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Impact of Developmental Games on Balance Abilities of Basic School Children in Cape Coast Metropolis, Central Region, Ghana

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Abstract

The purpose of this study was to examine the impact of some selected traditional developmental games on balance abilities of children aged 10 to 12 years in the Cape Coast Metropolis of the Central Region of Ghana. Using a quasi-experimental design, 30 school children, comprising of 15 boys and 15 girls, aged 10, 11, and 12 years were randomly selected for the study. The school children participated in a 12-week motor skills intervention program designed for this study. Balance was measured among the school children at baseline (pretest), after four weeks (posttest 1), then eight weeks (posttest 2), and 12 weeks (posttest 3) using BOT-2 battery test (Bruininks and Bruininks, 2005), which takes 15 to 20 min to administer. Two hypotheses were tested using repeated measure ANOVA, with gender as interaction variable. Using Bonferroni post-hoc analysis, the results indicated a significant difference in balance improvement between the Pre-Test (M = 7.33, SD = 0.66) and Post-Test 1 (M = 8.57, SD = 0.68), Post-Test 2 (M = 8.70, SD = 0.59) and Post-Test 3 (M = 8.83, SD = 0.50) scores. However, there was no significant gender interaction effect on balance after the intervention program (5, 84) = 1.79, p = 0.174, Pillai's Trace = 0.171, partial η^2_p = 0.171]. Based on the results obtained, it was concluded that , developmental games could be effective tools for improving balance among children aged 10-12 years, especially if they are given about three months interval to practice. Thus, using these available games can reduce source challenge in teaching and learning of PE and help improve sports in the country.

Keywords: *Developmental Games, Balance, School Children, 12-week Practice*

1. Introduction

Motor skill development is critical for both movement and sports performance, and acquisition of these skills at early life is most important. The motor skills refer to both fundamental movement and basic sports skills (Graham, 2007). Motor skills are deliberate and controlled movements requiring both muscle development and maturation of the central nervous system. Also, the skeletal system needs to be strong enough to maintain the movement and weight involved in any new activity and once these conditions are met, children are able to learn new physical skills by practicing them until each skill is mastered (Faure and Richardson, 2011).

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The development of motor skills is important for daily living, and is a process that involves both inherent abilities and considerable practice during childhood and adolescence. Self-selected, unplanned play and structured movement instruction are important for acquiring motor skill abilities. Without this formalized learning, movement performance and improvement are really left to chance. However, Smith and O'Keefe (2001) observed that even some professional educators assume that such essential skills will emerge automatically. Accordingly, motor skills development demands that young children learn and practice these skills until they can proficiently participate in a variety of games and sports. Evidence shows that when teaching interventions are applied for the learning of fundamental motor skills, children four to six years are able to achieve full proficiency (Smith and O'Keefe, 2001).

Movement skills can be categorized into four levels of developmental hierarchy. Level one, is made up of the rudimentary skills of sitting, crawling, creeping, standing and walking. Level two, consists of fundamental motor skills which emerge from birth to the end of about six or seven years of age. Level three represents loco-motor skills such as running, jumping, hopping, galloping, skipping, and object control skills like throwing, catching, striking, kicking, and dribbling. These fundamental motor skills provide the foundation for the learning of other more specialized and complex movement skills. Level four is at the top of the hierarchy; these are referred to as ontogenic (development of an individual) skills, and specific to the needs and interests of a particular person (Burton, 2002). Thus, fundamental motor skills include balance, coordination and agility, which are the foundations of any physical literacy development.

Balance is the ability of an individual to maintain his or her equilibrium in relation to the force of gravity, whether the body is in a static posture or performing a dynamic activity. It also includes the ability to make very small alterations in the body when placed in various positions. To be able to achieve balance, the line of gravity that passes through the centre of gravity must also lie within the base of support. If this line falls outside the base of support, a person cannot maintain balance and will fall unless compensatory movements are made (Gallahue and Donnelly, 2003). Balance involves motor control skills that are required for the maintenance of posture whilst standing, walking or other common tasks such as reaching for an object on a shelf (Bruininks and Bruininks, 2005). The skill is regarded as a complex part of a person's motor fitness that is affected by vision; the inner ear; the cerebellum; the proprioceptors (nerve endings) in muscles, joints and tendons; and the skeletal muscles (Gallahue and Donnelly, 2003). Balance can be static (stationary) or dynamic movement which can be influenced by factors such as the trunk stability, movement or stasis and the use of visual cues (Bruininks and Bruininks, 2005).

Static balance is the ability to maintain equilibrium in a fixed position like when standing on one foot or balancing on a balance board. Dynamic balance is the ability to maintain equilibrium while the body is moving such as walking on a balance beam or jumping on a trampoline. It is evident that all movements involve an element of balance, whether static or dynamic. Therefore, it is critical that children develop balance ability from an early age (Gallahue and Donnelly, 2003). Static balance involves maintaining equilibrium while the centre of gravity remains stationary. Children can develop static balance by activities like pull to standing position, stand without handholds, stand alone, balance on a foot 3 to 5 sec, support body in basic 3-point inverted position (10 months to 6 years aged children). Moreover, dynamic balance involves maintaining equilibrium as the centre of gravity shifts, and it can be developed with activities like walks 2.54 cm straight line, walk on low balance beam, stand on low balance beam, walk on 10.16 cm wide beam for short distance for 2 years to 4 years aged children.

Balance is regarded as one of the performance-related components of physical fitness, others include coordination, agility, the speed of movement and power. Children who skillfully perform several activities such as bicycling, swimming, throwing catching and climbing are regarded as possessing good skill-related fitness. Thus, activities promoting balance skills should be addressed first in developmentally based PE programs (Gallahue and Donnelly, 2003). This is due to the importance of developing movement control such as balance, coordination and agility, before developing force production for speed and power. Common evaluation measures of balance as a performance-related fitness component include a beam walk (dynamic) and the stick balance or one-foot stand (static). It is reported that these balance measures show year-by-year improvements with an increase in age. However, growth differentials occur as children age. For instance, from age of eight-years-old, girls often outperform boys, especially during dynamic balance activities. However, after the age of eight, balance abilities appear to be similar between girls and boys (Gallahue and Donnelly, 2003).

The ability to maintain balance, also known as equilibrium, is dependent on the vestibular system. The vestibular system is the sensory system considered to have the most important influence on the other sensory systems and on the ability to function in everyday life (Cheatum and Hammond, 2000). Tober and Pollak (2005) posit that balance and bilateral coordination are regarded as very important motor skills that may play a role in the home—and school environment. Proficiency in these skills may also influence school children's participation in physical activity including sports. In comparing the motor proficiency of nine year-old children raised in orphanages before being adopted with

their peers raised by their birth family, Tober and Pollak, indicated that the children from a previously disadvantaged background presented delayed balance and bilateral coordination, and that, these delays persisted over time. Therefore, one might expect to find similar delays in other children from previously disadvantaged schools and—backgrounds (Roeber et al. 2012). Roeber *et al.* (2012) also argued that children from disadvantaged backgrounds do not simply benefit from environment enrichment, and that, this is not beneficial for the correction of delays in motor skills. Roeber *et al.* (2012) further noted that previously disadvantaged children may benefit from early identification as well as a specific and targeted intervention program. Thus, balance and bilateral coordination were chosen as the focus of the motor skills development program designed for the current study.

Children do not develop motor skills naturally through innate maturational processes. They rather learn, practice and reinforce them from their early ages (De Jager, 2009). The teaching of Physical Education (PE) at the basic level of education requires the use of equipment and materials. Gerber *et al.* (2010) observed that availability of learning materials in schools are very important in executing successfully programmed activities. Furthermore, Pienaar (2009) believes learning takes place better when learners are fully involved in the process through the use of proper variety of instructional materials in teaching. In Ghana reports by the Curriculum Research Development Division (CRDD) and Ghana Education Service (GES) Inspectorate Division (2008) revealed that most teachers at the basic school level do not teach PE. In 2015, the GES Inspectorate Division confirmed that the problem of non-teaching of PE still persisted in schools (G.E.S., 2015).

Several reasons including unavailability of equipment and materials have been mentioned by teachers as factors for actively teaching of PE at the lower levels of education. Evidence (Pate *et al.*, 2000) confirmed that it might be impossible to achieve satisfactory results from teaching students with training facilities and equipment that are inadequate or sub-standard. Furthermore, Bunker (2001) noted that the lack of instructional materials for participation is a significant problem in the education system especially at the basic level. This calls critical motor skill interventions. Fortunately, research indicates that motor skill interventions are found to be effective in the improvement of motor skills in children. Thus, a call is made, (Logan *et al.*, 2011), for a need for research to understand the effectiveness of motor skill interventions, more specifically to determine the overall effect of motor skill intervention programs on the improvement of motor skill competence in children. This is a challenge to PE teachers in countries such as Ghana, who are confronted with the problem of inadequate resources to teach children. Altinkök (2016) emphasized that it is when original materials are not available for use in teaching and learning that other types and forms of instructions can be applied. Unfortunately, PE teachers in Ghana, especially at the basic school level, are faced with the challenge of limited equipment, facilities and materials in teaching the subject. Fortunately, evidence from countries like Israel, Nigeria, Kenya, and South Africa, with similar challenges, indicated that they have adopted locally designed appropriate motor skill developmental programs which require minimal equipment or materials to augment their inadequate resources (De Jager, 2009; Altinkök, 2016). Accordingly, these countries used their very local childhood games to teach and help improve upon the various fundamental motor skills.

Research findings appear to suggest that the development of a motor skill like balance is on the decline due to several factors including decline in accidental play among children, increase in television watching and extra classes (Ogah, 2010). Recent findings by Bortsie *et al*. (2018), further attest that the attitude of parents not encouraging their children to engage in meaningful physical activities towards motor development compared with television viewing is on the ascendancy in Ghana. The trend, if not checked, might be detrimental to the holistic development of children in the country. Frimpong (2016), contends that the lack of well programmed routine physical exercises by individuals in the country is contributing to an upsurge of preventable diseases among Ghanaians including children. The purpose of this study therefore was to examine the impact of some selected developmental games on the development of balance as a motor skill among male and female basic school children aged between the ages of 10 and 12 years in the Cape Coast Metropolis of the Central Region, Ghana. We assumed that the children between 10 to 12 years will significantly improve in their balance abilities after participating in selected developmental games for 12 weeks, and that there will be significant gender interaction effect on the improvement of balance skill levels among school the children 10 to 12 years after participating in the selected developmental games for 12 weeks.

2. Method

This study adopted a quasi-experimental approach involving pre-test, post-tests control group design. A quasi-experimental design was accordingly used for the study given that the research population already belonged to existing groups (Baumgartner *et al*., 2002) in the form of Primary 5 classes. Of the five basic schools in the metropolis, three were classified as disadvantaged schools located in a low economic area. Therefore, we purposively selected the three and

randomly sampled only one for the study. Furthermore, we purposively sampled primary five pupils in the selected school. This class consisted of 42 children within the target age group of 10 -12 years (Baumgartner *et al*., 2002).

We recruited children (N-30) between the ages of 10 and 12 years. They were assigned to the experimental group consisting of (15 girls and 15 boys). This number was determined because the children spend about seven hours in school which allowed for testing all the participants within a day, after every four weeks of intervention. Random sampling was used to select five boys and five girls from primary five for each of the age groups, 10, 11, and 12 years into strata. The researchers selected this sample size to meet the demands of the test battery Bruininks-Oseretsky Test of Motor Proficiency-2 [BOT-2] (Bruininks and Bruininks, 2005), which takes 15- 20 min to test each participant.

3. Intervention Activities

The selected children received lorry tyre jumping activities (balance) for 12 weeks during 30 min sections, twice in a week. The entire intervention program involved 12 weeks starting from January to March. Prior to each day's training, participants went through warm-up activities, involving general running exercises and dynamic stretching activities for 10 min.

Lorry Tyre Games (Balance): Children were in six groups of five (5), one behind the other, in a file. The tyres were placed flat in front of each group for participants to perform jumping activities into the holes of the tyres. After describing and demonstrating how the activities were to be performed, each participant went through the jumping exercises while maintaining balance. Children, in-turns, jumped into the hole within the tyre and jumped out landing in front, and joined the colleagues from behind to have other trials. Children performed varieties of the jumping activities using the lorry tyres. Other tyres were added to have continuous jumping into two or three tyres before joining the queue to have further trials. To end each day's activity, participants competed between the groups using tyre jumping activities to declare the winner for the day. This varying interventional activity was undertaken for 30 min twice a week for 12 weeks.

4. Data Collection

Ethical clearance was sought from University of Cape Coast, Ethical Review Board. With an Introductory letter from the Department of Health, Physical Education and Recreation, UCC, permission was also sought from the Metro Education Service and the Head of the school to conduct the study. Informed consent was sought from the Head and the parents. Pupils' levels of balance, coordination and agility were assessed with BOT battery test using one group pretest-posttest design.

The group participated in the 12-week motor skills development program designed for this study. By comparing the pre-test to the post-test results of the group's motor skill performance, the effects of the motor skills development program were observed (Torgerson and Torgerson, 2008).

Boys and girls between the ages of 10 and 12 years from the selected school were included in this study. Any child with an obvious disability or physical injury, who could not participate in the motor proficiency test, was excluded from this study. The conduction of the motor proficiency test battery and the implementation of the self-designed motor skills development program took place in the facilities provided by the school involved in this study.

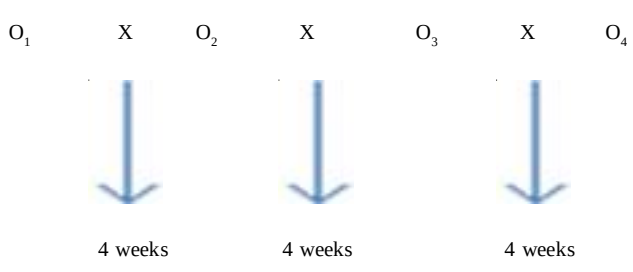

Figure 1: Weeks Intervention Design With Four Tests, i.e., One Pre-test and Three Post-tests (O_1 Represents the Pre-test and O_2, O_3 and O_4 Represent Post-tests. X Represents the Intervention).

5. Results

To investigate the change in the skill of balance after the 12 weeks, we applied the repeated measure ANOVA to the data, which was collected at four times in four weeks interval, including the base-line. The data is displayed in Table 1. Test of Sphericity shows a violation of Mauchly's Test of Sphericity, χ^2 (5) = 11.64, p = 0.040, an indication that the variance in the tests is not equal, therefore, Huyhn-Feldt test was used. The results showed a significant difference over time, F (3) = 117.25, p = 0.001, η^2_p = 0.80. With a large magnitude of differences (effect size), Bonferroni post-hoc analysis revealed a significant difference in balance abilities between the Pre-Test (M = 7.33, SD = 0.66) and Post-Test 1 (M = 8.57, SD = 0.68), Post-Test 2 (M = 8.70, SD = 0.59) and Post-Test 3 (M = 8.83, SD = 0.50). Hence, the intervention which is comprised of a traditional developmental game called Lorry Tyre Game could be an effective tool for improving balance among children between 10 and 12 years after they gone through for 12 weeks.

Table 1: Repeated ANOVA Test Results of Balance Among Children Aged Between 10-12 Years

Variables	*N*	*M*	*SD*	*F*	χ^2	*Df*	*Sig.*	η^2_p
Mauchly's Test					11.64	5	.040	
Huyhn-Feldt				117.25		3	0.001	0.80
Pre-Test	30	7.33*^@	0.66					
Post-Test 1	30	8.57*	0.68					
Post-Test 2	30	8.70^	0.59					
Post-Test 3	30	8.83@	0.50					

Note: N = 30, df = 3, 26

Further repeated factorial ANOVA analysis indicated a non-significant gender interaction effect on the improvement in balance, F (3) = 1.16, p = 0.33, η^2_p = 0.040, after the children had been taken through the 12-week developmental games. Though the test of sphericity showed a violation of Mauchly's Test of Sphericity, χ^2 (5) = 12.977, p = 0.024), we used a corrected test of Huyhn-Feldt, which also revealed a non-significant gender*balance interaction result, F (5, 84) = 1.79, p = 0.174, Pillai's Trace = 0.171, partial η^2_p = 0.171. Therefore, though children age 10-12 will improve in their balance, this improvement is not dependent on whether they are boys or girls.

6. Discussion

The finding indicated that participation in 12-week developmental games can improve balance significantly among children between 10 and 12 years. This improvement in balance is markedly seen in the fourth week which is sustained throughout the 12 weeks. This is evidence that the developmental games (tyre game) can be effective in improving the balance ability of children between ages 10 to 12 years. It must be noted that the developmental games used in this study were physical activity related games, and thus, not surprising that these developmental games improved the development of balance ability among the children. This may infer that children who are physically active have better balancing skills than children whose activity levels are low (Burgi *et al*., 2011; Stodden *et al*., 2008; Vandorpe *et al*., 2012).

Similar to the finding of our study, Gupta *et al*. (2011) found that even children (7 to 15 years) with Down's syndrome showed great improvement in balance after they were taken through 12 weeks of physical activity training program. Moreover, the current findings support that of Graft *et al*. (2012) who employed a specific intervention program aimed at increasing students' fundamental movement skills in Finnish Junior High School PE. Graft *et al*. found that balance and locomotor skills were significantly enhanced. Despite the similarities in results, the current study used healthy children aged 10-12 years whereas Gupta and colleagues studied children with disability. The similarities in the findings of these studies could be attributed to the common intervention, that is, the physical activity program, in which all the children were made to participate in. Therefore, irrespective of the health status and the gender of the children, once an adequate physical activity program is designed and given to the children, improvement in balance will be achieved.

We also observed a maintenance of balance improvement as the number of developmental games increased and the children kept practicing the activities through-out the 12 weeks. It is arguable to assume that the consistent improvement

in balance ability in response to the increase in developmental games was a function of maturation and familiarization of the children to the intervention program (Okely and Booth, 2004; Ward *et al*., 2010). In other words, these children are likely to develop physiologically and increase their ability to perform certain physical activities. However, the consistency and maintenance of improvement gained from pre-test to post-test one (1) through to post-test three (3) is indicative of the role of the physical activity intervention in increasing balance in the children over time. Perhaps, others studies have revealed a bidirectional relationship between physical activity and balancing skills (Burgi *et al*., 2011; Eliakim *et al*., 2007), suggesting that as children attain some level of improvement in balancing skills on first developmental games, performing the subsequent developmental games becomes easy, and that aids proficiency. Furthermore, once a child is exposed to a local developmental game, performance on similar games latter would be better since equipment for these games are locally available. This could also account for the consistent improvement in performance seen in the current study. Therefore, introducing the children to these games early becomes vital to ensuring their development and uptake of many physical activity skills enough for life and sports participation. It is, however, important that PE teachers design and redesign these locally existing games with emphasis on developing specific components of motors skills of the children.

The development of motor skills with games could also be affected by the developmental stage of the children. Donath *et al*. (2014) assessed the improvement of motor skill development among 4-6 years preschool children using card-based KIDZ-box activity for seven months. In their study, the activity was not found to be effective in improving balance of preschool children. Although the card-based activity comprised three different activities just like the three different developmental activities used in this study, the results were different. Even though it has been established that repeated and/or long exposure of physical activity related programs to children significantly improve their balance ability, this was not the case in Donath *et al*.'s study. The discrepancies might be attributed to the fact that whereas this study used children between 10-12 years, 4-6 year old children were used in Donath et al.'s study. In another study that used KIDZ-box activities, Ehmig *et al*. (2009) did not find a significant improvement in balance ability among children in Switzerland. Further investigations by Ehmig *et al*. (2009) discovered that majority of KIDZ-Box activities are not meant for improving balancing skills in children. Contrasting the studies by Donath *et al*. (2014) and Ehmig *et al*. (2009) with the current one, some evidence can be gathered that indeed the developmental games used in this study improved the skills of balance among the children, and that such games must be active enough to illicit the desired effects in the children. However, the previous studies failed to reveal the gender variations in the level of the gains made by children. This presupposes that the male and female children do not necessary develop their motor skills at difference levels.

The implications of this finding are to the children, the teaching of the subject PE and the general development of skills for appropriate enjoyment in physical activity and play, PE education and sports participation promotion in Ghana. The development and improvement in the skill of balance is foundational and essential to most other motor movements, and that the earlier children pick it, the better (Gupta *et al*., 2011). In addition, many of the children grow out from the areas where these developmental games are part of the integration process, and that, in the sphere of the limited resources, these developmental games could be an important means to developing the skill of balance in these children. Moreover, teaching and learning of the PE subject becomes locally-based when such already known and culturally accepted movement games or plays are used in the development of the essential motor skills in the children.

7. Conclusion

The aim of the study was to examine the impact of some selected developmental games on the development of balance as a motor skill among male and female basic school children aged between the ages of 10 and 12 years in the Cape Coast Metropolis of the Central Region, Ghana. We observed that children from less endowed schools would improve the motor skills like balance with appropriately designed developmental games. Moreover, the games will improve the fundamental balance skill of the children if they are taking through for considerable number of weeks such as 12 weeks. In specific term, the skill of balance will improve when these children are given about 12 weeks to practice these developmental games. However, the games need to be designed and children taken through if the skill of balance is to be acquired properly, and that, boys and girls will develop the skill of balance at the same rate if they go through 12 weeks of training using developmental games, thus, there would be need to for separate special gender designed programs for the children.

References

Altinkök, M. (2016). The Effects of Coordination and Movement Education on Preschool Children's Basic Motor Skills Improvement. *Universal Journal of Educational Research*, 4(5), 1050-1058.

Baumgartner, T., Strong, C. and Henley, L. (2002). *Conducting And Reading Research in Health and Human Performance.* New York, NY: McGraw-Hill.

Bortsie, A.S., Sorkpor, R.S. and Ampiah, J. (2018). Comparison Between Residential and Non-Residential Soccer Players Physical Fitness. *International Journal of Scientific Research and Management*, 6(07), 41-52.

Bruininks, R.H. and Bruininks, B.D. (2005). *BOT-2 Bruininks-Oseretsky Test of Motor Proficiency Manual* (2nd ed.). Minneapolis, MN: NCS Pearson.

Bunker, L.K. (2001). ElemeNtary Physical Education and Youth Sport. *Journal Physical Education and Recreation*, 52(2), 26-28.

Burgi, F., Meyer, U., Granacher, U., Schindler, C., Marques-Vidal, P., Kriemler, S. and Puder, J.J. (2011). Relationship of Physical Activity With Motor Skills, Aerobic Fitness And Body Fat in Preschool Children: A Cross-Sectional and Longitudinal Study (Ballabeina). *Int. J. Obes. Lond.*, 35, 937-944.

Burton, A. W. (2002). The development of movement skills. Early Report, 19, 2.

Cheatum, B. A. and Hammond, A. A. (2000). Physical activities for improving childrens behaviour: A guide to sensory motor development Champaign, IL: Human Kinetics.

Curriculum Research Development Division. (2008). *Ghana Education Reform.* Accra: Black Mask Ltd.

De Jager, M. (2009). *Baby Gym: Brain and Body Gym for Babies.* Welgemoed, CPT: Metz Press.

Eliakim, A., Nemet, D., Balakirski, Y. and Epstein, Y. (2007). The Effects of Nutritional-Physical Activity School-Based Intervention on Fatness and Fitness in Preschool Children. *J. Pediatr. Endocrinol. Metab.*, 20, 711-718.

Ehmig, S., Dunkel, A. and Lenares, J. (2009). *Evaluation des Modulprojekts KIDZ-box im Kanton Zug.* Lugano, Switzerland: Health Promotion Switzerland.

Faure, M. and Richardson, A. (2011). Baby Sense: Understanding Your Baby's Sensory World – The Key to a Contented Child. Welgemoed, CPT: Metz Press.

Frimpong, M. (2016). *Dealing With Preventable Diseases.* Paper Presented at the National Conference of Doctors at in Accra. July 16-17, 2016.

Graham, G. (2007). Motor skill acquisition- An essential goal of physical education programs. Journal Physical Education Recreation and Dance, 58(7), 44-48.

Gallahue, D. L. and Donnely, F.C. (2003). Developmental physical education for all children (4th ed.). Champaign, IL: Human Kinetics.

Gerber, R.J., Wilks, T. and Erdie-Lalena, C. (2010). Developmental Milestones: Motor Development. *Pediatrics in Review*, 31, 267-277.

Ghana Education Service, Inspectorate Division. (2008). *Ghana Education Reform.* Accra: Black Mask Ltd.

Ghana Education Service. (2015). *Ghana Education Reform.* Accra: Black Mask Ltd.

Graft, C., Koch, B., Kretschmann-Kandel, E., Falkowski, G., Christ, H., Coburger, S… and Dordel, S. (2012). Correlation Between Bmi, Leisure Habits and Motor Abilities in Childhood. *International Journal of Obesity*, 28, 22-26.

Gupta, S., Bhamini, K. R. and Kumaran, S. D. (2011). Effect Of Strength and Balance Training in Children With Down's Syndrome: A Randomized Controlled Trial. *Clinical Rehabilitation*, 25, 425-432.

Logan, S.W., Robinson, L.E., Wilson, A.E. and Lucas, W.A. (2011). Getting the Fundamentals of Movement: A Meta-Analysis of the Effectiveness of Motor Skill Interventions in Children. *Child: Care, Health and Development*, 38(3), 305-315.

Ogah, J.K. (2010). Developing and Promoting Active Lifestyles for Healthy Living and National Development. *West Africa Journal of Physical & Health Education*, 14, 47-70.

Okely, A. D. and Booth, M. L. (2004). Mastery of Fundamental Movement Skills Among Children in New South Wales: Prevalence and Sociodemographic Distribution. *J. Sci. Med. Sport*, 7, 358-372.

Pate, R.R., Trost, S.G., Levin, S. and Dowda, M. (2000). Sports Participation and Health Related Behaviors Among U.S. Youth. *Archives of Pediatrics & Adolescent Medicine*, 154, 904-911.

Pienaar, A. E. (2009). Kinderkinetics: An investment in the total well-being of children. South African Journal for Research in Sport Physical Education and Recreation, 31(1), 49-67.

Roeber, B. J., Tober, C. L., Bolt, D. M. and Pollak, S. D. (2012). Gross motor development in children adopted. Human Movement Science, 18, 202-211.

Smith, P.J. and O'keefe, S. (2001). Fundamental motor skill development. The Irish scientist year book. Retrieved June 30, 2006 from the World Wide Web: http://www.irishscientist.ie/p187ahtm

Stodden, D.E., Goodway, J.D. Langendorfer, S.A., Roberton, M.A., Rudisill, M.E. and Garcia, C. (2008). A Developmental Perspective on the Role of Motor Skill Competence in Physical Activity: An Emergent Relationship. *Quest*, 60, 290-306.

Tober, C.L. and Pollak, S.D. (2005). Motor development of post institutionalized children across time. In: Biennial meeting of the Society for Research in Child Development, Atlanta, GA.

Torgerson, D.J. and Torgerson, C. (2008). Designing randomised trials in health, education and the social sciences: An introduction. Basingstoke, HA: Palgrave Macmillan.

Vandorpe, B., Vandendriessche, J., Vaeyens, R., Pion, J., Matthys, S., Lefevre, J., Philippaerts, R. and Lenoir, M. (2012). Relationship Between Sports Participation and the Level of Motor Coordination in Childhood: A Longitudinal Approach. *J. Sci. Med. Sport*, 15, 220-225.

Ward, D.S., Vaughn, A., McWilliams, C. and Hales, D. (2010). Interventions For Increasing Physical Activity at Child Care. *Med. Sci. Sports Exerc.*, 42, 526-534.

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