, H. (2010). How principals and peers influence teaching and learning. *Educational Administration Quarterly*, 46(1), 31-56.

Swaddling, J. (1980). *The ancient Olympic Games*. Published for the Trustees of the British Museum by British Museum Publications: London.

Taylor, J., & Wilson, G. (2005). *Applying Sport Psychology: Four Perspectives*. Champaign, IL: Human Kinetics.

World Health Organisation. (2011). Childhood overweight and obesity. Retrieved 7 January, 2011
<http://www.who.int/dietphysicalactivity/childhood/en/>