

Promoting Physical Activity of PEI Children:
Examining the Effects of Active Start PEI Resources and Educator Training

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Abstract

Purpose: The purpose of this study was to evaluate the efficacy of the Sport PEI Active Start program and measure the combined and separate value of training and resourcing early childhood educators. **Methods:** Early childhood education centres (n=8) were assigned within four different interventions of (1) a control group, (2) receiving only training, (3) receiving only resources and, (4) receiving both resources and training. Participants (n=80) were given pre and post tests on the primary outcome variable of gross motor skill via the TGMD-2 assessment of both locomotor and object control ability to assess the combined and separate value of training and resourcing early childhood educators. **Results:** When looking at the improvements in mean total skill scores a 5.3% improvement was found when the centre staff was only resourced with lesson plans and equipment, a 10.1% improvement when the centre was only trained and a 15.9% improvement when the centre staff was both trained and given the resources. A one-way ANOVA was used to test for differences among the three types of interventions in relation to overall changes in skill score. Types of interventions differed significantly across the three interventions, $F(2,68)= 6.114, p=0.004$. Using a Bonferroni post-hoc analysis it was found that resourcing produced significantly lower change scores than combining training with resourcing ($p=.003$). Differences between the other types of interventions were non-significant. **Conclusions:** The Sport PEI Active Start program did improved the children's gross motor ability and it was found that combining training and resources given to Early Childhood Educators had the largest effect on developing gross motor skill in children.

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Introduction

The financial cost of physical inactivity in Canada is significant and well established in the literature (Janssen, 2012). Researchers studying healthcare costs attributable to physical inactivity use the three categories of direct, indirect, and total costs. Direct cost is described as the cost associated with direct treatment and care of diseases associated with physical inactivity whereas indirect cost is linked to areas such as lost productivity due to the illness of an individual. Total cost is the sum of direct and indirect costs (Katzmarzyk, 2011). Research shows the estimated direct, indirect, and total health care costs of physical inactivity to Canada in 2009 were \$2.4 billion, \$4.3 billion and \$6.7 billion, respectively (Janssen, 2012). As shown in Table 1, the costs associated to physical inactivity is an important factor for multiple countries with recent data showing that the economic cost attributed to physical inactivity ranges from 1.2% to 2.5% of total annual health care expenditures (Katzmarzyk, 2011).

Study	Country	Year ^a	Direct Medical Costs ^b	Costs as Percent of Total Health Expenditures
Stephenson <i>et al.</i> (29)	Australia	1993 to 1994	A\$377 million	1.2
Colditz (6)	United States	1995	US\$24 billion	2.4
Katzmarzyk <i>et al.</i> (16)	Canada	1999	Can\$2.1 billion	2.5
Martin <i>et al.</i> (20)	Switzerland	1999	SwF1.6 billion	—
Katzmarzyk and Janssen (17)	Canada	2001	Can\$1.6 billion	1.5
Allender <i>et al.</i> (1)	United Kingdom	2002	£1.06 billion	1.5
Popkin <i>et al.</i> (22)	China	2000	US\$1.35 billion	—

^aYear that economic costs were estimated for.

^bCosts are presented in the currency of the country, with the exception of China.

Table 1. Estimated economic burden of physical inactivity for several countries (Katzmarzyk, 2011)

The promotion of physical activity is seen as a cost-effective approach to reduce this financial burden. For example, a 5% drop in risk factors associated with physical inactivity is projected to lead to a cost savings of \$31 billion per year in the United States. This is seen across the spectrum of care in that overweight individuals are associated with an increase of 36%

in inpatient/outpatient care and 77% in prescription medicine cost (Chenoweth & Leutzinger, 2006).

In Canada, there is strong evidence that the prevalence of childhood obesity is rising rapidly (Tremblay & Willms, 2003) with a quarter of children and youth overweight or obese combined with a decline in physical fitness in this age group (Colley, et al., 2011). In PEI, data suggests that only 45% of youth meet national physical activity guidelines (Murnaghan, 2011). It has also been shown that higher proficiency levels of fundamental movement skills relate to higher rates of fitness, physical activity, and perceived sports competency (Hardy, King, Farrell, MacNiven, & Howlett, 2009; Lubans, Morgan, Cliff, Barnett, & Okely, 2010; Riethmuller, Jones, & Okely, 2009). As well, research shows that early childhood development is foundational in an individual's subsequent long-term health (Keon & Pepin, 2009) and the benefits of healthy living are most effective when healthy routines are established during early years (Black & Hurley, 2012). There is also evidence that a child's future physical activity patterns are strongly influenced by activities in a child care centre (Temple, Naylor, Rhodes, & Wharf-Higgins, 2009). Paradoxically, the quantity and quality of interventions to improve motor development in young children is limited (Riethmuller, Jones, & Okely, 2012).

The above findings have been disseminated to policy makers within government health and wellness departments across the country and policy leaders have been tasked to fund and develop programs which will tackle this physical inactivity challenge (Starky, 2005). With this in mind, the primary author developed a program in 2011 and asked the PEI Department of Health and Wellness to partner with Sport PEI on a pilot project which aimed to provide Island children aged 3-6 years with an opportunity to master fundamental motor skills through participation in a province-wide Active Start Program.

This Active Start program became a project led by Sport PEI delivered by local champions at the community level such as Early Childhood Education Centres. At the core of the project are partnerships with the centres in providing the key interventions of (a) resourcing with lesson plans and equipment and (b) training in teaching fundamental movement skills (FMS). The giving of resources such as lesson plans and equipment is seen as a method of breaking down the barriers of early entry into to physical activity (National Institute for Health and Clinical Excellence, 2009). Teacher training, the second intervention, is supported in the literature such that in-service education (such as the FMS course), is significant in increasing pre-school quality (Sandberg, Anstett, & Wahlgren, 2007). The intent of this research project was to evaluate the efficacy of the Active Start program components of resourcing and training. The anticipated outcome is to provide recommendations to government with respect to the efficacy of the Active Start program.

History of the Project

In the fall of 2010, Sport PEI was interested in how Island Provincial Sport Organisations (PSO) were implementing their new Long Term Athlete Development (LTAD) programs (Canadian Sport for Life, 2013). To do so, Sport PEI initially surveyed all of the National Sport Organisations (NSO) to see how they supported their respective PSO in this implementation. During this same time period, Sport PEI performed semi-structured interviews with most of the PSOs that they service on the Island. One of the key findings through this process of gathering information from both NSO and PSO sources was a lack of programming for children in the Active Start (ages 0-6 years) level of the LTAD. With this finding in mind, the primary author worked with Sport PEI to apply for government funding to develop and implement a province wide Active Start program to be delivered by Early Childhood Education Centres. This program

was designed to address the gap identified in the application of the LTAD model by the NSO and PSO sources.

To ensure program quality, an advisory council was created to analyze project concepts, policy, and budgets. Experts in early childhood education, provincial sport, community recreation and health research fields, as well as government representatives from health and wellness, physical education and early childhood education sat on this Advisory Council. This council met quarterly throughout the research period to evaluate the progress of the of the Active Start PEI program. The primary author was also the project manager for the Active Start PEI program.

Purpose

Based on the information presented above, the objectives of the present study were to:

1. Create a standardized platform of delivery of the Sport PEI Active Start program in early childhood centres.
2. Determine the Active Start's impact on children's gross motor skill development participating in the Active Start program in early childhood centres.
3. Provide a recommendation to Government policy makers in regards to the separate and combined value of training and resourcing early childhood educators.

Method

Participants

The study began with the recruitment of Early Childhood Centres to participate in the study. Letters (Appendix A) were sent to 50 centres inviting them to take part in the study. A total of 16 centres expressed interest in participating. From these 16 centres, 8 were randomly chosen to take part in the study and were placed in the various conditions by the random drawing of names, described more fully under Research Design. Next, parental consent letters (Appendix

E) were sent home with the children at each centre. Only children with completed consent forms took part in this study. In order for the data from TGMD-2 forms to be used for this study, three levels of inclusion criteria had to be met. The first inclusion criterion was that the student had to be enrolled in a Type 1 Licensed Early Childhood Centre as defined by the province of Prince Edward Island (Province of Prince Edward Island, 2013). This type of centre was chosen in an attempt to standardize the program in that Type 1 Centres are licensed by the province, must meet minimum standards of staff qualification and ratios of educator to students. As well, they offer full day educational programming. The second inclusion criterion was that the child had to fully complete test TGMD-2 (Test of Gross Motor Development – 2; Ulrich, 2000) tests. The TGMD–2, is a validated assessment that quantitatively assesses fundamental motor skill performance of children between the ages of three and ten years. When using the TGMD-2 assessment the children are asked to try 12 activities twice. If on any of these 24 attempts the child decides to not try an activity, the assessment is deemed incomplete and not included in the data for this study. The children were not pressured to attempt elements of the assessment if they expressed that they did not want to try an activity. The third inclusion criterion was that the child be present at the pre-test and post-test assessments. In total, 173 children performed an assessment, but only 80, ranging in age three to four, fully met the above criteria.

Research Design

A total of eight early childhood centres were randomly selected across the province of Prince Edward Island to participate in the study. Each centre comprised of approximately 20 children between the ages of three and four years of age. Upon selection, centres were randomly assigned to one of four conditions, resulting in two centres per condition. The conditions represented the different combinations of training and resources received by centres to help

administer the Active Start program, and thus acted as independent variables. The first condition was a control group where centres operated in their normal manner with no additional training or resources. Upon completion of the study, centres in the control group were provided with all elements of the Active Start program received by the other participating centres. The second condition received the Active Start PEI resources of lesson plans (Appendix C) and relevant equipment (Appendix D) to deliver the Active Start program. The lesson plans present a number of different activities that centres used to enhance the motor skill development of children. A total of 50 individual lesson plans, that the centres were to teach sequentially, were provided to centres in this condition. Centres in the third condition participated in the National Coaching Certification Program (NCCP) Fundamental Movement Skills Course (Canadian Coaches Association, 2013). This course, which was delivered to early childhood educators at the centres in this condition, is an eight hour course that teaches centre educators how to incorporate appropriate fundamental movement activities with the goal that teachers will gain the training and confidence to identify, observe, and correct these skills within their centres. The primary author, a certified master learning facilitator with the NCCP, delivered the courses to the participants. Upon completion of the course, centre educators were expected to incorporate their learning in their daily centre programming. Centres in the final condition received the Active start lesson plans, program equipment (Resources), and participate in the NCCP fundamental movement course (Training). The primary outcome variable of this study was the changes in gross motor skill scores as assessed by the Test of Gross Motor Development – 2 (Ulrich, 2000). This test measures the motor development of children between the ages of 3 and 10 years of age across two broad dimensions of locomotion and object control (Appendix E). The locomotion domain is assessed with the following six skills: running, galloping, hopping, leaping, sliding,

and a horizontal jump. Conversely, object control is assessed by stationary ball striking, stationary dribbling, catching, kicking, overhand throwing, and underhand rolling. Each skill was assessed by a trained assessor on a number of criteria across two separate trials. Following the assessment, raw scores were calculated for each child and pooled with the other scores across the condition within which their centre was assigned. Assessment of motor skill development occurred at baseline and 18 weeks. The interventions described above (i.e., providing training or resources) took place within 1 week of the baseline assessments. Once all the data was collected, scores were pooled across all participants ensuring complete confidentiality and anonymity of participant data. Continued anonymity was achieved by assigning an identification number to each participant and centre. The child's participation in this study was completely voluntary and participants or parents could decide to stop participating at any point without consequence.

Analysis of the TGMD-2 test scores included the measure of mean change in scores from pre to post-test. Differences in the dependent variable of change scores between pre and post tests were assessed using a one way ANOVA across the levels of the independent variables. Following this, a Bonferroni post-hoc analysis tested further differences between each level of the independent variable.

Creating the resources: Lesson Plan creation

The process of creating the lesson plan document started with a scan of current gross motor development lessons and games offered for children aged 3-4 years. This was done predominately through website searches of groups working with this age group and gaining permission or purchasing the rights to use the lessons and games from these organisations. This process was completed by three interns at Sport PEI over a two month period and resulted in the retrieval of a total 873 lessons and games. Next, these retrieved lessons and games were indexed

based on the 12 categories tested by the TGMD-2 assessment tool. These grouped lessons were shared with sport specific experts who were asked to evaluate the lessons that were related to their expertise. For example, the kicking lessons were assessed by Soccer PEI's technical director. The sport specific experts were then asked to rank the lessons and recommend which ones were, in their opinion, best suited to be included in the lesson plans. These experts were also asked to make any revisions to the content of these lessons if they felt it would improve the lesson. Next, using the above content, four lessons were created for each of the 12 items tested in each category that is within TGMD-2 assessment tool with the goal of the lesson plan booklet to have an equal amount of content of each skill and not be dominated by a specific skill. Two additional lessons were added that focused on a mix of different general motor skills to round out the number of lessons to 50. These 50 lessons were used to create the complete lesson plan booklet. A draft copy of the lesson plan booklet was then given to a graphics company to make the booklet appealing to use by the early childhood educators. The draft copy of the lesson booklet with graphics was then reviewed by the Province of PEI Education Department's physical education curriculum specialist for final review. After edits were made, the final lesson plan document (Appendix C) was printed and distributed to the centres in the conditions which called for the intervention of resources.

Assessments

Assessments, using the TGMD-2, for five of the centres were done on-site at their respective centres. For the other three centres, assessments took place at local gymnasiums that the children were used to going to within their regular programming. Each assessor was responsible for 3 to 5 children and assessed the 12 different skills for these children. The assessor demonstrated each skill to the children and then asked each child to try the demonstrated skill

twice. Each trial was assessed based on the TGMD-2 assessment tool. After the child's first attempt of the skill, the assessor did not coach or teach the child prior to their second attempt.

Assessor training

Prior to completing the data collection phase, training took place for all of the assessors. Assessors were shown videos of children aged 3 to 4 performing tasks similar to ones outlined by the TGMD-2. The assessors were asked to individually complete the TGMD-2 assessment tool based on what they saw in the video. After they completed the assessment of the skill shown on the video, assessors shared their results and were asked to justify their rankings. The process continued with a new video of the same skill with a different child until the majority of the assessors showed common rankings. Once consensus was achieved, the next skill was introduced via video and the process continued. This process was followed for all 12 skills tested within the TGMD-2 assessment tool. This assessor training process was led by the primary author who is a certified master learning facilitator in fundamental movement skills training.

Results

Results of the intervention are based on improvements of fundamental movement skills from pre to post-test. Although the use of change scores is not considered an appropriate analytical method by some researchers, recent research suggests that the abolition of change scores in research practice is unwarranted (Thomas & Zumbo, 2012) and in some cases change scores may be preferred over other methods such as analyses of covariance (Kisbu-Sakarya, MacKinnon, & Aiken, 2013). With this in mind, it was felt that analysis of the difference of the pre and post TGMD-2 test scores was justified.

Based on feedback from the assessors, it was decided to not include the control group data for this study. One of the centres used in this control group provided a space to assess the children that was very distracting to the children and under sized to properly complete some elements of the TGMD-2 which did not allow for fair assessment of the children's gross motor skills. This center represented 82% of the children in this control group so it was felt that the data was inappropriate and therefore not included in this analysis. Results will be presented across the three remaining conditions in our analysis.

For our analysis, we looked at the mean improvements in the children's total score gross motor development scores. When looking at the improvements in total skill scores from pre to post test, a 5.1 point improvement was found when the centre was only resourced with lesson plans and equipment, whereas a 9.7 point improvement was found when the centre was only trained and a 15.3 point improvement was found when the centre was both trained and given the resources (Figure 1).

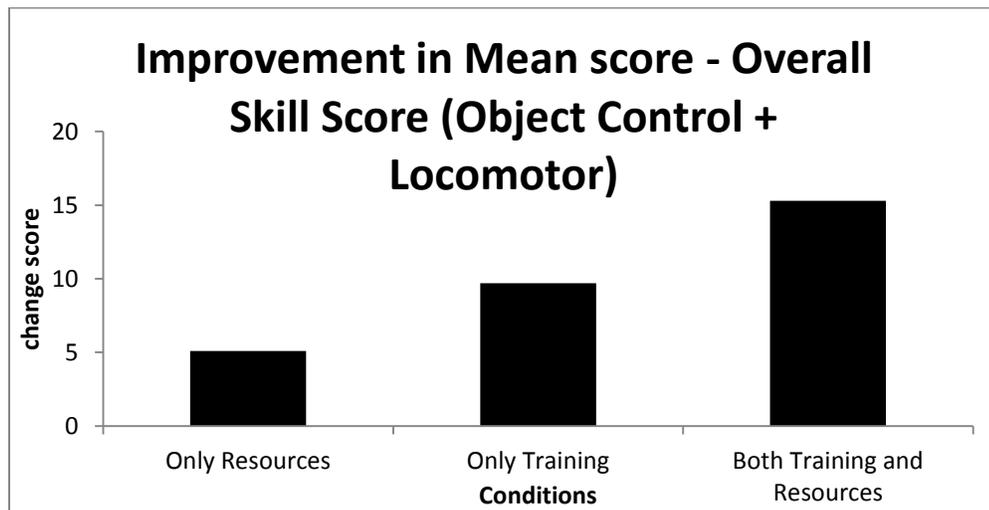


Figure 1. Change score on overall skill score by intervention type

To investigate difference scores across the three different interventions, a one-way ANOVA on the change scores tested the effects of only resourcing, only training, and combining training with resourcing. A significant main effect across intervention types was found with a $F(2,68) = 6.114, p = 0.004$. A Bonferroni post-hoc analysis revealed that resourcing produced significantly lower change scores than combining training with resourcing ($p = .003$). Differences between the other types of interventions were non-significant.

Discussion

The purpose of the present study was to develop an Active Start program capable of positively influencing the development of fundamental movement skills in children 3 to 4 years of age. In addition, our goal was to provide recommendations to government officials on how to invest in fundamental movement programs; by funding resources, or by funding training of staff in Early Learning Centres. These types of decisions are particularly important in light of the costs associated physical inactivity (Katzmarzyk, 2011). Governments are faced with the difficult challenge of allocating assets to various programs in the attempt to achieve some of the health outcomes reviewed above. Because they are a cost-effective approach (Cadilhac, et al., 2011; Roux, et al., 2008), governments, both globally and across Canada, offer programs that attempt to get individuals more physically active.

The first objective of this study was to create a standardized program of delivery of the Sport PEI Active Start program in early childhood centres. This purpose was brought to light by the reality that the majority children in Prince Edward Island do not meet physical activity guidelines (Murnaghan, 2011) and early childhood education centres have the potential to positively influence the behaviors of these children (Riethmuller, Jones, & Okely, 2012). This objective was achieved by creating a Lesson Plan document, the giving of equipment as

resources which is supported by recommendations of health authorities (National Institute for Health and Clinical Excellence, 2009), and training in teaching fundamental movement skills which has been shown to improve early childhood education quality (Sandberg, Anstett, & Wahlgren, 2007).

The second objective was to determine the Active Start's impact on the children's gross motor skill development. Across the different intervention groups (training, resourcing, training & resourcing), it was found that certain groups provided higher change score results than others. More specifically, the training and resource group was significantly higher than the group which received only resources. However, the group that received training and resources did not differ statistically than the group which received only training. This suggests that although combining training and resources may provide the optimal situation for early childhood centres, similar results may be achieved by simply providing centres with educator training. The results of the present study are preliminary and future research is needed to validate this claim.

This finding allows us to address the third objective of the study and make recommendations to government funders in regards to the value of training and resourcing early childhood educators in the context of developing gross motor skills. Based on our analysis of the data, it is recommended that when government funders are looking to support similar projects, they first look to combine resources and training. This is due to the fact that training and resources combined yielded the largest increases in change scores from pre to post-test. In addition, the combination of training and resources resulted in change scores that were significantly higher resourcing alone. However, given that financial resources may not always be available, the data suggests that providing fundamental movement skill training to centre employees is the next best option. Even though the difference in change scores between

resourcing and training were not significantly different, the resourcing group change score that were higher than the resourcing group. Further investigation of the different types of training and resources is needed to further elucidate the impact that each has on the ability to positively influence the development of fundamental motor skills in children.

In addition to further investigating the impact of different intervention types, there are a number of additional avenues for future research. This study used the overall score of the TGMD-2. As mentioned above, the instrument assesses a total of 12 skills across the two domains of locomotion and object control. It would be of interest to better understand the role of resources in training in affecting the individual skills and the two dimensions assessed by the instrument. There was also a very strong interest in being involved in this study by local early years education centres. Based on this, it would be of interest to expand the study to include a larger number of centres to obtain a clearer picture of the effects that the different types of training have on the development of skills in children. In addition, collecting information on children of different ages of a range of different backgrounds (i.e., urban/rural, males/females, high/low motor skills) would provide with a broader picture of how training affects the development of motor skills.

Although our results indicate that it is possible to positively impact the development of motor skills in youth, this study sets the stage for a program evaluations that will lead to the refinement of the Active Start program. Further discussions with the centres involved should occur to identify methods of maximizing the potential of this program. This may lead to the identification of certain skills that require more attention or the identification of additional methods of helping centres intervene with the children in their care. Regardless of the outcome

of these discussions, children within the target age will benefit from continued efforts to positively impact their development.

As per any other studies conducted in this area, the present investigation has a number of limitations that are worth noting. First, the control group data was omitted from the analysis due to the data not being collected in an acceptable environment. Therefore, our conclusions may represent normal growth experienced by children rather than true impact of the intervention. Additional studies should consider this limitation and attempt to include a true control condition. In addition, the data were collected in multiple areas, limiting the control over data collection procedures. Although the data collected occurred in an environment known to participants, it is possible that the different environments affected the participants in a certain way. Future research may wish to control the environment in which the assessments are made.

Despite these limitations, it is believed that the results from the study offer important information to practitioners and policy makers. Generally speaking, we found that it is possible to positively impact the development of motor skills of children aged 3 to 4 years and that resourcing and training provide the best approach. It is believed that if we can provide all children with access to fundamental movement skills programs, we could potentially increase the participation in physical activity in children. This is particularly important given that only 45% of children in PEI are meeting the physical activity guidelines (Murnaghan, 2011). By increasing physical activity, we may ultimately see a decrease in obesity rates within the province and reduce the economic burden of physical activity on the health care system (Janssen, 2012).

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Appendix A – Centre invitation letter



Invitation to Participate in the following Research Project:

Promoting Physical Activity in PEI Children:

Examining the Effects of Active Start Resources and Educator Training

Dear Childcare Centre,

Why we are doing this research project:

Research shows us the estimated direct, indirect and total health care costs of physical inactivity in Canada in 2009 were \$2.4 billion, \$4.3 billion and \$6.8 billion, respectively. The above findings have been disseminated to policy makers within government Health and Wellness departments across the country and these policy leaders have been tasked to fund and develop programs to tackle this physical inactivity challenge. In 2011, the PEI Department of Health and Wellness partnered with Sport PEI on a pilot project with the goal of providing every Island child aged 0-5 years the opportunity to master fundamental motor skills through participation in a high-quality, province-wide Active Start Program. The benefits of higher proficiency levels of fundamental movement skills includes higher rates of fitness, physical activity and perceived sports competency. The intended outcome of the Active Start program is to develop island children's confidence in the ability to participate in sport and recreation activities to foster a lifelong enjoyment of activity. This program was created and led by Sport PEI and is delivered by local champions at the community level such as Early Childhood Education Centres. At the core of the project are partnerships with centres such as yours in the two areas of resourcing and training. The intent of our current research project is to evaluate how well our Active Start program is supporting the gross motor development of the children you work with in your centre.

What are looking to do:

A total of 24 early childhood centres will be randomly selected across the province of Prince Edward Island to participate in the study. Each centre is comprised of approximately 25 children (or more) between the ages of 3 and 5 years of age. Participating centres will be randomly allocated to one of four groups, creating four conditions with six centres in each. The conditions represent the different type of training or resources received by centres to help administer the Active Start program. The first condition will be a control group, meaning that the centre will operate in its normal manner. The control group is important so that we can compare the other conditions to development that is already occurring. We will be experimenting with different combinations of variables in order to determine the value of resource and education interventions. The exact nature of your participation will be determined, randomly, once participating centres have been identified. Your staff may be offered some relevant

training and/or you may get some resources (e.g., lesson plans; equipment). Importantly, some centres will be asked to operate normally so that we can compare interventions to the developments that occur in this control group. **Please note: At the end of the research project (January – April 2013) – ALL centres involved in the study will receive all the training and resources that the other centres have received.**

(continued on next page...)

How you can help:

We are asking for your support in two ways:

- 1- We would like to have your centre be one of our randomly selected centres
- 2- We would like to have you help us recruit participants (the children you work with) by sending home the attached Information Letter

We will take care of the coordination of the assessment days, training days, creation of the lesson plans, distribution of the equipment and staffing of the assessment days. We will however request that you would help us with the administration of the assessment by collecting the informed consent forms and handing this into us before or on the assessment days.

What you will receive:

As a participating centre in this research study, you will receive:

- 1- An Active Start Manual with 100 x 30 minute fundamental movement skill lesson plans
- 2- All the equipment necessary to teach the above lesson plans
- 3- Training for all your staff in the NCCP Fundamental Movement Skill course (8 hours of PD credit with Dept. of Education – Early Childhood Division) free of cost
- 4- We will give you a breakdown of the gross motor development average scores from the study and your centre's averages (please note: your Centre's score will not be given to anyone else or identified in the final report)
- 5- A copy of the final report

Thanks in Advance:

We know you share our desire to help the children in your care develop their gross motor skills and their enjoyment of movement. We look forward to working with you on this project to support our Island's children's physical development to foster a lifelong enjoyment of activity!

There are no more physical risk than normal playing would involve, no physical, psychological, economic or social risks associated to with participating in this study.

(continued on next page...)

This research project has been approved by the Research Ethics Board of the University of Prince Edward Island. We can contact the UPEI Research Ethics Board at (902)566-0637, or by e-mail at lynmacdonald@upei.ca if I have any concerns about the ethical conduct of this study.

If you have any questions or concerns regarding the study, please contact:

Jamie Whynacht – Principal Investigator
University of Prince Edward Island Graduate Student and Active Start Project Manager
Sport PEI
jwhynacht@sportpei.pe.ca
368-6648

Supervisors:

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Assistant Professor
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University of Prince Edward Island
T: 902-566-6482
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Appendix B – Invitation letter to parents



LETTER OF INFORMATION

Promoting Physical Activity in PEI Children: Examining the Effects of Active Start Resources and Educator Training

The information below describes a research study and invites you to volunteer your child as a participant in the research being conducted. You are free to keep a copy of this form.

The purpose of the present study is to test how well Sport PEI's Active Start program is helping to develop children's gross motor development in PEI daycares. Our goal is to have approximately 600 children take three gross motor development tests over a 12 week period to track improvement in their gross motor development. The intended goal of the study is to provide recommendations to policy makers regarding developing gross motor skill in pre-school aged children and how daycare centres can be supported in developing these skills.

The researchers for this study are Jamie Whynacht (Graduate Student, University of Prince Edward Island and Project Manager of the Active Start Program), Dr. Blake Jolley (University of Prince Edward Island) and Dr. Dany MacDonald (University of Prince Edward Island). Participation in this research project requires that your child participate in three separate assessment days that will last between 20 and 40 minutes each. Each assessment day will be conducted on a separate occasion with 6 weeks between tests. Your child will be assessed on their Gross Motor Development by performing the following skills: running, galloping, hopping, leaping, horizontal jump, sliding, striking a ball, dribbling, catching, kicking and throwing. This will be done in a safe and fun atmosphere and led by qualified coaches and kinesiologists with your child's daycare staff in attendance. The assessment will be done in local community and school gymnasiums.

Once the tests are completed, data will be pooled across participants ensuring complete confidentiality. We will also protect participants' individual information by assigning an identification number to each participant. Once the data collection phase complete, the names of participants will be removed to allow researchers to link the different sections of the data (i.e., gross motor development scores to specific daycare centers) using identification numbers only. The anonymous data will be used for research purposes. Only aggregate results will be reported.

Your child's participation in this study is completely voluntary and you can decide to stop participating at any point without consequence. Should you decide to withdraw your child from the study at any point, information collected to that point will be removed from the study. There is no financial compensation for

participating. However, we anticipate that your child will develop their gross motor ability by participating in the Active Start program that we are studying. As well, the findings from this research will enhance the delivery of gross motor development programs in daycares in PEI.

All the information collected will remain confidential to Jamie Whynacht and his research team outlined above. Throughout the entire study, all information will be kept in a locked filing cabinet. At no point will participants' information be shared with others.

(Continued on next page)

There are no more physical risk than normal playing would involve, psychological, economic or social risks associated with participating in this study.

This research project has been approved by the Research Ethics Board of the University of Prince Edward Island. I understand that I can contact the UPEI Research Ethics Board at (902)566-0637, or by e-mail at lynmacdonald@upei.ca if I have any concerns about the ethical conduct of this study.

If you have any questions about the study, please contact:

Jamie Whynacht – Principal Investigator

University of Prince Edward Island graduate student and Active Start Project Manager

Sport PEI

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Appendix C –Active Start Lesson Plan Booklet



Appendix D – Active Start Equipment Bag



TGMD-2

Test of Gross Motor Development-Second Edition

Profile/Examiner Record Form

Section I. Identifying Information

Name _____

Sex _____

Male Female Grade _____

Referred by _____

Date of Testing _____
 Date of Birth _____
 Age _____

Reason for Referral _____
 Examiner _____
 Examiner's Title _____

Section II. Record of Scores

First Testing

	Raw	Standard	Age
	Score	Score	Equivalent Percentile
Locomotor	_____	___	___
Object Control	_____	___	___
Sum of Standard Scores	_____	___	___
Gross Motor Quotient	_____	___	___

Second Testing

	Raw	Standard	Age
	Score	Score	Equivalent Percentile
Locomotor	_____	___	___
Object Control	_____	___	___
Sum of Standard Scores	_____	___	___
Gross Motor Quotient	_____	___	___

Section III. Testing Conditions

Section V. Profile of Standard Scores

A. Place _____

	Interfering				Not
B. Noise level	1	2	3	4	5
C. Interruptions	1	2	3	4	5
D. Distractions	1	2	3	4	5
E. light	1	2	3	4	5
F. Temperature	1	2	3	4	5
G. Notes and other considerations	_____				

Section IV. Other Test Data

Name of Test	Date	Standard	TGMD-2 Equivale
_____	_____	_____	_____

Standard Scores	Locomotor	Object Control	Standard Scores	Quotients	Gross Motor Quotient	Quotients
20	.	.	20	150	.	150
19	.	.	19	145	.	145
18	.	.	18	140	.	140
17	.	.	17	135	.	135
16	.	.	16	130	.	130
15	.	.	15	125	.	125
14	.	.	14	120	.	120
13	.	.	13	115	.	115
12	.	.	12	110	.	110
11	.	.	11	105	.	105
10	.	.	10	100	.	100
9	.	.	9	95	.	95
8	.	.	8	90	.	90
7	.	.	7	85	.	85
6	.	.	6	80	.	80
5	.	.	5	75	.	75
4	.	.	4	70	.	70
3	.	.	3	65	.	65
2	.	.	2	60	.	60
1	.	.	1	55	.	55

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Section VI. Subtest Performance Record

Preferred Hand: Right Left Not Established

Preferred Hand: Right Left Not Established

Locomotor Subtest

Skill	Materials	Directions	Performance Criteria	Trial1	Trial2	Score
1. Run	60 feet of clear space, and two cones	Place two cones 50 feet apart. Make sure there is at least 8 to 10 feet of space beyond the second cone for a safe stopping distance. Tell the child to run as fast as he or she can from	1. Arms move in opposition to legs elbows bent			
			2. Brief period where both feet are off the ground			
			3. Narrow foot placement landing on heel or toe (i.e.,			
			4. Nonsupport leg bent approximately 90 degrees			
Skill Score						
2. Gallop	25 feet of clear space, and tape or two cones	Mark off a distance of 25 feet with two cones or tape. Tell the child to gallop from one cone to the other. Repeat a second trial by galloping back to the original cone.	1. Arms bent and lifted to waist level at takeoff			
			2. A step forward with the lead foot followed by a step with the trailing foot to a position			
			3. Brief period when both feet are off the floor			
			4. Maintains a rhythmic pattern for four consecutive gallops			
Skill Score						
3. Hop	A minimum of 15 feet of clear space	Tell the child to hop three times on his or her preferred foot (established before testing) and then three times on the other foot. Repeat a second trial.	1. Nonsupport leg swings forward in pendular fashion			
			2. Foot of nonsupport leg remains behind body			
			3. Arms flexed and swing forward to produce force			
			4. Takes off and lands three consecutive times on			
			5. Takes off and lands three consecutive times on non-			
Skill Score						
4. Leap	A minimum of 20 feet of clear space, a beanbag, and tape	Place a beanbag on the floor. Attach a piece of tape on the floor so it is parallel to and 10 feet away from the beanbag. Have the child stand on the tape and	1. Take off on one foot and land on the opposite foot			
			2. A period where both feet are off the ground longer than			
			3. Forward reach with the arm opposite the lead foot			
Skill Score						

Skill	Materials	Directions	Performance Criteria	Trial1	Trial 2	Score
5. Horizontal Jump	A minimum of 10 feet of clear space and tape	Mark off a starting line on the floor. Have the child start behind the line. Tell the child to jump as far as he or she can. Repeat a second trial.	1. Preparatory movement includes flexion of both			
			2. Arms extend forcefully forward and upward			
			3. Take off and land on both feet simultaneously			
			4. Arms are thrust downward during landing			
Skill Score						
6. Slide	A minimum of 25 feet of clear space, a straight line, and	Place the cones 25 feet apart on top of a line on the floor. Tell the child to slide from one cone to the other and back. Repeat a second trial.	1. Body turned sideways so shoulders are aligned with			
			2. A step sideways with lead foot followed by a slide of			
			3. A minimum of four continuous step-slide			
			4. A minimum of four continuous step-slide			
Skill Score						
Locomotor Subtest Raw Score (sum of the 6 skill scores)						

Object Control Subtest

Skill	Materials	Directions	Performance Criteria	Trial1	Trial 2	Score
1. Striking a Stationary Ball	A 4-inch lightweight ball, a plastic bat, and a batting tee	Place the ball on the batting tee at the child's belt level. Tell the child to hit the ball hard. Repeat a second trial.	1. Dominant hand grips bat above non-dominant hand			
			2. Non-preferred side of body faces the imaginary tosser			
			3. Hip and shoulder rotation during swing			
			4. Transfers body weight to front foot			
			5. Bat contacts ball			
Skill Score						
2. Stationary Dribble	An 8- to 10-inch playground ball for children ages 3 to 5; a basketball for children	Tell the child to dribble the ball four times without moving his or her feet, using one hand, and then stop by catching the ball. Repeat a second trial.	1. Contacts ball with one hand at about belt level			
			2. Pushes ball with fingertips (not a palm)			
			3. Ball contacts surface in front of or to the outside of foot			
			4. Maintains control of ball for four consecutive bounces without having to move the feet			
Skill Score						
Locomotor Subtest Raw Score (sum of the 6 skill scores)						
Skill	Materials	Directions	Performance Criteria	Trial1	Trial2	Score
3. Catch	A 4-inch plastic ball, 15 feet of clear space, and	Mark off two lines 15 feet apart. The child stands on one line and the tosser on the other. Toss the ball	1. Preparation phase where hands are in front of the body and elbows are flexed			
			2. Arms extend while reaching for the ball as it arrives			

	tape	underhand directly to the child with a slight arc aiming for his or her chest. Tell the child to catch the ball with both hands. Only count those tosses that are between the child's shoulders and belt. Repeat a second trial.	3. Ball is caught by hands only			
Skill Score						
4. Kick	An 8- to 10-inch plastic, playground or soccer ball a beanbag; 30 feet of clear space and tape	Mark off one line 30 feet away from a wall and another line 20 feet from the wall. Place the ball on top of the bean-bag on the line nearest the wall. Tell the child to stand on the other line. Tell the child to run up and kick the ball hard toward the wall. Repeat a second trial.	1. Rapid continuous approach to the ball 2. An elongated stride or leap immediately prior to ball contact 3. Non-kicking foot placed even with or slightly in back of the ball 4. Kicks ball with instep of preferred foot (shoe-laces) or toe			
Skill Score						
5. Overhand Throw	A tennis ball, a wall, tape, and 20 feet of clear space	Attach a piece of tape on the floor 20 feet from a wall. Have the child stand behind the 20-foot line facing the wall. Tell the child to throw the ball hard at the wall. Repeat a second trial.	1. Wind up is initiated with downward of hand/arm 2. Rotates hip and shoulders to a point where the non-throwing side faces the wall 3. Weight is transferred by stepping with the foot opposite the throwing hand 4. Follow-through beyond ball release diagonally across the body toward the non-preferred side			
Skill Score						
6. Underhand Roll	A tennis ball for children ages 3 to 6; a softball for children ages 7 to 10; two cones; tape; and 25 feet of clear space	Place the two cones against a wall so they are 4 feet apart. Attach a piece of tape on the floor 20 feet from the wall. Tell the child to roll the ball hard so that it goes between the cones. Repeat a second trial.	1. Preferred hand swings down and back, reaching behind the trunk while chest faces cones 2. Strides forward with foot opposite the preferred hand toward the cones 3. Bends knees to lower body 4. Releases ball close to the floor so ball does not bounce more than 4 inches high			

	Skill Score	
Object Control Subtest Raw Score (sum of the 6 skill scores)		

Appendix F – Informed consent form



PARTICIPANT INFORMED CONSENT FORM

Promoting Physical Activity in PEI Children:

Examining the Effects of Active Start Resources and Educator Training

I have read the letter of information and understand the purpose of the present research study. I have been given the opportunity to ask any questions or discuss the project with the researcher(s) and my questions/concerns have been answered to my satisfaction. I hereby give consent for my child to take part in the present study. I also understand that all of the information collected will remain confidential to the research team and that once data collection is finished the researchers will remove participants' names.. I understand that I can keep a copy of the signed and dated consent form. Finally, I realize that my child's participation in this research is voluntary and I can withdraw my child from this study at any moment and that any data collected to that point will be removed.

I give consent for my child to participate in this research project.

Child Name

Parent/Guardian Name

Signature

Date

Name of researcher or research assistant

Signature

Date

If you wish to receive a summary of the results, please check the box below and provide your contact information.

Yes, I would like to receive a summary of the results

Send at the following address: _____

Or e-mail address: _____

This research project has been approved by the Research Ethics Board of the University of Prince Edward Island. I understand that I can contact the UPEI Research Ethics Board at (902)566-0637, or by e-mail at lynmacdonald@upei.ca if I have any concerns about the ethical conduct of this study.

If you have any questions about the study, please contact:

Jamie Whynacht – Principal Investigator

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