Traditional Indigenous Games promoting physical activity and cultural connectedness in primary schools – Cluster Randomised Control Trial

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Introduction

Progressing culturally relevant health promotion strategies takes on a new significance in light of the ‘closing the gap’ agenda. There is considerable evidence that a child’s sense of connectedness to school plays a protective role in the development of problem behaviours that may lead to disengagement with the education system. This is particularly relevant for Aboriginal and Torres Strait Islander (ATSI) children who attend mainstream schools. There is an identified need for targeted programs for Indigenous children to bring about a sense of belonging within the school environment. Evidence shows increasing success in retention rates for Indigenous children in schools that have culturally relevant programs.

The purpose of this study was to evaluate whether a Traditional Indigenous Games (TIG) program improves the physical activity and sense of cultural connectedness for Indigenous students in primary schools and in lower socio-economic populations.

Methods

The Traditional Indigenous Games program

The TIG project is a demonstration project of the Queensland Government’s ‘Eat Well Be Active Healthy Kids For Life’ campaign. Historically, the games were played by ATSI societies during social gatherings. The TIG kit that includes contemporary sports gear such as noodles, frisbees, etc., has replaced the traditional gear to meet with the safety standards. The games were chosen based on the age appropriateness as set out in the TIG resource – the Yulunga, developed by Ken Edwards, Queensland University of Technology.

After consultations with the schools, two teachers from each intervention school were trained as TIG facilitators by Blackbase, a non-profit organisation. TIG were implemented once a week for an hour from March to May 2007.

Abstract

Issue addressed: This study investigated the effectiveness of Traditional Indigenous Games (TIG) to improve physical activity and cultural connectedness among primary school students in the community renewal areas of Townsville in North Queensland.

Methods: A cluster randomised control trial was conducted in four primary schools in 2007. Baseline and post implementation surveys were conducted in two intervention and two control schools and the results were compared.

Results: TIG delivered in primary schools every week over period of three months did not contribute to any statistically significant improvement in intervention and control groups in physical activity levels or cultural connectedness.

Conclusions: Further research specifically in terms of intensity and duration of TIG may inform whether physical activity may be improved. Enhancing the Indigenous cultural features of the existing TIG kit might positively influence Indigenous cultural connectedness.

Key words: Traditional Indigenous Games, primary schools.

So What

TIG is gaining popularity and is being implemented in many parts of Queensland but have mostly been evaluated at the process level. This study identified that TIG is a culturally relevant intervention within primary schools.
Study design
A cluster randomised control trial was conducted to avoid contamination of data in naturally occurring groups during simple randomisation. Ethics approval was obtained from Education Queensland and James Cook University (Approval No. H2569). Passive consent was sought by parents/guardians by distributing letters explaining the study and also providing an opportunity to withdraw permission for their child to participate in the TIG.

Sampling and recruitment
Four of the six primary schools in the community renewal areas of Townsville were randomly selected; of these, two were randomly assigned as intervention and two as control groups.

Data collection tools
The baseline questionnaire was administered to the same students before and after the implementation of TIG. The follow up was done a week after the implementation of TIG. The student questionnaire collected demographic data and assessed physical activity level and cultural connectedness. The physical activity levels were taken from the validated Active-Ate Student Questionnaire. General activity questions assessed the type and frequency of physical activity undertaken during the week and on weekends, while school activity questions assessed the level of physical activity engaged in at recess and lunchtime. Due to the non-existence of appropriate measures of Indigenous cultural connectedness, the questions were developed and reviewed for age and cultural appropriateness by an Indigenous Reference Group (IRG). The questions were based on elements of social capital: shared vision, opportunity, gatherings and respect. The students were asked to respond to four statements ‘I am happy and/or proud of my cultural background’, ‘I play and/or talk with classmates who are not from my cultural background’, ‘I share information about my cultural background’, and ‘my classmates understand and/or respect my cultural background’.

The TIG facilitator questionnaire primarily measured capacity building of teachers to implement TIG in schools. The questionnaire assessed the various aspects of capacity building such as facilitator training outcomes, sustainability and also perceived benefits of TIG. All facilitators from the two intervention schools completed the self-administered questionnaire.

Statistical analysis
Numerical characteristics were described as median values and inter-quartile ranges due to skewed distributions. Characteristics were compared between intervention and control group at baseline and follow-up using Chi-square tests and non-parametric Wilcoxon tests. Comparisons were adjusted for the cluster sampling approach of using schools as the primary sampling unit. SPSS for Windows and STATA, release 8 were used for statistical analyses.

Results
Participant characteristics
A total of 167 students, aged 9-12 years from Year 6 and composite Year 5-6 participated in this study. The baseline sample comprised of 54.2% male students and 21.6% were from an Indigenous background. There was 97% follow-up of students for post-measurement.

Physical activity
Baseline data revealed that students at the two control schools (n=76) reported a higher median number of physical activities typically performed during a week than children from the two intervention schools (n=91) (p=0.040, Table 1). None of the other characteristics recorded were significantly different between the intervention and control group. At follow-up there were no significant differences in physical activity participation between control and intervention children (Table 1).

Table 1: Weekly level of physical activity at baseline and post-intervention.

<table>
<thead>
<tr>
<th></th>
<th>Baseline Total (n=167)</th>
<th>Control Total (n=76)</th>
<th>Intervention Total (n=91)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median number of activities (IQR)#</td>
<td>7.5 (6, 9)</td>
<td>7.5 (6, 9)</td>
<td>7 (5, 8)</td>
<td>p=0.051; p=0.040</td>
</tr>
<tr>
<td>Median number of times activities performed during week (IQR)</td>
<td>19 (12, 27)</td>
<td>21 (15, 29)</td>
<td>18 (11, 25)</td>
<td>p=0.078; p=0.553</td>
</tr>
<tr>
<td>Median number of times activities performed during weekend (IQR)</td>
<td>11 (5, 19)</td>
<td>14 (8.3, 27.8)</td>
<td>8 (3, 15)</td>
<td>p&lt;0.001; p=0.210</td>
</tr>
<tr>
<td>% ran or played hard during recess</td>
<td>49.1%</td>
<td>48.7%</td>
<td>49.4%</td>
<td>p=0.201</td>
</tr>
<tr>
<td>% ran or played hard during lunchtime</td>
<td>47.2%</td>
<td>47.4%</td>
<td>47.1%</td>
<td>p=0.413</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>After intervention Total (n=163)</th>
<th>Control Total (n=66)</th>
<th>Intervention Total (n=97)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median number of activities (IQR)</td>
<td>7 [6, 9]</td>
<td>7 [6, 8]</td>
<td>7 [6, 9]</td>
<td>p=0.142; p=0.110</td>
</tr>
<tr>
<td>Median number of times activities performed during week (IQR)</td>
<td>18 [12, 27]</td>
<td>18 [12, 24]</td>
<td>17 [13, 29]</td>
<td>p=0.437; p=0.434</td>
</tr>
<tr>
<td>Median number of times activities performed during weekend (IQR)</td>
<td>12 [5, 21]</td>
<td>12.5 [5, 24]</td>
<td>11 [5, 19]</td>
<td>p=0.417; p=0.550</td>
</tr>
<tr>
<td>% ran or played hard during recess</td>
<td>48.0%</td>
<td>45.3%</td>
<td>50.0%</td>
<td>p=0.178</td>
</tr>
<tr>
<td>% ran or played hard during lunchtime</td>
<td>51.0%</td>
<td>53.8%</td>
<td>48.8%</td>
<td>p=0.089</td>
</tr>
</tbody>
</table>

Notes: a) p-value adjusted for cluster sampling approach; b) first p-value relates to comparison of median values, second p-value relates to comparison of mean values adjusted for cluster sampling; #IQR = inter-quartile range
Table 2: Self-reported cultural connectedness at baseline and post-intervention.

<table>
<thead>
<tr>
<th></th>
<th>Controls</th>
<th>Intervention</th>
<th>p-valuea</th>
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</thead>
<tbody>
<tr>
<td>% who always felt proud of their cultural background</td>
<td>Before: 47.4%</td>
<td>After: 53.0%</td>
<td>0.375</td>
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<td></td>
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<tr>
<td>% who always played/talked with classmates not from their cultural background</td>
<td>Before: 42.1%</td>
<td>After: 48.5%</td>
<td>0.268</td>
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<tr>
<td>% who always shared information about their cultural background with classmates</td>
<td>Before: 9.2%</td>
<td>After: 9.1%</td>
<td>0.682</td>
</tr>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>% who reported that their classmates always respected their cultural background</td>
<td>Before: 44.7%</td>
<td>After: 45.5%</td>
<td>0.576</td>
</tr>
</tbody>
</table>

Notes: a) p-value adjusted for cluster sampling approach

Cultural connectedness

Before and after comparisons within control and intervention schools showed no significant differences (Table 2). The results were stratified by cultural background, but did not show any statistical significance for Indigenous or non-Indigenous students at baseline and at follow up.

TIG facilitator feedback

TIG facilitators (n=4) agreed or strongly agreed that the training received was relevant and useful in preparing them as facilitators. All facilitators agreed or strongly agreed to “feeling good about facilitating culturally inclusive activity in the school curriculum”. A major barrier to continued implementation of TIG identified by three of the facilitators was related to internal staffing issues.

The majority of them (n=3) perceived that TIG raised awareness of Indigenous culture and improved physical activity, while (n=3) perceived that TIG improved cultural pride among Indigenous students. The results were similar for the facilitator feedback in 2008.

Discussion

Contrary to evidence that culturally relevant curriculum improves participation rates in schools among Indigenous students, the TIG as a culturally relevant intervention was not found to achieve such change in this study. There was no evidence of an increase in cultural connectedness or physical activity.

The reasons for this may be two-fold. Firstly, the primary consideration in the choice and delivery of TIG for schools was ease of implementation rather than physical activity benefits. Secondly, the TIG kit in its current form may be best seen as a secular and contemporary intervention rather than an ethnocultural intervention. The materials within the kit do not reflect the Indigenous nature either visually or texturally; thus they do not encourage natural inquiry of the 'Indigenous' aspect of the kit.

This evaluation identified gaps in the delivery of TIG in schools and the TIG kit and recommends ways of addressing these gaps as a consideration for future projects. In future evaluation of the TIG there should be investigation of efficacy for improving physical activity levels in relation to the length, duration and intensity of the intervention. Incorporating cultural features into the TIG kit needs to be further explored.

Acknowledgements

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References

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