

**EFFECT OF A PEER-TUTOR PROGRAMME ON SOCIAL,
PSYCHOMOTOR AND PHYSICAL FITNESS OF YOUTH WITH
AND WITHOUT INTELLECTUAL DISABILITY IN NAIROBI
COUNTY, KENYA**

BY

**PETER WISIUBA BUKHALA (MA)
H871065307**

**A THESIS SUBMITTED IN FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY IN THE SCHOOL OF APPLIED
HUMAN SCIENCES OF KENYATTA UNIVERSITY**

JUNE 2012

DECLARATION

This thesis is my original work and has not been presented for a Degree in any other University.

Signature _____ Date _____

Peter Wisiuba Bukhala

Department of Physical and Health Education

SUPERVISORS' APPROVAL

This Thesis has been submitted for review with our approval as University Supervisors:

Signature _____ Date _____

Vincent Onywera PhD

Senior Lecturer

Department of Recreation Management and Exercise Science

Kenyatta University,

Kenya

Signature  _____ Date _____

Professor Elizabeth Bressan, PhD

Department of Sport Science

University of Stellenbosch

South Africa

DEDICATION

This far I have come I dedicate to God who strengthened me even when all looked lost. This work is also dedicated to you Musanga, Sham and my wife Susan for your patience during these years. Camp Shriver Athletes, Partners, Parents and Volunteers I salute you all for your friendship and support.

ACKNOWLEDGEMENT

I am indebted to all those who contributed towards the realization of this thesis. My sincere appreciation goes to all my family members who encouraged me to go on even when things looked so tough. Their support and companionship is highly appreciated. I am particularly grateful to my supervisors for their constructive, scholarly guidance and devotion to get this work done. To Professor Elizabeth Bressan, thank you for exposing me to the state of the art programmes at Stellenbosch, South Africa. To Dr. Vincent Onywera whom we reversed roles, thank you for teaching me many things that I now know. I will always be grateful to all of you.

Thank you Special Olympics Inc. for the training opportunity you provided to me as a Eunice Kennedy Shriver Fellow (2009), Special Olympics New Jersey and the Centre for Social Development in Education at University of Massachusetts – Boston for practical exposure and financial support towards the research project. I am also grateful to the University of Manitoba for financial assistance towards my studies. In addition, I was overwhelmed by the supports I received from volunteers, parents and athletes who enrolled in the research programme and have continued to participate in the Camp Shriver programme at Kenyatta University.

Lastly but not least, I acknowledge my colleagues in the department who have been real team players in this game. Their critical evaluation of the research work from time to time helped to shape the final document.

ABSTRACT

The positive impact of peer tutoring on student learning is supported by research. However, specific methods on how peer-tutoring works have inconclusively been studied. The present study was designed to further investigate further the effectiveness of using trained peer tutors in enhancing the physical activity participation level of youth with and without intellectual disabilities in Nairobi, Kenya. The study involved 106 youths with and without intellectual disabilities in equal number to participate in the unified programme. Thirty two trained research assistants served as cross-peer tutors. Peer tutors were trained for four days in specific physical activities and motor abilities and also other aspects of teaching methodologies. These included: cueing, prompting, reinforcement, observation and writing individualized Education Programming for learners with disabilities. Data was collected through questionnaires, observation checklists and a physical fitness test protocol. Data collected using the instruments were analyzed using both t-test and Analysis of Variance (ANOVA) to investigate the effects of the peer tutoring programme on participants' achievement levels. A significant improvement was noted in motor performance for both participants with and without disabilities. Specifically, there was a marked improvement in both the left handgrip ($t(196)=-.979<0.05$), right handgrip ($t(196) = -2.798<0.05$) kicking ($t(196)=2.743<0.05$) and right leg balance($t(196) =-3.067<0.05$) activities. These were presented in Tables, figures, bar graphs and pie chart. No significant changes were recorded in the physical fitness measures except for the waist to hip ratio which recorded a significant mean change for all participants($t(132)=2.743<0.001$) male participants ($t(62)=2.139<0.036$) and females ($t(62)=2.139<0.036$). However, linear regression analysis indicated a positive trend for most of the physical fitness parameters evaluated in this study. Both peer tutors and parents' views were analysed qualitatively and reported as themes. In both cases, the peer tutors and parents had positive responses about the peer-tutor programme. Peer tutors felt that they had gained experience working with persons with disabilities; they had learned new coaching methods and improved their personal lives by influencing change in other peoples' lives. Peer tutors also reported a change in the participants' skill level and social development. Parents interviewed also reported a positive change in their children. From the findings of this study, it was recommended that guidelines on the use of peer tutors should be provided to adapted PE teachers to encourage the use of such support groups in the classroom where learners with disabilities are enrolled. Further investigations to understand the extent to which peer tutoring programmes could be transferred to other settings such as playground, lunch time and after school programmes was needed.

LIST OF APPENDICES

Appendix 1: A Peer Tutor Survey questionnaire for Peer tutors participating in the peer tutor directed programme.....	115
Appendix 2: Parents Questionnaire.....	119
Appendix 3: Kenya Institute of Special Education Assessment Form.....	122
Appendix 4: Consent Form	123
Appendix 5: EUROFIT Protocol form	127
Appendix 6: Ethical Approval letter	129
Appendix 7: Letter of invitation of athletes	131
Appendix 8: Code of Conduct form	132
Appendix 9: WHO (2011) BMI percentile rank charts for girls.....	134
Appendix 10: WHO (2011) BMI percentile rank charts for boys.....	135

LIST OF TABLES

Table 1: Enrolment in Special Schools by Type of Impairment, 2003 and 2007.....	5
Table 2: Number of registered athletes in Special Olympics clubs in Nairobi County.....	43
Table 3: Total number of Participants by Gender.....	56
Table 4: Age Categories by Gender.....	57
Table 5: Mean scores for pre/posttest anthropometric measures for all Participants.....	59
Table 6: Mean scores for pre/posttest measures for motor skill Abilities for all participants.....	59
Table 7: BMI percentiles for female athletes and partners by age categories.....	64
Table 8: BMI percentiles for Male athletes and partners by age categories.....	65
Table 9: One-Way ANOVA for mean waist circumference scores for athletes and Partners.....	67
Table 10: Pretest – posttest means for waist/hip ratio for athletes and partners...	68
Table 11: Description of mean skin fold scores for participants by Status, gender and age category	70
Table 12: Pre – Posttest Means for Athletes and Partners on Selected significant Motor Abilities.....	70
Table 13: Motor skill performance of male participants	71
Table 14: Motor skill performance of female participants.....	72
Table 15: Motor skill performance of partners.....	73
Table 16: Motor skill performance for all athletes	74
Table 17: Motor performance measures by age categories 8-12 yrs.....	75

Table 18: Anthropometric measures by age categories 13-19yrs.....	75
Table 19: Motor skill performance measures by gender Boys 8-12yrs.....	76
Table 20: Motor skill performance measures by gender Girls 8-12yrs.....	76
Table 21: Distribution of peer tutors by Gender.....	77
Table 22: Year of study at the University	78
Table 23: Programme of Study.....	78
Table 24: Prior Training or Academic Background Working with Individuals with Disabilities.....	79
Table 25: Prior Contact with Individuals with Disabilities.....	80
Table 26: Prior Experience with Individuals with Disabilities.....	84
Table 27: Participant Interactions as Observed by Peer Tutors	82
Table 28: How much improvement did you notice in most of the participants in the following areas?.....	83
Table 29: What have you learned about working with individuals with ID Experiences with participants?.....	84
Table 30: How have you personally benefitted from serving as a coach.....	85
Table 31: Type of employment of parents of athletes and partners.....	87
Table 32: Parents initial and later views about allowing their children to participate in an integrated programme.....	88

LIST OF FIGURES

Figure 1: Diagrammatic Presentation of the Theory of Planned Behaviour	10
Fig.2: Age categories by gender.....	58
Fig 3: Mean scores for pre/posttest anthropometric and motor ability measures for athletes and partners.....	60
Fig. 4: Programme of Study.....	79

LIST OF ABBREVIATIONS AND ACRONYMS

ALT-PE	Academic learning Time - Physical Education
BMI	Body Mass Index
CDC	Center for Chronic Disease Prevention and Health Promotion
CWPT	Class-wide Peer Tutoring
EUROFIT	European Fitness Test
GPE	General Physical Education
ID	Intellectual Disability
MVPA	Moderate to Vigorous Physical Activity
PE	Physical Education
RKEN	Rural Kenya
SMD	Severe Mental Disabilities
SOFIT	System for Observing Fitness Instruction Time (UN
SMD	Severe and Multiple Disabilities
TPB	Theory of Planned Behaviour
UKEN	urban Kenyan
UNFP	United Nation Food Programme
USDHHS	United States Department of Health and Human Services
WHO	World Health Organisation

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	vi
LIST OF APPENDICES	vii
LIST OF TABLES	viii
LIST OF FIGURES	x
LIST OF ABBREVIATIONS AND ACRONYMS	xi
TABLE OF CONTENTS	xii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the study	1
1.2 Statement of the Problem	4
1.3 Purpose of the Study	5
1.4 Study Objectives	6
1.5 Research Question	6
1.6 Research Hypotheses	7
1.7 Significance of the Study	7
1.8 Theoretical Framework	8
1.8.1 Social Development Theory	8
1.8.2 Theory of Planned Behaviour	9
1.8 Delimitation of the Study	11
1.9 Limitations of the Study	11
1.11 Assumptions of the Study	12
1.12 Operational Definition of Terms	12
CHAPTER TWO	15
REVIEW OF RELATED LITERATURE	15
2.1 Introduction	15
2.2 Persons with Disability and Physical Activity	15
2.3 Peer tutoring	17
2.3.1 One Directional Peer Tutoring	18
2.3.2 Reciprocal Tutoring	19
2.3.3 Class-Wide Peer Tutoring	19
2.3.4 Cross Age Peer Tutoring	19
2.4 Benefits of Peer Tutoring	20
2.5 Peer Tutoring Studies in Physical Activity	20
2.6 Peer mediated programmes	23
2.7 Peer tutoring and Academic Learning time	29
2.8 Trained versus Untrained Peer tutors	31
2.9 Peer tutoring and social interaction	33
2.10 Parental involvement	37
2.11 Summary	38
CHAPTER THREE	40
METHODOLOGY	40
3.1 Introduction	40

3.2 Research Design.....	40
3.3 Research Variables.....	41
3.4 Location of the Study.....	41
3.5 The Target Population.....	42
3.6 Sample and Sampling Procedures.....	43
3.6.1 Selection of Athletes	44
3.6.2 Selection of Partners	45
3.6.3 Selection of Peer Tutors.....	46
3.6.4 Event Management Training Workshop.....	46
3.7 Pre –Testing of Instruments	47
3.8 Research Instruments	47
3.8.1 Physical Activity Participation Questionnaire for Peer Tutors.....	47
3.8.2 Parents’ Questionnaire	48
3.8.3 Physical Fitness Test.....	48
3.8.3.1 Height.....	49
3.8.3.2 Body Mass Index	49
3.8.3.3 Skinfold Measure	50
3.8.3.4 Whole body balance.....	50
3.8.3.5 Isometric grip strength	51
3.8.3.6 Kicking.....	51
3.8.3.7 Dribbling.....	52
3.8.3.8 Throwing/Catching	52
3.9 Validity of the Instruments	52
3.10 Reliability of the Instruments.....	52
3.11 Data Collection Procedures.....	53
3.12 Data Analysis and Presentation	53
3.13 Ethical Considerations	54
CHAPTER FOUR.....	56
RESULTS AND DISCUSSION	56
4.1 Introduction.....	56
4.2 Demographic Characteristics of Participants.....	56
4.2.1 Demographic Characteristics of Participants by Age.....	57
4.2.2 Anthropometric Measures for Athletes and Partners	58
4.2.2.1 Height measures by gender and age.....	60
4.2.2.3 Body Mass Index (BMI) measures by gender, status and age.....	62
4.2.2.4 BMI Percentiles	63
4.2.2.5 Waist circumference	66
4.2.2.6 Waist to Hip Ratio measures by gender and age	67
4.2.2.7 Skinfold Measure	69
4.2.2.8 Psychomotor Abilities.....	70
4.2.3 Motor skill performance of male participants	71
4.2.4 Motor skill performance of all partners	73
4.2.5 Motor skill performance for all Athletes	73
4.2.6 Motor performance by Age Categories	74
4.2.7 Motor performance measures by Gender	76
4.3 Peer Tutor Demographics.....	77
4.3.1 Peer tutors	77
4.3.2 Year of Study.....	77

4.3.3	Programme of Study	78
4.3.4	Prior Training	79
4.3.5	Prior Contact with Individuals with Disabilities.....	80
4.3.6	Prior Experience	80
4.3.7	Interactions among the Participants.....	81
4.3.8	Changes in Motor Skill Performance	82
4.3.9	Experiences of Peer tutors	83
4.3.10	Impact Programme on Volunteer Peer Tutors	84
4.4	Parents' Demographics	86
4.4.1	Number of Parents Attending Programme	86
4.4.2	Means of Transport.....	86
4.4.3	Employment.....	87
CHAPTER FIVE		91
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS		91
5.1	Introduction	91
5.2	Summary of the Findings	91
5.3	Objectives of the Study	91
5.3.1	Research Questions.....	92
5.4	Research Hypotheses	92
5.6	Findings on Skill and Fitness Level of Athletes and Partners Engaged in the Peer Tutor Directed Sports Training Programme	93
5.7	Findings on the Level of Interaction Behaviour between Athletes and Partners	93
5.8	Findings on Attitudes of Peer Tutors towards Coaching Athletes and Partners involved in the Sports Programme.....	94
5.9	Findings on the Views of Parents towards their Children's social and motor ... Skill Abilities after Participating in the Peer Tutor Directed Sports Training..... Programme.....	94
5.10	Conclusions	95
5.11	Recommendations	95
5.11.1	Recommendation for Application.....	95
5.11.2	Recommendation for Policy Formulation.....	96
5.11.3	Recommendation for Further Research	97
REFERENCES		98
APPENDIX 1		115
A Peer Tutor Survey for Peer tutors participating in a two week camp at Kenyatta University.....		115
APPENDIX 2.....		119
PARENTS QUESTIONNAIRE		119
APPENDIX 3.....		122
APPENDIX 4.....		123
CONSENT FORM.....		123
APPENDIX 5.....		127
EUROFIT PROTOCOL FORM		127
APPENDIX 6.....		129
ETHICAL APPROVAL LETTER		Error! Bookmark not defined.
APPENDIX 7.....		131
LETTER OF INVITATION OF ATHLETES		131

APPENDIX 8.....	132
CODE OF CONDUCT FOR PEER TUTORS	132
APPENDIX 9.....	134
WHO (2011) BMI Percentile Rank Charts for Girls	134
APPENDIX 10.....	135
WHO (2011) BMI Percentile Rank Charts for Boys	135

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Current statistics indicate that there are about 500 million People with disabilities in the world today, with the majority being found in developing nations (UNFP, 2007). In addition, the World Health Organization (WHO) 2011 estimated that 10% of any nation is composed of people with disabilities and that 80% of these individuals are in the developing nations (UN 2010). Individuals with disabilities have been noted to experience a greater incidence of secondary impairments (such as cerebral palsy or other physical limitations) that affect motor skills (USDHHS, 2000). Rimmer in 2009 noted that disability affects a person's ability to endure in an activity for a longer time and therefore fatigues easily. Disability is generally viewed in four broad categories: physical, visual, auditory and intellectual disabilities (Auxter, Pyfer & Huettig, 2005).

Physical disabilities affect the use of the body as a result of deficiencies of the nerves, muscles, bones, and/or joints. The main causes of physical disabilities are neurological impairments, orthopedic and traumatic injuries. Persons with physical disabilities find movement stressful and are likely to remain sedentary unless support systems are put in place to ease their movement. They tend to have low fitness levels and this contributes to their poor health status (Lieberman, 2002; Auxter, et al., 2005; Shapiro, Moffatt, Lieberman, and Dummer, 2005 and Onyewadume, 2006;). Their participation level is therefore reduced and hence limiting the person from enjoying the benefit of exercise (Sherrill, 2004).

Visual Disabilities are categorized as limited or profound visual impairment. Those with limited vision include one-eyed, squint and tunnel vision while profound vision includes those with total blindness. Poor vision affects an individual's spatial awareness, ability to control body and understanding of actual or expected movement (Auxter, et al., 2005). Many people with visual disabilities have been noted to lead a solitary lifestyle and are often overprotected by their caregivers (Kozub & Oh, 2004; Sherrill, 2004; Thahane, Myburgh & Poggenpoel, 2005).

Auditory disabilities are categorized as sensorineural hearing loss and conductive hearing loss (Auxter et al., 2005). In both cases, the individual lacks capacity to hear well. Sensorineural hearing loss affects clarity of sounds as a result of damage to the sensory end of the auditory nerve while conductive hearing loss is affected by interference to the ear due to blockage, loud sounds, or malformation of the ear. Auditory disabilities affect motor skill performance as it interferes with correct acquisition of skill and makes the individual unable to follow instructions properly (Lieberman, Dunn, Van der Mars, & McCubbin, 2000).

Lastly, Intellectual disabilities are classified as mild, moderate and severe mental disabilities. People with intellectual disabilities have a reduced ability to learn and their concentration span is usually short. There is delayed mastery of fundamental and sports skills and usually experience repeated failure. They therefore tend to be isolated and do not develop social skills easily. Intellectual disability has been documented (Auxter et al., 2005) to be the most prevalent disability and is seven times more prevalent than deafness, nine times more prevalent than cerebral palsy, 15 times more prevalent than total

blindness and 35 times more prevalent than muscular dystrophy. The degree of intellectual disability generally does not determine an athlete's performance level, but individuals with severe intellectual disabilities will be more challenged by the tactical aspects of competition (Van Biesen, et al., 2010).

Generally, research indicates that people with intellectual disabilities are less active in physical activity pursuits than their peers without disability (Hands & Larkin, 2006; Kosma et al., 2006; Frey, Stanish & Temple, 2008; Murphy, et al., 2008) yet given proper coaching and sufficient practice time, most individuals with intellectual disabilities can successfully compete alongside or against many of their peers without disabilities. People with intellectual disabilities have been noted to be more vulnerable when it comes to learning motor skills (Rimmer, 2009). This is due to their slow motor development, societal attitudes towards them, limited opportunities for practice and limited capacity to comprehend information (Sherrill, 2004; Murphy et al., 2008). In addition, many individuals with intellectual disabilities have been noted to become more inactive as they grow older and are family dependent, home-based and have a higher level of health needs which are unmet compared to the general population (Telama et al., 2005; Cooper, et al., 2006; Special Olympics Incorporated, 2009).

What emerges from previous research studies (Duran, Lugo, Ramirez, & Eusse, 2001; Nash & Rusinowski, 2001; Hicks et al., 2003; Jacobs; Van der Ploeg, van der Beek, van der Woude & van Mechelen, 2004; Fragala-Pinkham, Haley & Goodgold, 2006;) is that through a well-organised sports programme, it is possible to alleviate health problems that arise due to their conditions. It has also been reported (Carmona, Cabe & McCabe, 2005; Reid & Todd, 2006) that through a well-organized motor skill programme, it is possible to improve the health and wellness of individuals with intellectual disabilities through participation in physical activities. This study therefore set out to investigate the effect of peer tutoring on the psychomotor, social and physical fitness level of learners with and without intellectual disabilities involved in Special Olympics training programmes in the County of Nairobi.

1.2 Statement of the Problem

Following the declaration of 1981 by the United Nations as the Year for Persons with Disabilities, and subsequent proclamations by the Kenyan government through government policy papers, a number of educational programmes for people with disabilities at the primary and secondary school level have increased tremendously (GoK, 2003; GoK, 2007, GoK 2010). Through these programmes many learners with intellectual disabilities have been enrolled at different levels of learning in schools in Kenya. In addition, Special Olympics programmes around the country continue to attract many youths with intellectual disabilities to participate in sports through community based clubs. While these initiatives are noteworthy, persons with intellectual disabilities who wish to participate in inclusive sports activities often do not have adequate services available to them to ensure they successfully participate in physical activities (Chow, Frey, Cheung, & Louie, 2005; Lejčarova, 2009). This is due to various factors which include: lack of trained coaches in disability sports, access to quality sports facilities and negative attitudes (Special Olympics Inc., 2009).

Recent statistics from the Kenyan Ministry of Education (MoE, 2008) as shown in Table 1 show that enrolment of learners with disabilities in schools continues to increase with those identified as having an intellectual disability being the major beneficiaries to the expansion of Free Primary Education offered to all youths by the Kenyan government.

Table 1: Enrolment in Special Schools by Type of Impairment, 2003 and 2007

Impairment	2003			2007		
	Boys	Girls	Total	Boys	Girls	Total
Visual Impairments	8781	14,508	23,289	15,687	19,002	34,689
Hearing Impairments	9,286	15,817	25,103	12,871	25,914	38,785
Physical Impairments	8,220	10,508	18,728	11,098	18,136	29,234
Mental Impairments	13,995	18,968	32,963	19,685	23,179	42,864
Others	33,959	27,783	61,742	33,874	28,315	62,189
Total	74,241	87,584	161,825	93,215	114,546	207,761

Source: Special Education Unit, Ministry of Education 2008

Despite a surge in primary school enrolment as a result of the introduction of free primary education in 2003, Kenya has not increased its teacher stock since 1999 in tandem with the rising number of learners enrolled each year (Oyaro, 2008). Recent revelation that the country had a deficit of 46,000 teachers at the primary and 13,000 at secondary school level (Sinyolo, 2007; Oyaro, 2008) makes the situation even more challenging to provide individualized learning environments for those learners with disabilities who are integrated in regular schools. Teachers in general and those in special needs education classrooms are faced with instructional challenges as the diversity of students in their classrooms widen (Hall & Stegila, 2003). This study, therefore, investigated the effect of using peer tutors to enhance the physical and motor activity level of youth with and without intellectual disability in a unified physical activity programme.

1.3 Purpose of the Study

The purpose of this study was to investigate the effects of peer tutoring on the social, psychomotor and physical fitness of youth with and without intellectual disabilities participating in a peer tutor directed programme in Nairobi, Kenya.

1.4 Study Objectives

The objective of this study was to:

- a) To evaluate the effect of a peer-tutor programme on the level of social interaction of participants with and without intellectual disabilities.
- b) To evaluate the effect of a peer-tutor programme on motor performance of athletes and partners involved in an integrated sports training programme.
- c) Assess the physical fitness of participants with and without disabilities participating in a peer-tutor directed programme
- d) Investigate the views of peer tutors on the impact of peer tutoring programme on the motor and social skill learning performance of their children.
- e) To find out the views of parents on the impact of peer tutoring programme on the motor and social skill learning performance of their children

1.5 Research Question

- a) Does participation in the peer-tutor programme lead to improved social skills of participants with and without disabilities?
- b) What is the effect of peer-tutoring on motor performance of athletes and partners involved in an integrated sports training programme.
- c) Does peer tutoring improve the physical fitness level of participants with and without disabilities participating in a peer-tutor directed programme
- d) Are there any differences between pre-training and post-training opinions of peer tutors towards coaching participants with and without disabilities involved in the peer directed sports programme?

- e) Are there any differences between views held by parents of participants with and without disabilities towards their children's participation in the peer tutor directed sports training programme?

1.6 Research Hypotheses

It was hypothesized that:

H₀₁ There would be no significant difference in physical fitness levels of participants with and without disabilities who participated in the peer tutor directed sports training programme

H₀₂ There would be no significant difference in psychomotor skill performance of participants with and without disabilities who participated in the peer tutor directed sports training programme.

1.7 Significance of the Study

This study was designed to establish the effect of using peer tutors on the social and motor skill level of youth with and without intellectual disabilities participating in Special Olympics programme. As the numbers of learners with disabilities admitted to regular and special schools continue to grow, cost effective methods that reinforce the adoption and maintenance of an active lifestyle among these learners have to be developed. The cost of training learners with intellectual disabilities to be able to master motor and lifestyle skills in order to participate in recreational activities can be enormous, as they require personalized attention to achieve desired goals. Although the government provides some funding to cater for each learner with a disability enrolled in school, these funds are not adequate to hire teacher aides. The peer tutor programme if successful would provide a much cheaper option of integrating learners with disabilities in

recreational programmes and thus would help to meet the goals of the UN Millennium Development Goals and the Vision 2030 as far as envisioned by the Kenya government on eradication of poverty. This study was also expected to add knowledge to existing training practices in use for learners with disabilities in physical activity programmes.

In addition it was hoped that findings from this study could be used by physical activity practitioners in integrated settings to develop strategies and support systems that enables them to use the peer resource available more effectively. This study could form the basis for developing training curriculum for teachers and volunteers to support the many students enrolling in schools due to the free education and changing attitudes towards people with disabilities. The use of the peer-tutor directed sports training programme could be significant to physical educators who may not know how to involve those with disabilities in their classes. The study findings could also be used to increase knowledge and capacity among peer tutors and parents on the use of sports to enhance the welfare of all involved with learners with intellectual disability.

1.8 Theoretical Framework

This study was guided by the Social Development Theory and the Theory of Planned Behavior.

1.8.1 Social Development Theory

Vygotsky, (1978) proposed the Social Development Theory, which emphasizes the role played by the society in the learning process. The Social Development Theory defines learning as a connection between people and the cultural context in which they act and interact. The teacher and the learners are collaborators in the learning-teaching process.

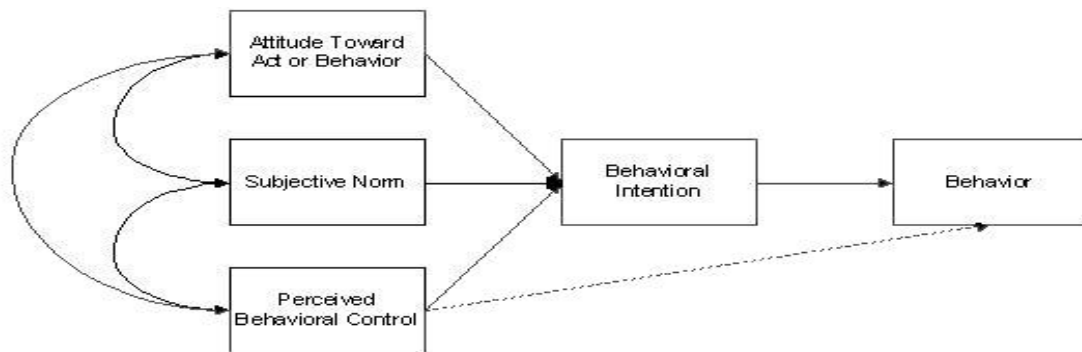
Learning is seen as a reciprocal experience for the student and the teacher and depending on the learning experience, the teacher and the learner can alternate roles leading to sharing of strategies to solve a problem. According to Vygotsky, the teacher can be anybody with more knowledge or with a better understanding or higher ability than the learner in respect to the task at hand. The concept of more knowledgeable other may apply to another student or even an electronic performance support system used in the learning process.

Research by Klavina and Block, 2008 showed that when peers are used in the learning process, both the peer learner and the peer tutor experience significant gains in the learning process. Damon and Phelps (1989) also noted that unlike adult-child instruction, the peer tutor is not far removed from the tutee in authority or knowledge. The interaction between the tutor and tutee is more balanced and livelier. Webb (1989) however noted that for peer tutoring to succeed, the peer tutor has to provide relevant help which should be appropriately elaborated, timely and understandable. An opportunity must also be provided for the tutee to use the information. This however is not explained in Vygotsky theory which does not show the motivation that would make one to participate as a peer tutor.

1.8.2 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) was developed from the theory of reasoned action by Ajzen in 1991. The theory states that individual actions are driven by behavioral intentions towards the behaviour (attitudes), the subjective norms surrounding the performance of the behavior, and the individual's perception of the ease with which the behavior can be performed (behavioral control). Attitude towards the behavior was

defined as the individual's positive or negative feelings about performing behaviour. It is determined through an assessment of one's beliefs regarding the consequences arising from a behavior and an evaluation of the desirability of these consequences. Subjective norm is defined as an individual's perception of whether people important to the individual think the behavior should be performed. The contribution of the opinion of others is weighted by the motivation that an individual has to comply with the wishes of others. Behavioral control on the other hand is defined as one's perception of the difficulty of performing a behavior. TPB, as shown in figure 1 an individual's intention to take up a behaviour is influenced by several factors, namely the individual's attitude towards the behaviour (positive or negative), beliefs about normative values (support from significant others and beliefs about behavioral control (perceived constraints and perceived efficacy). TPB views the control that people have over their behaviour as lying on a continuum from behaviours that are easily performed to those requiring considerable effort and resources. The Theory of Planned Behaviour therefore suggests that intentions of participants without disabilities to include peers with disabilities in their activities would be influenced by social expectations (i.e., subjective norms), their attitudes, and perception of control.



Adapted from Ajzen 1991

Fig. 1: Diagrammatic Presentation of the Theory of Planned Behaviour

Participants who have a favourable attitude toward inclusion of a student with a disability, and who perceive that significant others (e.g., teachers, parents, or peers) expect them to include a student with a disability, and have a strong feeling of control over the process of inclusion are more likely to have strong intentions to include a student with a disability in their activity. The theory of Planned Behaviour therefore goes beyond socialization as described by Vygotsky but puts in consideration the individual's feelings.

1.8 Delimitation of the Study

The findings of this study were delimited to learners with and without intellectual disabilities registered in the Special Olympics clubs in Nairobi County. The participants voluntarily enrolled to participate following an announcement made in their Special Olympics clubs and by word of mouth.

1.9 Limitations of the Study

The choice of sports that the participants were involved in was predetermined by the researcher. It would have been better to increase the number of sport activities to enable participants to choose from a wider selection of sports. This was however not possible due to the costs and time available during the intervention phase to teach a wider variety of sports to expected levels of skill mastery. The study was also limited in the local research and related literature available in the area of peer tutoring. Availability of such literature would offer more support and insight into the study. No study was found that had dealt with peer tutoring in sports in Kenya. The present study focused on the participants who voluntarily joined the peer tutor programme during the training period.

It therefore followed that the generalizations of the study could not be applied to other learners with and without disabilities.

1.11 Assumptions of the Study

The study assumed that:

- (a) Learners with intellectual disabilities had similar needs with their peers without disability in developing skills for recreation and fitness.
- (b) Mastery of sports skills would lead to increase in participation by learners with an intellectual disability in sports activities.
- (c) Those peer tutors who volunteered in the study represented a normal population.
- (d) There was an apriori assumption that football and basketball were popular sports that all participants in the study would be familiar with and know basic rules of play and therefore would readily be extended to community participation once the intervention phase was over. The two team sports were perceived as useful in enhancing social skills.

1.12 Operational Definition of Terms

Athletes: Is the term generally used in Special Olympics to refer to persons with intellectual disability participating Special Olympics sports activities.

Cross-age peer tutoring: Is a procedure where students in higher grade levels work with younger students. In cross-age tutoring, the tutor is older than the tutee and is assumed to be more knowledgeable.

Intellectual disability: a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social and practical adaptive skills.

Motor skills: Skills that are developed through participation in physical activities.

Partner: The term is used in Special Olympics to refer to a person without an intellectual disability who participates in a Special Olympics sports programme and provides support for the athlete especially in an integrated activity.

Peer: This refers to both participants with and without disability who are nearly similar in age.

Peer Tutoring: Peer tutoring is model in which peers (whether same-age or cross-aged) provide support to a peer with a disability in general PE class.

Physical fitness: Physical fitness is the capacity to carry out the day's activities, pursue recreational activities, and have the physical capability to handle emergency situations. It includes; body-composition, cardiovascular fitness, flexibility, muscular endurance, neuromuscular learning and strength. Skill-related components of fitness include agility, balance, coordination, reactions, rhythm, power, and speed.

Skill Enhancement: Improving the capacity of learners to perform a physical activity.

Social Interaction: Social interactions are the acts, actions, or practices of two or more people mutually oriented towards each other.

Special Olympics: Special Olympics is the worldwide organisation that provide sports training and competition opportunities for people with intellectual disabilities throughout the year and provides them with opportunities to participate in Olympic-type summer and winter sports.

Special Olympics Club: Centres established by Special Olympics around the country to manage Special Olympics sports programmes. In Nairobi County there are four such clubs that serve youth and adults with intellectual disabilities.

Support services: May be extra helpers present as in dual and team teaching, peer tutoring, and various forms of consulting by adapted physical activity specialists. May include adapted equipment or classroom materials like station labels in large print or Braille, sport wheelchairs, and rails on walls to help with balance.

Unified Sports: A programme developed by Special Olympics Incorporated with the objective of enabling athletes and partners of similar age and ability to train socialize and compete in integrated Sports.

Youth: defined as the age between pre-adolescence and early adulthood. In this study the term is operationalised as the age between 8 years and 25 years

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviewed literature pertaining to peer tutoring and related studies in and outside Kenya.

2.2 Persons with Disability and Physical Activity

Within the field of adapted physical activity, various researchers have noted that one way to enhance skill level (Borremans, Rintala & Kielinen, 2010), motor performance (Houston-Wilson, Dunn, Van der Mars & McCubbin, 1997; Cataneda & Sherrill, 1999), time on task (Wiskochil, Lieberman, Houston-Wilson & Peterson, 2007), social interaction (Lieberman & Houston-Wilson, 2002; Carter & Hughes, 2005; Murphy, et al., 2008) and self-concept (Stocchino, Selis, Guicciardi & Mereu, 2007) of individuals with disabilities is through participation in sports and recreational activities. Unfortunately, many individuals with disabilities have been denied opportunities to participate in sports programmes (Schleien, Stone, & Rider, 2005; Pan & Frey, 2006; Block et al., 2011). This is through inaccessible facilities, inappropriate facilities, ignorance of the individuals' attitudes, lack of trained teacher aides and apathetic teachers (Ellery & Stewart, 2000; Block, 2007). Many of the physical and social outcomes that could accrue from participation in these activities remain outside their experiences. As noted by Rimmer & Braddock, (2002), Van der Ploeg, van der Beek, van der Woude & van Mechelen, (2004) and USDHHS, (2005) many countries are now placing more emphasis on health, fitness and well being of all persons including individuals with

disabilities. These developments have had a far-reaching implication for both professional training of leisure and recreational personnel and research in various sports in which individuals with disabilities can be involved.

Researchers (Wiskochil, et al., 2007; Klavina & Block, 2008) have supported the use of volunteers in the teaching of individuals with disabilities as it facilitates interaction between those with and without disabilities while providing individualized teaching instruction. The relationship that develops when learners without disabilities are used to provide support for those with disabilities, include opportunities that are created to a) individualize instruction b) increase time on task so that teacher/coach can plan, instruct, and evaluate learning programmes c) foster interdependence d) promote social goals e) decrease the use of professional costs and f) develop positive attitudes towards people with disabilities (Goodwin, 2001; Wiskochil, et al., 2007). Currently, the most commonly used paraprofessionals in special education programmes in Kenya are paid teacher aides who in most cases have received little or no pre-service and/or in-service training to serve the schools effectively. Other support personnel such as volunteers, parents and peer tutors are rarely used to augment the teacher's role.

The use of peer tutors can be an effective and inexpensive way of supporting the integration of those with disabilities in physical activity programmes (Fernandez-Vivo & Cordero, 2005). Whereas literature (Sinibaldi, 2001; Lieberman, et al., 2002; Wiskochil, et al., 2007, Klavina & Block, 2008; Ayvazo & Ward, 2009;) supports the use of peer tutors as a valuable resource to assist students with disabilities to successfully enter regular physical activities, the outcomes of peer tutoring have however been based on

academic outcomes of students while ignoring its impact on interactions between learners with and without disabilities. Specific training programmes used in peer tutoring in physical activities have not been conclusive (Ward & Ayvazo, 2006).

2.3 Peer tutoring

Peer tutoring is considered by many educators (Causton-Theoharis and Malmgren, 2005; Block, et al., 2007) to be an effective and powerful instructional strategy that can be used to develop academic as well as social skills in both the tutor and the tutee. In addition, studies have shown that peer tutoring results in significant academic gains for both tutors and tutees (Ayvazo, 2006; Klavina & Block, 2008). One reason for this is that peer tutoring provides one-on-one attention, immediate feedback, and active learning in a non-threatening environment. Furthermore, studies have shown that peer tutoring can improve the overall behavior, attitude, self-esteem, communication and interpersonal skills of remedial and/or disruptive students by promoting cooperation, friendliness, and positive social behavior such as giving praise and encouragement (Wiskochil, et al., 2007; Klavina & Block, 2008). The tutors develop a sense of pride and accomplishment, and learn trust and responsibility and the most striking effect on the tutors is the increased confidence and feeling of adequacy (Topping, 2005). Peer teaching or tutoring provides a means through which a teacher can ensure each learner receives more opportunities to practice skills in a less threatening manner (Klavina & Block, 2008).

Bernard, (1990) noted that relationships created through peer tutoring programmes contribute toward social and cognitive development as both tutors and tutees learn to interact, help, comfort and empathize with each other. Lieberman and Houston-Wilson,

(2002) also noted that peer tutoring programmes are useful when teaching learners with disabilities in the following ways:

- (a) It provides a more individualized approach to help them learn skills better
- (b) Peer tutors benefit as they learn the skills they are teaching better
- (c) It provides peer tutors and tutees with an opportunity to enhance their leadership qualities in a less threatening environment
- (d) It provides an opportunity for social participation between learners with disabilities and their non-disabled peers
- (e) It provides an opportunity for both tutors and tutees to participate as partners and equals thus encouraging a positive relationship
- (f) It is an inexpensive way to help learners with disabilities to succeed in the general physical activity class

Peer tutoring can take various forms. These include: one directional peer tutoring, reciprocal peer tutoring, class wide peer tutoring and cross age peer tutoring (Lieberman & Houston-Wilson, 2002).

2.3.1 One Directional Peer Tutoring

In this case one of the participants takes the role of tutor while the other is the tutee for all the time the instruction is going on. The tutor may be older, more knowledgeable in the skill being learned or may be an able bodied individual tutoring a disabled colleague. As noted by Liebermann, et al. (2002), one directional peer tutoring method is effective when working with students with severe disabilities. When this method is used the tutor and the tutee's role are always clear to each throughout the instruction. It is easier for the

class teacher to focus attention on the tutor all through to ensure correct skills are being imparted.

2.3.2 Reciprocal Tutoring

In this option of tutoring, the pair of learners will be able to teach each other by taking turns. Depending on the activity or time one participant takes the role of tutor while the other is the tutee. The roles are reversed so that the tutor now becomes the tutee. This method can be used by pairing a learner with a disability with one without, or both a learners with or without disability.

2.3.3 Class-Wide Peer Tutoring

This method involves the use of a whole class in peer tutoring. Learners are paired and each participates in a reciprocal peer tutoring way. This method allows the teacher to offer each learner a chance to lead. At the same time no student is singled out because of his/her ability. However there is need to caution that this method works best when the learners are similar in age and/or have equal abilities.

2.3.4 Cross Age Peer Tutoring

This method is used when an older learner is chosen to tutor a younger one. In this method the older learner remains the tutor while the younger one is the tutee. Normally this method is used in schools where learners from the upper classes are contracted to teach those in the lower classes. The tutor is selected on the basis of his/her willingness to work with younger children or on the basis of his/her physical ability and availability. As noted by Webster, (1987), students who work with more competent partners generally gain more as they receive more individualized instruction and feedback.

2.4 Benefits of Peer Tutoring

Research (Lieberman & Houston-Wilson, 2002) indicates that peer tutoring intervention is relatively effective in improving both tutee and tutor. Some of the benefits that have been identified show that:

- (a) Both tutors and tutees learn the subject matter more when peers work together.
- (b) Motivation to learn improves through sharing.
- (c) Tutors heighten the tutee's learning.
- (d) Through peer interaction, both tutees and tutors learn to share, help, comfort and empathize with each other.

In spite of the many positive reviews and studies that show peer tutoring as an effective way to enhance learning, it is not widely used in adapted physical activity programmes. Some reasons cited in previous research (Sherrill, 2004; Block, 2007; Wiskochil, et al., 2007) include the following:

- (a) Teacher resistance based partly on seeing peer tutoring as a substitute for properly organized teacher activity.
- (b) Parent cautiousness.
- (c) Possible lack of expertise on cross-age tutoring
- (d) Strategies that utilize students with disabilities as tutors are not sufficiently developed.
- (e) Peer tutoring procedures in use have not been sufficiently validated.

2.5 Peer Tutoring Studies in Physical Activity

Peer tutoring interventions have become increasingly popular over the past decade. The efficacy of such peer-mediated procedures has been well documented in the general

learning but a few have been documented in the field of physical activities (Ward & Ayvazo, 2006; Block, et al., 2007). Peer tutoring studies have mainly focused on skill learning, peer tutor/tutee experience and effect of peer tutor training.

Van de Putte, Behets, Van Keer and Van Hove, (2010) reviewed peer tutoring studies from 1987-2009 and identified studies in physical activities that have dealt with peer tutoring in inclusive physical education classes. In total 7 studies were identified which showed that peer tutoring was effective where a peer tutor was assigned to a student with a disability. One study reported a positive effect of cross-age peer tutoring and another study which investigated the progress of the inclusion process through peer tutoring strategy by the teacher. In all these studies, the student with a disability did not take the role of a peer tutor (unidirectional peer tutoring). The study recommended further research on how peer tutoring can be implemented optimally in inclusive physical activities.

Ward and Ayvazo, (2006) assessed the effectiveness of Classwide Peer Tutoring (CWPT) during a 26-lesson motor skill unit focusing on catching and striking by two autistic children in an integrated class. The procedures involved training of observers who were in turn required to meet an intra observer criterion level of 95% accuracy or better. They observed level of engagement and correct motor performance of the two participating children and recorded the data accurately. The participants were observed over a 13 - week, 26-lesson plan unit. Also, each lesson was designed with the same format so as to prevent confusion and random results. Lastly, the entire class was given instruction and practiced CWPT just before the study began. The two autistic children performed more correct catches during CWPT than during regular whole group instruction. It was

concluded that CWPT intervention was more effective than whole group instruction in meeting the goal of including autistic students into physical education.

The conclusion made in this study however may be faulted as it does not consider the fact that studying learners who are accustomed to peer tutoring and are already comfortable with inclusive classrooms may have influenced the data. This study however did not consider the fact that 8 year old autistic boys were different from their typically developing partners. The two typically developing peers were purposively selected by the investigator to serve as peer tutors for the two autistic participants (Ward & Ayvazo, 2006, p. 235). Unfortunately, because of these choices, the conclusions of the study could be inherently biased.

Van Vliet, et al., (2006) investigated the physical fitness profile of high-performance athletes with intellectual disability (ID) in comparison with able-bodied individuals. A total of 231 male and 82 female athletes participated and were evaluated using the EUROFIT physical fitness test. The results showed that in comparison with population data, both male and female athletes with ID scored better for flexibility and upper body muscle endurance, but had similar or lower values for running speed, speed of limb movement, and strength measures. When compared with age-matched physical education students, male athletes with ID scored better for running speed and flexibility, and worse for strength. Female athletes with ID scored not different from able-bodied individuals for flexibility, running speed, and upper body muscle endurance, but worse for strength measures. Athletes with ID were also found to have poorer cardio-respiratory endurance capacity compared with sportive peers without ID. Furthermore, male athletes had a more differentiated profile depending upon their sports discipline, compared with female

athletes. The authors concluded that high-performance athletes with ID can reach physical fitness levels that are equal to or lower than those of able-bodied sportive counterparts.

In a recent study, Borremans, Rintala and McCubbin, (2010) also investigated the physical fitness profile and physical activity level of 30 adolescents with and without Asperger syndrome (AS). Evaluations were done using the Eurofit physical fitness test and the Baecke Habitual Physical Activity questionnaire. A 2 x 2 MANOVA indicated that adolescents with AS scored significantly lower than the comparison group on all physical fitness subtests, on balance, coordination, flexibility, muscular strength, running speed, and cardio-respiratory endurance ($p < .001$). Adolescents with AS were also found to be less physically active ($p < .001$).

Similarly, Borremans, Rintala, and Kielinen, (2010) examined the efficacy of an exercise programme for twenty adolescents with Asperger Syndrome on motor competency and physical fitness. A quasi-experimental nonequivalent control group design with a follow-up measurement over a period of six months was done. The intervention group received a 12 –week physical exercise programme focusing on improving motor competence and physical fitness. The exercises were given 3 days a week for 1 hour. Pre and posttest data collection was done using the Movement Assessment Battery for Children and the EUROFIT physical fitness test. The results showed an improvement in motor and physical fitness for the treatment group at the end of the programme.

2.6 Peer mediated programmes

Block, Obersweiser, and Bain, (1995) studied the effect of teacher and peer mediated approaches in learning motor skills. The results showed that learners with a disability

were more successful and learned skills faster than in the teacher mediated approaches. Learners with disabilities were more accommodated much more in regular physical education. Similarly, Webster, (1987) conducted a study to determine the effect of peer tutoring on the Academic learning Time- Physical Education (ALT-PE) of three students with moderate and severe intellectual disability. A multiple baseline design that compared different conditions was used to collect data for this study. Although Webster's study specifically compared the data between trained and untrained peer tutor conditions, the results of ALT-PE measures revealed no significant differences between the two conditions. However, it was noted that, whether trained or untrained, the chronological age and appropriate peer tutors were two factors important in assisting learners with disabilities to acquire appropriate motor skills.

Halle, Gabler-Halle, and Bembren, (1989) utilized an experimental/control group design to analyze the effect of a peer-mediated aerobic conditioning program on the fitness skills of elementary age students with moderate to severe disabilities. The research was conducted in a university physical fitness laboratory. In this study, 7 students with disabilities and 25 students without disabilities were included in Group 1, and 7 other students with disabilities and 14 students without disabilities were included in Group 2. Students without disabilities assisted peers with disabilities during each daily exercise session for three weeks, however, no information was provided about training or characteristics of support. Results showed that the fitness level of students with disabilities improved when they were engaged in peer instructed exercise activities. In addition, the consumer satisfaction survey indicated that students without disabilities were more positive and enthusiastic about the programme while students with disabilities

showed moderate satisfaction for participation in the project. The study findings determined that peers without disabilities can be effective motivators and provide frequent encouragement for their peer with moderate and severe intellectual disability during daily aerobic exercises programs. However, it was not clear from this study if peer tutoring would work in a general PE setting since the peer mediated programme was implemented in segregated setting.

Lieberman, et al., (2000) utilized a multiple baseline research design to determine the effects of trained peer tutors on the moderate to vigorous physical activities of eight elementary age deaf students. Eight peers without disabilities of the same age and gender received two and a half hour training session including a description of disabilities, instructional strategies using the system of least prompts, cueing, modeling and physical assistance. The System for Observing Fitness Instruction Time (SOFIT) by McKenzie, Sallis, and Nader, (1991) was used to measure the primary dependent variable, moderate to vigorous physical activity (MVPA) as well as teaching behaviors of peer tutors. Several codes were created to record tutors' interactions with tutees. For example, 'D' was coded when peer tutor demonstrated, or was engaged in fitness activities together with a tutee, or 'O' was coded when peer tutor observed, or evaluated tutee's performance. Interactions between peer tutors and tutees were videotaped and recorded using wireless microphone. Study results revealed that MVPA data in physical activity and skill level improved when trained peer tutoring was introduced. In addition, the MVPA data improved for both the students with disabilities (from 22% to 41.5 %) and for peer tutors (from 19% to 37.9 %). While study results showed that the mean percentage of peer tutors' instructions increased during intervention phase, the frequency

of each behavior was never explained nor how this behavior related to tutees response across experimental stages.

Houston–Wilson, et al., (1997) investigated the effect of teaching instructions provided by untrained and trained peer tutors to peers with developmental and motor delays. The dependent measure was the student's ability to perform discrete motor skills such as horizontal jump, catch, overhand throw, forehand strike, and sidearm strike. The analyses of each skill included assessment of presence/or absence of five critical elements displaying fundamental components of particular skill. In addition, five specific teaching behaviors, consisting of verbal cue (VC), model (M), physical assistance (PA), general skill feedback (G), and specific skill feedback (S), were recorded to determine instructions provided by peer tutors. Participants were six elementary age students with disabilities and six age appropriate peers without disabilities. This study used two protocols: (a) in the first protocol, three participants were assigned to three conditions (baseline (A), intervention by untrained peer tutor (B), intervention by trained peer tutor (C)), and (b) in the second protocol, other three participants were assigned to two conditions (A, C). Results of the first protocol revealed that motor appropriateness scores for 42 of participants improved from baseline (11.9%) and untrained peer tutoring condition (15.3%) to a trained peer tutoring condition (38.7%). Similarly, in the second protocol improvements were determined between baseline (12.6%) and condition of trained peer tutors (44.6%). The study findings on teaching behaviors (e.g., verbal cue, model, physical assistance) showed that the mean of teaching instructions demonstrated by peer tutors increased after training. Unfortunately, the impact of peer tutoring on

interactions between students with disabilities and other peers without disabilities, and the social behaviors of target students were not discussed.

Klavina and Block, (2008) study was designed to determine the effects of an instructional peer tutoring model, on the physical, instructional, and social interactions between students with severe and multiple disabilities (SMD) and their peers without disabilities in inclusive PE setting. Three instructional accommodations were implemented across baseline and intervention phases, (a) teacher-directed, (b) peer-mediated, and (c) voluntary peer support. The condition of voluntary peer support followed immediately after the teacher directed instructional accommodation to determine if peer tutors would continue interacting with students with SMD during PE class periods when they were not assigned to tutor. This study also investigated the effects of peer tutoring on interaction behaviors between students with SMD and other students without disabilities, not designated as peer tutors, across three instructional accommodations. In addition, the effects of peer tutoring on interaction behaviors between students with SMD and adult support personnel (i.e. APE teacher, teacher assistant) were examined. The trained peer tutor intervention served as the independent variable, with the primary dependent variable being the percentage of intervals spent in interaction behaviors between the student with SMD, peer tutors, and other students without disabilities. Peer tutors were trained to use instructional steps on how to teach, and assist students with SMD during GPE activities. Results showed that peer tutoring procedures employing peer-mediated strategies were effective for increasing interaction behaviours between students with SMD and students without disabilities in PE settings. During teacher-directed conditions all target students were more frequently engaged in interaction behaviors with teachers than with classmates

without disabilities. During peer-mediated and voluntary peer support conditions students with SMD were engaged in interaction behaviors with peer tutors more frequently than with other peers not designated as peer tutors. This study however used a very small sample size of participants and the results cannot be generalized.

Block, et al., (2001) studied the effects of 5th and 6th grade elementary age students without mental disabilities serving as partners on the motor skill performances and aberrant behaviors of students, ages 7 through 14, with severe, multiple disabilities. The 26 students in this study had either severe autism or severe intellectual disabilities, such that they needed extensive/pervasive support in virtually all academic and adaptive behaviors. Twenty-five partners (15 girls and 10 boys) from fifth and sixth grades (10-12 years of age) were recruited to serve as partners. All of these partners had limited exposures to students with disabilities. Individual permission was obtained from each student's parent/guardian prior before initiating the study. The study began with pre-testing of motor skills and interviewing parents regarding their child's daily living, communication and socialization. Partners were then brought in for 4 hours of training (2 hours in each of 2 days). Training consisted of information about the school, individual students, training methods, safety, and lifting and positioning techniques. Training was conducted by the adapted physical educator, physical and occupational therapists. When training was completed, partners were transported by bus to the special center every Thursday for 1 hour for a total of 12 weeks to assist their students in motor skills training. Finally, parent and teacher comments were collected and used to determine consumer satisfaction and meaningful significance in the study. The results showed those students with severe disabilities, participating in the training Programme, were better able to

perform individually targeted motor activities with more independence after having participated with assistance from student partners. In addition the results showed significant improvements from pre- to post-tests on the following sub-scales; receptive language ($t=2.50$, 25df, $p <.01$), expressive language ($t=2.11$, 25df, $p <.03$), play and leisure time ($t=2.13$, 25df, $p <.03$), and gross motor ($t=2.25$, 25df, $p <.02$).

Kalyvas and Reid, (2003), examined active participation and enjoyment of students with and without disabilities in a regular game of Newcomb volleyball and a modified game of Newcomb volleyball (e.g., smaller court, lower net, use of a balloon, rule requiring all members of team to touch the ball before sending it over the net). Participants were 15 students with physical disabilities (e.g., spina bifida, cerebral palsy; ten ambulatory and five used wheelchairs) and 20 students without disabilities who attended a reverse integrated special school. A Quasi-Experimental Factorial Design was used in this study. Results showed that the modified game resulted in more activity time and greater success rate, as measured by successful passes for both students with and without disabilities. Both students with and without disabilities enjoyed both the regular and modified games, as measured by the interest and enjoyment subscale. However, older students without disabilities (ages 10-12) did express some dissatisfaction with the modified game.

2.7 Peer tutoring and Academic Learning time

De Paepe, (1985) investigated the effectiveness of three environmental settings - one of which was peer tutoring - on the Academic Learning Time-Physical Education (ALT-PE) of students with disabilities. The experimental design consisted of three intact groups, each including ten elementary age students with moderate intellectual disabilities.

Although no information was provided about peer tutor training, results showed that ALT-PE data were higher for the study subgroup receiving peer tutor assistance.

Wiskochil, et al., (2007) study examined the effect of trained peer tutors on the academic learning time-physical education (ALT-PE) scores of children with visual impairments. Four participants who were visually impaired were selected from a list of campers who attended a sports camp for persons with visual impairments. The peer tutors were selected from the tutees' physical education classes. Two to four tutors were trained for each tutee to ensure consistent, skilled, and available tutors throughout the study. All the tutors volunteered and were chosen by their physical education teacher and classroom teacher, and they and their parents signed informed consent forms. The tutors and the tutees underwent a 1.5- to 2-hour training session. Training included information on low vision and blindness, communication, guiding techniques, and various teaching and feedback techniques.

Each tutee was videotaped in four to five physical education classes to establish a baseline phase. Once the baseline data demonstrated a steady pattern, the intervention began. The baseline phase was conducted in a staggered fashion to ensure that the target behavior occurred because of the onset of the intervention, rather than because of extraneous variables. All the participants (the tutors and the tutees) were videotaped for six to eight physical education classes, which served as the intervention phase. Since only one tutor was required per physical education class to assist the tutee, the tutors took turns tutoring. During the intervention phase, each tutor instructed the tutee; physically assisted him or her when necessary; and gave verbal feedback to the tutee on his or her

performance. Throughout the intervention phase, the primary investigator monitored and gave feedback to the tutors. The primary investigator met the tutor and tutee prior to each class to give them information on various teaching techniques in regard to the day's activity. The primary investigator also met the tutor and tutee after each physical education class to discuss the day's activity and to answer any questions that the tutor or tutee may have had.

An analysis of each participant's ALT-PE scores was presented as percentages of motor-appropriate behaviors for each class. The researcher used the interval recording technique, six seconds of recording and six seconds of observation, to determine the amount of ALT-PE. Daily percentages were graphed for each participant. In all cases, the peer tutoring increased the mean percentage level of ALT-PE. In all but one case, peer tutoring increased the level of ALT-PE between the baseline and intervention phases. In two cases, peer tutoring decreased the variability of the tutees' motor performance, and in three cases, the gap between the tutees' and sighted classmates' ALT-PE scores decreased by an average of 27.5%. Thus, it was concluded that peer tutoring can have a positive effect on the ALT-PE scores of students with visual impairments in general physical education classes.

2.8 Trained versus Untrained Peer tutors

Houston-Wilson, et al., (1997) studied the effects of six trained peer tutors on motor performance of six students with mild intellectual disabilities included in fourth- or fifth-grade General Physical Education (GPE) over a 36-day period. The training consisted of two 30-min sessions and enabled the peer tutors to use appropriate cueing (system of least prompts, modeling, and physical assistance), feedback (positive general and positive specific), and task analysis of five motor skills. Upon completion of the training, peer

tutors were randomly assigned to the students with disabilities (one-on-one). The study was divided into two protocols. In the first protocol, three students with disabilities were analyzed in three conditions: baseline (no peer tutor), intervention by an untrained peer tutor, and intervention by a trained peer tutor. In the second protocol, three different students with disabilities were analyzed in just two conditions: baseline and intervention by a trained peer tutor. Participants in protocol one showed improvement in skill performance from 11.9% (baseline) to 15.3% (untrained peer tutor) to 38.7% (trained peer tutor). Similar improvement was found in protocol two (12.6% at baseline to 44.6% with a trained peer tutor). Improvement occurred for each participant only after the intervention by trained peer tutors.

Lieberman, et al., (1997) studied the effects of six cross-aged, trained peer tutors (age 11) on motor engagement levels of six students with disabilities (Down syndrome, autism, behavior disorder, and developmental delay) included in kindergarten through second-grade GPE classes. The training programme consisted of a description of the disability, appropriate cueing (system of least prompts, modeling, and physical assistance), and feedback techniques (positive general, positive specific, and corrective). Upon completion of one 150-min training session, participants were randomly assigned to the students with disabilities (one-on-one) for approximately 6-13 classes each. The results showed that the students with disabilities significantly improved their motor appropriate engagement levels from 62% to 83%.

Lieberman, et al., (2000) studied the effects of eight same-aged, trained peer tutors on moderate to vigorous physical activity levels of eight deaf students, ages 10-12, included in fourth- or fifth-grade physical education classes (class size of 30 students. In addition,

the peer tutors were taught signs relevant to physical fitness instruction. Upon completion of five 30-min training sessions, participants were purposively assigned (one-on-one) to deaf students for approximately five months each. Results showed that the deaf students increased their moderate to vigorous physical activity from 22% to 41.5% of class time. In addition, the peer tutors also increased their activity levels from 19% to 37.9%.

Murata and Jansma, (1997) found that a combination of trained teacher assistants with a trained peer tutor improved participation of three students with multiple disabilities (intellectual disability plus severe behavior disorder), ages 14, 16, and 18. The study used a Multi-Element Design that compared different conditions from data which was collected in a high school GPE class consisting of 24 high school students. Participants who included a GPE teacher, teacher assistants and three peer tutors received two 120-min training sessions on several academic learning time behaviors. That is, prompting techniques, modification strategies, and specific roles and responsibilities of teaching assistants and peer tutors. Upon completion of the training, peer tutors and teacher assistants were randomly assigned to targeted students with disabilities (one on-one) for approximately ten sessions each. Results showed that the activity and knowledge time percentages were significantly higher when students with disabilities were assisted by trained teacher assistants and trained peer tutors compared to a trained PE teacher condition only.

2.9 Peer tutoring and social interaction

Staub and Hunt, (1993) studied the effects of social interaction on high school peer tutors. Eight tutors (four trained and four controls) worked with four severely disabled students. The study revealed that volunteer peer tutors were able to increase the rate of social

interaction with their schoolmates with severe disabilities after relevant training. Those in the trained group had significantly higher rates of social interaction than the control group.

Klavina and Block, (2008) assessed the effect of peer tutoring on physical, instructional, and social interaction behaviors between elementary school age students with severe and multiple disabilities (SMD) and peers without disabilities. Additional measures addressed the activity time of students with SMD. The study was conducted in inclusive general physical education settings under three instructional support conditions for students with SMD: (a) teacher-directed, (b) peer-mediated, and (c) voluntary peer support. During peer-mediated and voluntary peer support conditions, the instructional and physical interaction behaviors between students with SMD and their peers increased, while social interactions remained low. The activity engagement time data increased for all target students throughout intervention sessions. Interactions between students with SMD and teachers decreased toward the end of intervention.

Roberts, Pratt and Leach, (1990) investigated the effect of classroom and playground interaction of students with and without disabilities. Subjects were 190 elementary school students ranging in age from 8 to 13 years. Of these students, 95 were students with mild disabilities who were enrolled in Educational Support Centres attached to 11 regular state elementary schools within the metropolitan area of Perth, Western Australia. These students were all integrated into regular classrooms for varying periods of time during the day. The remaining 95 students, who were without disabilities, were enrolled in the same integrated classrooms. Students without disabilities were matched with an integrated

student with disabilities by choosing a regular-class peer of the same sex, with the closest birth date to the targeted student. The sample of students without disabilities included 69 males and 26 females. A time-sampling method was used to gather the observational data. The observational interval was 25 seconds (s) including 15 s of observational time and 10 s of recording time. The first behaviour to be observed within the 15-s observational time was the behavior that was coded. Intervals were cued by a beeper mechanism, which was heard through an earpiece. There were differences, however, between the groups in the type of behavior engaged in, both in the classroom and on the playground. On the playground, students with disabilities interacted and played less with their peers than did the other students. When not interacting with their peers, the students with disabilities were observed to engage in significantly more solitary play and more positive interactions with adults.

The results suggested that students with disabilities interacted less with peers and more with adults than did the students without disabilities. An explanation that considers only the strengths and weaknesses of the individual child could suggest that the students with mild disabilities need coaching in the area of social skills. The study however did not report the role of the teacher or teacher aides in cueing the learners to positive activities that would have increased their time on task.

The study by Townsend and Hassall, (2004) assessed the attitudes of regular students in New Zealand to the inclusion of children with intellectual disability in regularly scheduled organised sports activities. The participants were 170 primary and secondary school students attending public schools in Auckland, New Zealand. The primary school

sample contained 35 females and 28 males in three Year 6 classes (aged approximately 10 years) at two primary schools. The secondary school sample contained 58 females and 49 males in six Year 11 and Year 12 classes (aged 16-17 years) at two high schools. At both the primary and secondary level, schools were selected from both higher and lower socioeconomic areas of the city to provide socioeconomic and ethnic diversity in the sample. A questionnaire was designed to assess regular students' attitudes toward playing organised team sports with students with intellectual disability. The knowledge and attitude instruments were administered under no time restrictions to intact classes in a single session.

Overall, the results indicated that although generally positive, older students were less positive about out-of-hours participation, interacting at school and in appearing at special schools or units with their peers with disabilities. Generally, the younger students appeared to be more positive concerning their general interactions with students with an intellectual disability (in talking with them, playing sport with them, travelling together, sharing a uniform, and so on). Age differences were not apparent for more public interactions, such as being in team photos, whether published or not, and going to parties. Significant gender effects were found in all cases as the females were more positive than the males.

The relatively less positive response of the males appeared to stem from activities involving closer interaction and/or greater time than from more static activities (such as being in photos or wearing a uniform). The researchers concluded that though positive, it was still unclear whether the attitudes expressed here would translate to actual

behaviours, practices and values of acceptance and inclusion in a practical physical activity environment.

2.10 Parental involvement

Tsai and Fung, (2009) examined the experiences of parents of persons with intellectual disabilities (ID) as they sought inclusive sport participation for their children. In-depth interviews were conducted on 49 parents. Qualitative data analysis was conducted to identify common themes from the responses. The analysis showed that most parents sought inclusive sport involvement for their children but they soon gave up their effort due to rejection by staff and other participants. Underlying these attitudinal problems were a lack of quality contact between people with and without ID and a lack of understanding of people with ID. Parents' lack of sense of entitlement, low sport values, and lack of participation information and opportunities also contributed to their giving up of inclusive sport. Weiss, (2008) has suggested that involvement in Special Olympics may serve as an important source of social support for mothers of adults with intellectual disabilities.

As noted from interviews with parents of young children participating in Special Olympics Programmes, families gained a variety of benefits from their involvement, including improved family dynamics, heightened awareness of their child's capabilities, and opportunities to connect with other families (Favazza & Siperstein, 2006). Parents provide unique support, emotional strength share views of their children's needs which may encourage participation (Dukes, 2007). In addition, parents may participate with their children with disabilities and give physical support. They can identify other needs (emptying bowels) and ensure quick response to any difficulty. It is evident that parents

are children's first and most enduring educators and when fully involved, positive impact develops (Menear, 2005). There have however been no studies documented in Kenya on how parents of learners with intellectual disability are involved in the sports programmes of their children. The current study therefore investigated further the views of parents of Special Olympics athletes concerning the effectiveness of using trained peer tutors to enhance motor skills among learners with and without intellectual disabilities in a Unified sports programme.

2.11 Summary

From the review of literature and related studies conducted on the area of peer tutoring, a number of gaps were identified and discussed. These include the use of small numbers of participants in most of the previous studies. Almost all the studies were laboratory type studies which have not been field tested and more important, the level of training for the peer tutors was not reported in most of the studies. Many of these studies utilized a purposive sampling technique in order to increase internal validity of the findings. Block and Obrusnikova, (2007) have noted that future studies in the area of physical activity for persons with a disability should attempt to have more random selection that would allow for more generalization of results. In addition the studies examining the effects of peer tutoring should provide detailed information on the training protocol used to train peer tutors and any ongoing support tutors may have received such support by a teacher, assistant or adapted physical education specialist in GPE. This was not reported in most of the studies reviewed.

It was the purpose of this study to assess the effect of peer tutoring on motor performance of youth with and without intellectual disabilities bearing in mind some of these

recommendations by Block and Obrusnikova (Ibid). Specifically this study addressed the issue of documenting the background information about the peer tutors, development of a training protocol and also noting previous experience the peer tutors may have had working with individuals with disabilities.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter deals with the methods used in the study. The chapter is organized under the following subheadings; research design, target population, sample and sampling procedures, research instruments, validity and reliability of instruments, pilot study, data collection and analysis procedures.

3.2 Research Design

The study employed a pre-post quasi-experimental design. This design was selected as it was expected that positive results from the sports programme would be beneficial to all participants thus denying one group a chance to benefit from peer tutoring programme was likely to raise ethical questions. There was therefore no exclusive control and experimental groups. In addition the use of questionnaires to collect data from both peer tutors and parents at the beginning and at the end of the programme excluded the study from being an experimental design.

All the participants (youth with and without disabilities) were assessed at the beginning on their entry behaviour before the treatment was given, then a post test given at the end of the training programme to assess the effect of the training programme to all. That is, the initial skill level and abilities of each participant were determined through fitness and motor skill performance tests. The information collected during the initial stage was used to initiate an intervention programme for the participants on an individualized basis. At

the end of the programme, a post-test fitness and motor skill performance test were administered to determine the extent of motor skill acquisition. In addition questionnaires were developed (Appendix 1&2) for peer tutors and parents. In both cases the respondents were assessed on the perceived change in behaviour of the participants over the training period. This design was preferred as it was suitable for assessing attitudes, subjective norms and the perceived behaviour control of participants as defined in the theory of planned behaviour.

3.3 Research Variables

The independent variables in the study were peer tutoring, age, gender and disability status (i.e. with or without disability) while the dependent variables for the study were social skills, physical fitness and motor skill performance.

3.4 Location of the Study

The study was conducted in the County of Nairobi. Four Special Olympics training centres were identified through the Special Olympics Kenya office. These included Special Olympics Clubs at Kenyatta University, University of Nairobi, Mathare Special School and Tree Side Special School. In all these centres people with Intellectual disabilities participate in sports activities every Saturday under the guidance of volunteer coaches. For the purpose of this study the Kenyatta University Special Olympics club served as the main centre where all participants from the four clubs and the coaches were trained. Kenyatta University is one of the seven public Universities located 23 km north of the capital city centre along the Nairobi – Thika road.

3.5 The Target Population

As shown in Table 2, the target population of athletes was 250 youth with intellectual disabilities registered in the four Special Olympics programmes in the county of Nairobi. Participation at any one of these clubs is based on an initial screening and proof of one having an intellectual disability as assessed by a recognised assessment centre. In addition all athletes had to be aged eight years and above as a requirement of Special Olympics rules. All those identified as having an intellectual disability are registered by Special Olympics Kenya office and advised to join any one of the clubs closest to them. The target population of the peer tutors was all students at the main campus of Kenyatta University who participate in University football and basketball teams and also all students registered in the two departments of Physical and Health Education, Recreation Management and Exercise science.

In addition the target population of partners who were all youth in the catchment areas who met the requirement to participate as partners. Since the training was held during the December holiday season, most participants from Treeside Special School which is a boarding school and Mathare Special school had left for their rural homes and only ten were available to participate. Majority (38) of athletes at the Kenyatta University Special Olympic club were able to participate as they live less than 1 km away from the venue of training.

Table 2: Number of registered athletes in Special Olympics clubs in Nairobi County

SPECIAL OLYMPICS CLUBS IN NAIROBI COUNTY	TARGET POP.	SAMPLE
KENYATTA UNIVERSITY SPECIAL OLYMPICS CLUB	70	38
NAIROBI UNIVERSITY SPECIAL OLYMPIC CLUB	60	5
MATHARE SPECIAL OLYMPICS CLUB	55	5
TREESIDE SPECIAL OLYMPIC CLUB	65	5
TOTAL	250	53

Source: Special Olympics Kenya 2010

In addition 53 partners were drawn from the neighbourhood of Kenyatta University. That is: Githurai, Kiwanja and Kahawa Garrison. Willing siblings of targeted athletes were encouraged to participate too. Parents/guardians of all athletes in the four Special Olympics clubs in Nairobi County formed the target population for the study.

3.6 Sample and Sampling Procedures

The study employed purposive and convenient sampling procedures (Mugenda & Mugenda, 2003) due to a number of reasons:

- a) Athletes from the four Special Olympics clubs were purposively targeted for the study. While partners were conveniently sampled from around the university. The only condition they were to meet was that they lived near to the home of the athlete identified for the study.
- b) The Treeside club and Mathare clubs are school based clubs that only operate during school term dates and are managed by teachers who serve as coaches. It

would not have been possible to do a random sampling as the number available was small and hence all who were present were included in the study. The athletes who participate at the University of Nairobi club come from different directions of the city. Their attendance on a weekly basis could not be guaranteed owing to the travel costs to the training centre. But all athletes from this club who assured their ability to participate regularly were all encouraged to register.

- c) Kenyatta University Club provided the bulk of the participants as they live closer to the venue. Out of the possible 70 registered athletes, only 38 were finally enrolled. The enrollment was based on their ability to ambulate independently, having an assessment record and also being eight years and above. Special Olympics programmes cater for athletes who are above eight years.

3.6.1 Selection of Athletes

Athletes with intellectual disabilities aged 8 years and above identified from Special Olympics clubs records were encouraged to participate. All those participants who desired to participate in the programme were considered for inclusion in the study after an informed consent form was filled by their caregivers. All athletes had to produce a letter of assessment from the Kenya Institute of Special Education (KISE) assessment centre (Appendix 3) and a duly filled consent form from their caregivers (Appendix 4) before they were registered to participate in the study. Kenya Institute of Special Education is the premier college in the country which trains teachers in Special Needs Education (SNE). It has an assessment centre that caters for all disability screening and the reports given are normally used to place these learners in schools within Nairobi region. All participants with an intellectual disability who met the requirements for participation were 53 and were registered on a first come first served basis. Exclusion

criteria included an athlete not being able to participate independently, was younger than the eight years or had other disabling conditions that limited his/her ability to participate in a physical activity.

3.6.2 Selection of Partners

Partners were selected after the enrolment of those identified as having an intellectual disability was completed. This was to ensure that the partners selected lived closer to the participants with disabilities as they were to act as partners not only on the field but also walk together back home. An equal number of partners were therefore selected on the basis of age, residential location and acceptance to participate after their parents had filled the consent form. The selection procedure involved a letter being sent to the school head teacher to announce to all pupils who live close to the university and were interested in participating in a unified sports camp. Once the names of all partners were recorded, they were matched with those with ID in terms of age, location of residence and gender. In addition parents of youth with ID were encouraged to nominate friends or neighbours of the same age to be included in the programme. Partners whose parents filled and returned duly signed forms were included on a first come first served basis. Siblings and neighbours of the participants with an intellectual disability were encouraged to register as partners. Overall 53 participants registered as partners for the programme. The sample for the study consisted of both boys and girls aged 8 to 24 years. There were fewer girls with and without disabilities registered than boys.

3.6.3 Selection of Peer Tutors

Peer tutors were selected from among university students in the Departments of Recreation Management and Exercise Science, Physical and Health Education and the general University student population who play for the University football and basketball teams. An advertisement was placed on student notice boards requesting for volunteers to serve as coaches. They were required to have competencies as football and basketball players. Those with interest in children sports were highly encouraged to apply. Thirty seven students applied to volunteer. They were screened through initial interviews to ensure that all those who were selected: (a) possessed knowledge of skills in the activity areas of interest to the research project (b) had a desire to work with individuals with disabilities and (c) were willing to spend the necessary time and effort to carry out the project. Although thirty seven (37) students applied, the final list consisted of thirty two (32) student coaches who were selected for a four day Event Management Training Workshop.

3.6.4 Event Management Training Workshop

Using the participatory approach, the selected coaches received theoretical and practical exposure to coaching learners with intellectual disabilities. Five University lecturers and coaches from the departments of Physical and Health Education, Recreation Management and Exercise Science, Sports and Games facilitated the workshop. In addition two Special Olympics personnel were on hand to offer tips on how to handle people with ID. The training covered various topics that included: Use of appropriate cues, prompting, provision of feedback, scheduling and practical experiences on teaching football and basketball to young participants. Practical demonstrations of coaching football and

basketball were facilitated by two University senior basketball and football coaches. The four day workshop also offered training in fitness testing by a trained Level Two International Standards for Advancement of Kinanthropometry (ISAK) facilitator. By the end of the four day workshop the trainee coaches had been exposed to a variety of situations they would likely deal with during the research phase. After the workshop, the trainee coaches were assigned to work with small groups of participants with ID who attend the Saturday Special Olympics programme at Kenyatta University. Each was assigned 4-5 youngsters to provide individualized training and also for acquaintance with issues related to ID.

3.7 Pre –Testing of Instruments

The instruments for data collection were pre-tested in one of the special schools for learners with intellectual disabilities to determine their validity and reliability. To prevent bias, the respondents in this phase were not used in the main study. The test re-test method was used to establish the reliability index of the questionnaires and a reliability index of 0.8 and above was an acceptable indicator of the reliability of the instrument. Research assistants were also trained on methods of collecting data during this phase.

3.8 Research Instruments

Four research instruments were used in this study. They included a) A Physical activity participation questionnaire for peer tutors b) Physical activity questionnaire for parents c) video recording of interviews with parents and d) Physical fitness testing protocol.

3.8.1 Physical Activity Participation Questionnaire for Peer Tutors

In order to obtain information about the impact of peer tutoring on mastery of motor skills by learners with intellectual disability, an 18 item questionnaire was developed for

peer tutors to respond to. This covered the following areas: a) General demographic information about the student coaches b) Their experiences as peer tutors c) their views about the participants' involvement in the programme. The questionnaire was circulated to professionals in the area of Special Olympics for input and verification of content. In this way face and content validity was ensured. The questionnaire was given at the end of the training and all thirty two student coaches responded and returned the questionnaires immediately.

3.8.2 Parents' Questionnaire

Parents were asked to respond to a ten item Pre-post test questionnaire on their initial views about their children's motor and social performance before commencement of the two week training and at the end of the programme. The items on the questionnaire covered: a) demographic information about the parents b) information about their children c) perceived effect of training on the social and physical activity level of children and d) impact of the programme. The items in the questionnaire were derived from a focus group discussion with ten parents of children with disabilities from one of the four clubs. Their views were incorporated to form the universe of content that was included in the final questionnaire. This questionnaire was again validated by experts from the departments of Physical and Health Education whose opinions were incorporated for the final version. In this way, face and content validity of the instrument was assured.

3.8.3 Physical Fitness Test

The physical fitness status of participants in the study was evaluated using the EUROFIT, the European Test of Physical Fitness (Appendix 5) (Oja and Tuxworth, 1995). The

anthropometric measurements assessed included height, body mass, and skinfold measures. Body Mass Index (BMI) was defined as body mass (kg, measured using an electronic weighing scale to the nearest 0.1 kg) divided by height (m, measured to the nearest 0.1 cm) squared (kg/m^2). Height was measured using a stadiometre while weight was measured using an electronic digital weighing machine. The hip and waist circumference was taken using an anthropometric flexible tape measure. All the measurements followed the International Standards for Anthropometric Assessment by the International Society for the Advancement of Kinanthropometry (ISAK) (Marfell-Jones, Olds, Stewart & Carter, 2006).

3.8.3.1 Height

The stretch stature method was used. Measuring of stature was done by having the participant stand on the footplate of the stadiometer without shoes. The individual was positioned with heels close together, legs straight, arms at sides, shoulders relaxed. The participant was asked to inhale deeply and to stand fully erect without altering the position of the heels. The participant's head was held in the Frankfort plane position and the headpiece lowered snugly to the crown of the head with sufficient pressure to compress the hair. The reading was made with the measurer's eyes parallel to the headpiece for accuracy, as recommended by Marfell-Jones et al., (2006).

3.8.3.2 Body Mass Index

BMI is used differently for children and teens (under 20 years old). It is calculated the same way as for adults, but then compared to typical values for other children of the same age. For children and teens, the interpretation of BMI is both age- and sex-specific. The Metric BMI calculator was used and the results recorded in kilogrammes (kg) and

centimetres (cm). After calculating BMI, Growth Charts as developed by WHO (2011) were used to determine the percentile rankings and interpretation of the correct children and teens BMI. The participant was instructed to have minimal clothing before standing on the scale. The measurer ensured that the scale was reading zero before the subject was instructed to stand on the centre of the scales without support so that the weight was distributed evenly on both feet. The measurer checked that the weight from the side was to the nearest kilogramme.

3.8.3.3 Skinfold Measure

Three skin fold sites were measured; the triceps, Biceps and calf sites. These were measured to the nearest 0.2 mm using a Harpender skinfold caliper. The triceps and biceps skinfold measurement was taken parallel to the long axis of the right arm at the Triceps and biceps skinfold site respectively. The skinfold was picked up at the site by grasping the skin and lifting it up between the thumb and index finger and using the caliper the skin was pinched about 2.5 cm and reading taken before skin was released. As for the calf measurement, the skinfold measurement was taken vertically at the medial calf skinfold site. The subject assumed a relaxed standing position with the right foot placed on the box. The right knee was bent at about 90 degrees. The fold made parallel to the long axis of the leg.

3.8.3.4 Whole body balance

The Flamingo Balance Test which is total body balance test, formed part of the EUROFIT test battery. This single leg balance test assesses the strength of the leg, pelvic, and trunk muscle as well as dynamic balance. The purpose was to have each participant to balance successfully on a single leg for 30 seconds. Using a stopwatch, the tester asked

the participant to stand with one foot on a flat surface. The participant had to stand with shoes removed and keep balance by holding on the preferred leg. The free leg was flexed at the knee and the foot of this leg held close to the buttocks. The tester alerted the participant to be ready and started the stopwatch each time the participant lost balance (either by falling off or letting go of the foot being held). The number of falls in 30 seconds of balancing was recorded and when the participant fell more than 15 times in the first 15 seconds, the test was terminated and a score of zero given. When the participant could maintain balance for the total length of the time a score of 4 was given.

3.8.3.5 Isometric grip strength was assessed using the handgrip test. The participants held the handgrip dynamometer (LB9011 Senoh, Japan) in the hand to be tested, with the arm at the side but not touching the body. The subjects were instructed to squeeze the dynamometer with maximum isometric effort while exhaling. This was performed twice with each hand (alternating) and the highest result from each hand was summed to produce the final score. The better of the two trials was recorded to the nearest 0.1 kg. Procedural difficulties that could have arisen when testing individuals with ID were resolved by permitting multiple trials, so that the participants could understand the test item (Mac Donncha, et al., 1999).

3.8.3.6 Kicking

The participants were asked to kick the ball to a target placed 4 metres away. They used the dominant foot to kick using the instep, upper part of foot and toes. Each was given three trials and total number of successful trials recorded. A successful kick was recorded if the ball reached the target. The average of the three types of kicks formed the score for each participant.

3.8.3.7 Dribbling

Standing in lines each participant was given a chance to dribble a basketball round four pylons placed three metres apart and back. All those who could navigate through without dropping the ball scored an aggregate of 4 while the score of zero was awarded to those who could not pass the first pylon dribbling the ball. Each was given a chance to pick the size of basketball to use from the junior to standard balls available. Each participant was encouraged to use his/her preferred hand and the coaches encouraged and cued them to the correct way of dribbling.

3.8.3.8 Throwing/Catching

Using a tennis ball the participants were asked to throw the ball to the coach who acted as partner standing 4 metres away. The focus was on the throwing style, effort and aiming to target. Each was given four chances to throw. On the reverse, the coach threw the ball back and the participant was assessed on his/her catching skills. The focus here was on the pattern of catching and throwing and assessed as mature or immature.

3.9 Validity of the Instruments

A panel of physical education experts from Special Olympics (1) and the Departments of Physical Education and Recreation Management and Exercise Science (3) at Kenyatta University were consulted to assess the content and structure of the questionnaires. Their comments were incorporated in the final versions of the test instruments. In this way, face and content validity of the instruments was determined.

3.10 Reliability of the Instruments

The questionnaires and the physical fitness test protocols were pretested on a selected small sample of parents and athletes from the Treeside Special Olympics club to assess

the coherency, readability and administratability of the instruments. Their comments were finally included in the final draft questionnaire.

3.11 Data Collection Procedures

Data was collected using a variety of research tools. These included parent, peer tutor questionnaires and the EUROFIT (Oja & Tuxworth, 1995) for fitness test protocol. Semi-structured questionnaires were designed to collect information from peer tutors and parents. Information gathered from the questionnaires was summarized and reported as themes. The EUROFIT test protocol was used to collect information from participants with and without disabilities in the study. The participants were assessed at the beginning of the intervention and later at the end of the programme. All the 106 participants were assessed for handgrip strength, balance, skinfold, BMI and flexibility. In addition, psychomotor skill performance was assessed at the initial level and later at the end of the programme. The variables assessed included kicking, throwing, and, dribbling. The fitness test assessments were done by student coaches who had been trained in methods of fitness testing during the event management course. For parents and participants who did not understand English, Kiswahili was used for instruction. Specific stations were set up for participants to go through under the guidance of the student coaches who recorded the scores for each participant.

3.12 Data Analysis and Presentation

All information collected was coded and analysed using the SPSS version 17. The SPSS for Windows, version 17.0, was used to analyze the data. Both descriptive and inferential statistics were used to analyse the data. Data collected from coaches, parents and participants was analyzed and presented in the form of tables and figures. Performances

of the learners with and without ID who participated in the two week peer- tutor programme were compared using t-test and one-way analysis of variance (ANOVA). To examine programme effects on the subjects' achievement level, data collected at the beginning of the programme (pre-test) on the motor skill level of the participants was compared to that collected at the end of the programme (post-test). Both descriptive and inferential statistics were used to analyze the results. All quantitative analyses were reported at the significant level of $p < 0.05$ while information gathered from interviews with parents and peer tutors was reported qualitatively as percentages and themes and reported graphically in tables and figure forms.

3.13 Ethical Considerations

Ethical approval was given by the Kenyatta University ethical board (Appendix 6) to enable the researcher conduct the study. Subsequently, the researcher visited Special Olympics clubs in Nairobi to request athletes in these clubs to participate in the research during the school break. In addition, a flier was distributed to the Special Olympics programmes and special schools in Nairobi (Appendix 7) to inform the communities and to create awareness of the programme. All athletes aged 8 years and above were encouraged to register for the programme at the secretariat office in the Gymnasium at Kenyatta University.

All those athletes who had an assessment certificate from a recognized Assessment centre were given a consent form to fill and return. The consent form described in detail the project and the responsibility of the researcher and due diligence to be followed. All forms were returned before the first day of the programme for documentation. In total, 53 athletes were registered. The number was then used to recruit an equal number of

partners without ID from the same communities. Both parents of athletes and partners also signed the consent form. University students who served as coaches were also required to fill a code of conduct form (Appendix 8) that detailed their responsibilities.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The purpose of this study was to establish the effect of a peer -tutor programme on the physical activity, social and physical fitness level of learners with and without intellectual disability participating in a unified sports camp. In order to analyse the results, specific tests were conducted for each of the population in the study. Both descriptive and inferential data analysis of the variables identified as important from campers, student coaches and parents are discussed in this chapter.

4.2 Demographic Characteristics of Participants

From a total population sample of 106 youths, data was collected from 99 of all registered participants in the programme. Seven of the participants had more severe physical disability or could not effectively respond to the test items and hence were excluded from the test protocols. As shown in Table 3, a total of 49(49.5%) athletes and 50(50.5%) partners took part in all the field tests. Only 32(32.3%) girls participated. That is, 17 athletes and 15 partners, while 67 (67.7%) boys who included 32 athletes and 35 partners participated.

Table 3: Total number of Participants by Gender

Gender	Athletes	Partners	Total
Male	32 (32.3%)	35 (35.4%)	67 (67.7%)
Female	17 (17.2%)	15 (15.1%)	32 (32.3%)
Total	49 (49.5%)	50 (50.5%)	99 (100%)

Overall the number of athletes and partners were about equal. Thus giving a 1:1 ratio as required for unified programming in Special Olympics activities. The number of girls (32.3%) was low compared to boys (67.7%). The results are similar to previous studies (King et al. 2003; Lugaila, 2003; Law, Petrenchik, King & Hurley, 2007; White & Gager, 2007; Dearing et al. 2009) which showed participation in sports generally varied by gender and females were less likely to engage in extracurricular activities than male peers. Females with disabilities have been shown not to participate in sports activities a lot due to fears by parents and caregivers that sports venues would expose the girls to molestation.

4.2.1 Demographic Characteristics of Participants by Age

As shown in Table 4 and figure 2 only 56 (57%) participants were in the pre-adolescent developmental stage (8-12 years), while the adolescent stage for those aged 13-19 years attracted 38 (38%) and the young adults aged 20-22 years were only 5 (5%) of the participants. Most of the participants were drawn from school going youth who participate in Special Olympics programmes in Nairobi County.

Table 4: Age Categories by Gender

	Male	Female	Total
8-12years	39 (39.4%)	17(17.2%)	56 (56.6%)
13-19years	26(26.3%)	12(12.1%)	38 (38.4%)
20-25years	2(2.0%)	3(3.0%)	5 (5.0%)
Total	67(67.7%)	32(32.3%)	99 (100%)

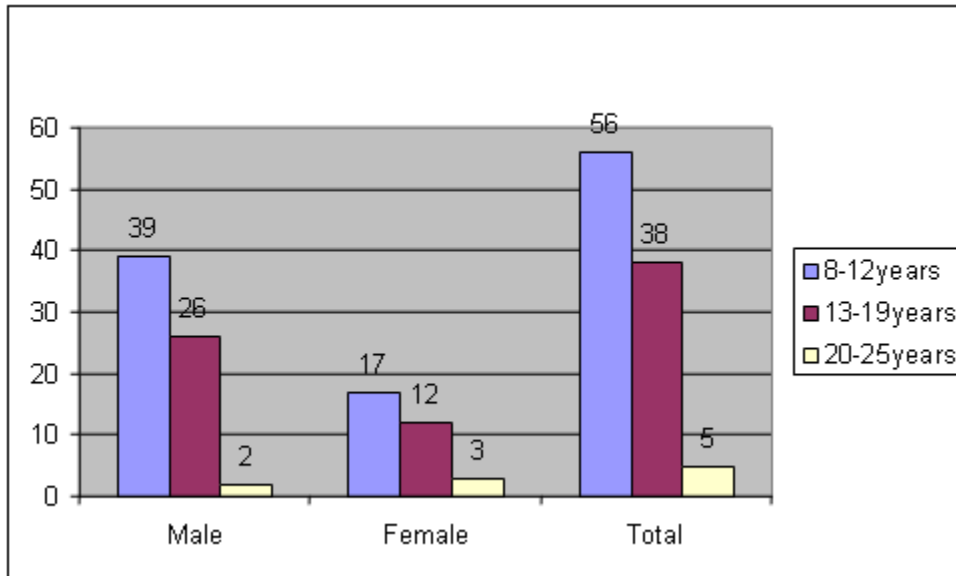


Fig.2: Age categories by gender

This distribution of participants mirrors the general trend that is seen within programmes for persons with disabilities in the Special Olympics programmes world over (Special Olympics Inc. 2005). The attitudes towards physical activity for older persons with disabilities remain generally negative. A study commissioned by Special Olympics and conducted by a team from the University of Massachusetts (Special Olympics Inc. 2005) reported similar trends in the USA. Of all those surveyed, 67% of the participants were drawn from the school based programmes, 16% from community based programmes and only 3% of those participating were drawn from work based programmes. The overall high percentage of younger participants in this study therefore tallies with results from elsewhere (Siperstein, et al., 2005).

4.2.2 Anthropometric Measures for Athletes and Partners

Five specific measurements on the height, weight, waist circumference, waist to hip (w/h) ratio and Body Mass Index (BMI) were analyzed and recorded. In addition, motor abilities covering six variables were also assessed. These included: right and left

handgrip, catching, throwing, kicking, dribbling and balance. Table 5, 6 and figure 3 below show mean scores and t-values for all variables included in the study.

Table 5: Mean scores for pre/posttest anthropometric measures for all participants

	Height (cm)	Weight (kg)	BMI	Waist (cm)	Hip (cm)	W/HR	Skinfold
Pretest	140.58	35.27	17.47	61.68	70.11	.89	8.7
Posttest	140.58	34.93	17.42	60.12	72.13	.83	8.7
t-values	1.00	.837	.889	.162	.191	.001	1.00

There were no significant changes between the pre and post test scores for all the independent variables shown in Table 5 except for waist to hip ratio. However significant changes did occur in some of the dependent variables which included left and right hand grip, kicking, and right leg balance as shown in Table 6. Throwing, catching and dribbling skills did not change significantly. Throwing and catching are fundamental skills that develop with maturation.

Table 6: Mean scores for pre/posttest measures for motor skill abilities for all participants

	RHGrip Kg	LHGrip Kg	Throw /4	kicking /4	Catch /4	Dribble /4	Bal (L) Sec	Bal (R) Sec
Pretest	13.61	11.58	2.27	2.80	2.59	2.05	12.93	13.18
Posttest	16.77	16.23	2.03	2.42	2.47	1.98	15.64	18.76
t-values	0.006	0.000	0.167	0.007	0.490	0.670	0.114	0.002

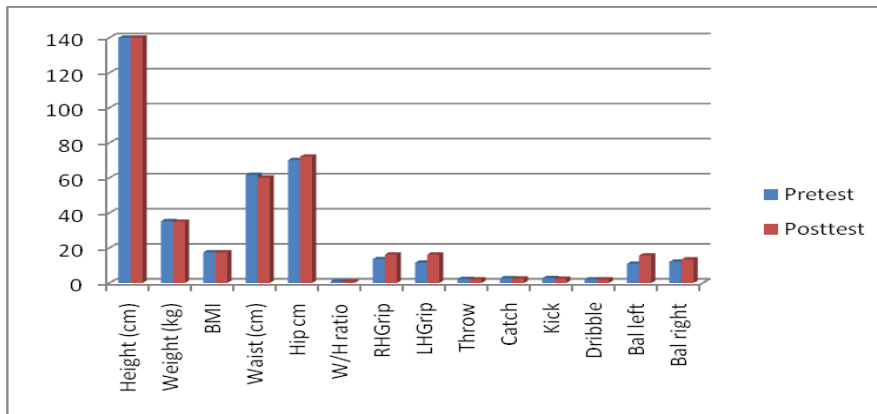


Fig 3: Mean scores for pre/posttest anthropometric and motor ability measures for athletes and partners

The independent variables such as height, weight, BMI waist and hip circumference measurements did not reveal any significant changes since the exercise programme was only for a few weeks. However, the linear regression showed a positive trend in improvement in some of the variables.

4.2.2.1 Height measures by gender and age

The mean height for all the participants was 140.58 cm. The mean height for athletes were 143.73 while the mean for partners' height was 137.50 cm. When assessed from a gender perspective, the mean height for boys was 139.58 while the mean height for girls was 142.69 cm. The height for participants by age category was significantly different $p < 0.001$ as the 8-12 year old participants had a mean height (cm) of 133.25 ± 11.25^a , 13-19 year category had a mean height of 148.81 ± 11^b while 20-25 year category recorded a mean height of 160.22 ± 12^c . In terms of gender, the mean height for the boys in the age category 8-12yrs was 132.28 ± 10.4^a while for 13-19years and 20-25year categories their mean height was 148.34 ± 11.99^b and 168.10 ± 0.57^c respectively. There was a significant difference in height between the groups $F(2) = 47.894$, $p < 0.000$. The height for girls also differed according to age category too. For the 8-12 year group their mean height was

135.48±13 while the 13-19year and 20-25 year groups were 149.83±9.8^b and 154.97±13.78^b respectively. A significant difference was noted $F(2) = 13.559$, $p < 0.000$ between girls aged 8-12 years and those aged 13-19 and 20-25 years. However, no significant differences were noted between the 12-19 years and 20-25 year groups. The significant difference in height was expected as height in growing children is linearly correlated with age. As for boys all the three groups were significantly different while for girls in the second and third group no differences were noted. This could be due to the influence of the adolescent growth spurt.

4.2.2.2 Weight measures by gender and age

The mean weight in kilogrammes for all the participants was 35.27±11.30. The mean weight measurement for athletes was 38.74±13.74 (kg) while the partners' weight was 38.92±13.07. When assessed from a gender perspective, the mean weight for boys was 33.44±11.63 while the mean for girls' was 38.5±12.07. The weight for participants by age category was significantly different $F(2) = 62.59$, $p < 0.000$ as the 8-12 year old participants had a mean weight (kg) of 28.98 ±1.95^a, 13-19 year category had a mean weight of 41.87±3.59^b while 20-25 year category recorded a mean weight of 51.60±1.02^c. In terms of gender, the mean weight for the boys in the age category 8-12yrs was 28.38±5.57^a while 13-19years and 20-25year categories, their mean weight was 39.90±12.70^b and 55.88±1.54^c respectively. There was a significant difference in weight between the groups $F(2) = 38.007$, $p < 0.000$. The mean weight for girls also differed according to age category too. For the 8-12 year group the mean weight for girls was 30.50±7.31^a while the 13-19 and 20-25 year groups were 46.15±7.31^b and 48.75±9.11^b respectively. A significant difference was noted $F(2) = 27.804$, $p < 0.000$ between girls aged 8-12 years on one hand and those aged 13-19 and 20-25 years on the other hand.

However no significant differences were noted between the 13-19 years and 20-25 year groups.

The significant difference in weight was expected as weight in growing children is linearly correlated with age. As for boys, all the three groups were significantly different while for girls in the second and third group no differences were noted. Girls generally were heavier than boys in the first two categories but in the category of over 20 years, they weighed less than boys. This could be attributed to the adolescence growth spurt. Boys tend to grow stronger and heavier later in life than girls.

4.2.2.3 Body Mass Index (BMI) measures by gender, status and age

The mean BMI for all the participants was 17.41 ± 3.04 . The mean BMI for athletes was 18.26 ± 3.42 while that for partners' was 18.36 ± 3.48 . This was not significantly different at $p < 0.05$. Although literature indicates that athletes are likely to have a higher BMI than partners, this was not the case in this study. The observation made from all the participants was that they came from poor communities and hence tended to be leaner irrespective of their status. When assessed from a gender perspective, the mean BMI for boys was 17.01 ± 2.55 while for girls' it was 18.25 ± 3.73 . The 8-12 year old participants had a mean BMI of 16.23 ± 1.95^a ; 13-19 year category had a mean BMI of 18.89 ± 3.59^b while 20-25 year category recorded a mean BMI of 20.04 ± 1.43^b . The mean BMI for the boys in the age category 8-12yrs was 16.20 ± 2.12^a while 13-19years and 20-25year categories their mean weight was 18.10 ± 2.82^{ab} and 19.77 ± 0.43^{bc} respectively. There was a significant difference in BMI between the groups $F(2) = 12.45$, $p < 0.000$. The BMI for boys in the 8-12 year age category and 13-19 year category did not differ significantly and similarly those in the age category of 13-19 years did not differ significantly with

those in the 20-25 age categories. This means that group one was significantly different from group three while group two did not differ from the first and last groups. The mean BMI for girls also differed according to age category too. For the 8-12 year group their mean BMI was 16.31 ± 1.49^a while the 13-19 and 20-25 year groups were 20.59 ± 4.48^b and 20.21 ± 1.86^b respectively. A significant difference was noted $F(2) = 15.65$, $p < 0.000$ between girls aged 8-12 years on one hand and those aged 13-19 and 20-25 years.

4.2.2.4 BMI Percentiles

The mean body mass index for all participants was evaluated using the Body Mass Index-for-age percentiles developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (CDC, 2011) that shows BMI percentile cut off for youth from age 0-20 years. There were only 5 participants aged over 20 years and their BMI was calculated as for adults. BMI was obtained by calculating the weight in kilogrammes of the participant divided by the square of the height in metres (kg/m^2). Using the WHO 2011 tables shown in appendices 11 and 12 the percentile BMI for girls and boys was derived. As shown in table 7, there were no female participants with a BMI below the 5th percentile. Majority (90%) fell in the range $p > 5^{\text{th}} < 85^{\text{th}}$ percentile. Only three (10%) recorded BMI higher than 85th percentile. Two athletes had BMI above the 95th percentile while one partner recorded a BMI above the $85^{\text{th}} < 95^{\text{th}}$ percentile. The BMI for two participants whose ages were above 20 years was calculated (wt/h^2) and found to fall in the normal range.

Table 7: BMI percentiles for female athletes and partners by age categories

	Gender	BMI Frequency of p<5 th	BMI Frequency of p>5 th <85 th	BMI Frequency of p85 th <95 th	BMI Frequency of p>95 th	Total
8-12yrs	athlete	0	8	0	0	8
	partner	0	9	0	0	9
13-19yrs	athlete	0	4	0	2	6
	partner	0	6	1	0	7
Total for athlete/partner	athlete	0	12	0	2	14
	partner	0	15	1	0	16
TOTAL (ALL)		0	27	1	2	30

As shown in Table 8, twelve of the male participants had a BMI below the 5th percentile. Of the 12 participants, there were more partners (9) than athletes (3) with a BMI below the 5th percentile score. Majority of these were partners 9 (75%). Majority 44 (72%) had normal BMI of between 5th and 85th percentile. Five (8%) participants (2 athletes and 3 partners) were at risk of being overweight or obese as their percentile BMI was above the 85th percentile. All the six participants with a BMI above 95 percentile were athletes. These results support earlier studies (Dunn & Leitscuh, 2006; Zhang, et al., 2009) which had shown individuals with disabilities tend to be more overweight or obese than those without disabilities.

Table 8: BMI percentiles for Male athletes and partners by age categories

Age	Gender	BMI Frequency of p<5 th	BMI Frequency of p>5 th <85 th	BMI Frequency of p85 th <95 th	BMI Frequency of p>95 th	Total
8-12yrs	Athlete	1	10	1	0	12
	Partner	6	12	0	3	21
13-19yrs	Athlete	2	14	0	1	17
	Partner	3	8	0	0	11
Total for athlete/partners	Athlete	3	24	0	1	28
	Partner	9	20	0	0	29
TOTAL (ALL)		12	44	1	4	61

In a study by Kamau (2008) on the prevalence of obesity in school going children in regular public and private schools in Nairobi County, a total of 1479 pupils in private and 3846 from public schools aged 10-15 years were involved. It was shown that 6.9% of pupils in private schools were obese while 16.7 were overweight whereas 1.6% pupils in public schools were obese and 5.7% were overweight. Similarly Adamo, et al., (2010) study assessed anthropometric and fitness-related data on Kenyan children living in urban Kenya (UKEN) and rural Kenya (RKEN) environments and compared them with previous data collected on Canadian children in order to examine the potential nutrition-physical activity transition. Height, weight, waist circumference, triceps skinfolds were directly measured on rural (RKEN) and urban Kenyan (UKEN) 179 children aged 9 – 13 years and compared with existing data from 274 Canadian children living in urban and rural environments of the same age. The results showed that none of the RKEN children were overweight or obese (OWO). However, 6.8% of UKEN boys and 16.7% of girls

were OWO. The RKEN children had lower BMI, waist circumference, and triceps skinfolds than all other groups (UKEN, and Canadian: $p < 0.05$). The authors concluded that Urban Kenyan children appear to be showing signs of the nutrition-physical activity transition, as judged by the anthropometric similarities to their contemporaries living in Canada. In these studies it was not indicated if children with disabilities were assessed too.

The present study showed a similar trend as that noted in the two previous studies. The population sample though based in peri-urban Nairobi showed a low level of obesity among the youth. Most of the youth had a normal body mass index. It was also noted that a number of the participants 12 (21%) of the boys were underweight. This is an alarming situation that should be addressed. From anecdotal reports gathered from parents, most of the participants come from poor families and may not be receiving adequate nutrition at home.

4.2.2.5 Waist circumference

The mean waist circumference for all participants was 61.68 cm in the pretest measures and 60.12cm in the posttest measurements. The independent t-test however showed no significant difference at $p < .05$. For both athletes and partners in the study, the mean waist circumference was 64.47 in the pretest and 62.66cm in posttest measures. The waist circumference measurements for male participants were 60.50cm at pretest and 59.57cm at posttest while for female participants, the waist circumference measurements were 64.14cm in the pretest and 61.25cm in the posttest. These were however not significantly different at $p < .05$. In the age category of 8-12 years, the pretest waist circumference measures were 58.25cm and 56.58cm in the posttest while in the age bracket of 13-19

years the waist circumference measures was recorded to be 65.74cm in the pretest and 64.46cm in the posttest. The waist circumference measures for the category of participants in the 20-25 year group was 69.20cm pretest and 66.70cm in the posttest measures. To test if the differences were statistically significant between groups, one-way ANOVA (Table 9) was conducted and the results showed a significant difference between the groups $F(2) = 35.00$ $p < 0.000$.

Table 9: One-Way ANOVA for mean waist circumference scores for athletes and Partners

	Sum of squares	Df	Mean squares	F	Sig
Between groups	3192.94	2	1598.47	35.00	0.000
Within groups	8904.18	195	45.66		
Total	1201.12	197			

$F(2) = 35.00$ $p < 0.000$

4.2.2.6 Waist to Hip Ratio measures by gender and age

The mean waist to hip ratio for all participants was 0.89 in the pretest measures and 0.83 in the posttest measurements. The independent t-test revealed a significant difference at $p < .05$. For athletes and partners in the study, the mean w/h ratio was 0.89 in the pretest and .84 in posttest measures for both groups. The w/h ratio for male participants was .89 at pretest and 0.84 at posttest while for female participants the w/h ratio changed from .89 in the pretest to .82 in the posttest. In the age category of 8-12 years, the w/h ratio was 0.90 in the pretest and in the posttest it was .85 while in the age bracket of 13-19 years the w/h ratio was recorded to be 0.89 in the pretest and 0.81 in the posttest measure. The

w/h ratio for the category of participants in the 20-25 year group, it was .80 at pretest and .77 at the posttest measure. Table 10 shows the results of the independent sample t-test analysis of the waist/hip ratio. These were statistically significant between test and retest at ($p < .05$) for all variables.

Table 10: Pretest – posttest means for waist/hip ratio for athletes and partners

Variable	Measure	N	Mean	Std Dev	Significance <0.05
W/h ratio	Pretest	99	.8928	.14354	.001***
	Posttest	99	.8332	.09022	

To test if the differences were statistically significant, one-way ANOVA was conducted and the results showed that the 8-12 year group had a significantly different waist to hip ratio from the 20-25 year group but not from the 13-19 year group.

Waist to hip ratio is the circumference of the body at the level of the navel divided by the circumference at the widest point around the buttocks. The waist/hip ratio is used as a convenient method of assessing the distribution of body fat. Men tend to have high ratios indicating that most fat is distributed around the waist; women have low ratios indicating fat distribution around the hips. These sex differences in fat distribution are thought to be due to hormonal effects during puberty. High estrogen levels in women influence the deposition of fat around the buttocks and hips, while high testosterone levels in men encourages deposition around the waist. Men with waist-hip ratios greater than 1.0, and women with ratios greater than 0.8, have an increased risk of cardiovascular illness. In the case of youth in this study, the mean w/h ratio was within the expected levels for a healthy person both at the pretest and posttest evaluation.

4.2.2.7 Skinfold Measure

Estimation of body fat by skinfold thickness measurement was done from three different standard anatomical sites of the body. These included the biceps, suprailiac and mid calf areas. These were measured from the right side for all for consistency (Marfell-Jones, et al., 2006). The tester pinched the skin at the appropriate site to raise a double layer of skin and the underlying adipose tissue, but not the muscle. The calipers were then applied 1 cm below and at right angles to the pinch, the reading in millimeters (mm) was taken two seconds later. The mean of two measurements was taken. If the two measurements differed, a third measurement was taken then the median value calculated. The mean skinfolds values are shown in Table 11. The results indicate that females had a higher mean skin body fat values of 14.90 ± 7.22 than males with $=13.06 \pm 7.38$. In the age category of 8-12 years, the mean skinfold measures were 10.899 ± 6.00^a while in the age bracket of 13-19 years the mean skinfold was 11.659 ± 8.33^a and the mean for those in the 20-25 year group was 10.487 ± 6.71^a . These were however not significantly different at $p < 0.05$. The low skinfold measures indicates the low fat levels for most of the participants. This may be due to environmental factors as a majority came from very poor neighbourhood and their nutritional status could be low and hence the very low numbers of overweight participants. In addition majority of these participants walk to school and to the camp daily which may contribute to the lean skinfold measures.

Table 11: Description of mean skin fold scores for participants by Status, gender and age

Status	Number	Mean	Std. Dev
All	99	8.67	5.64
Athletes	49	7.57	4.37
Partners	50	9.76	6.51
Gender	Number	Mean	Std. Dev
Male	67	13.06	7.38
Female	32	14.90	7.22
Age groups	Number	Mean	Std. Dev
All			
8-12 yrs	56	8.42	5.40 ^a
13 -19	38	8.66	5.43 ^a
20 -25	5	11.674	9.70 ^a
Male			
8-12 yrs	39	9.35	6.14
13 -19	26	8.59	5.05
20 -25	2	7.83	3.06
Female			
8-12 yrs	17	6.28	1.86
13 -19	12	8.81	6.41
20 -25	3	14.23	12.61

4.2.2.8 Psychomotor Abilities

As shown in Table 12, seven variables of motor ability were assessed. These included: handgrip, leg balance, throwing and catching, kicking and dribbling. The results showed

Table 12: Pre – Posttest Means for Athletes and Partners on Selected significant Motor Abilities

Variable	Measure	N	Mean	Std Dev	Significance <0.05
RHGrip	Pretest	99	13.61	7.011	.006***
	Posttest	99	16.77	8.813	
LHGrip	Pretest	99	11.58	6.795	.000 ***
	Posttest	99	16.23	9.456	
Bal R	Pretest	99	13.18	12.106	.002***
	Posttest	99	18.76	13.449	
Kicking	Pretest	99	2.80	1.152	.007***
	Posttest	99	2.42	0.716	

a significant change in both the Left hand grip $t(196) = -.979 < 0.05$) and right hand grip $t(196) = -2.798 < 0.05$. There was also a marked significant difference in the skill of kicking $t(196) = 2.743 < 0.05$ and right leg balance $t(196) = -3.067 < 0.05$. Although the mean score for left leg balance, catching and throwing were not significantly different in the pre-post tests. A linear regression showed a positive trend in all of them. Left leg balance for most young people would be difficult to master if they use the right leg predominantly. In addition the catching and throwing to target skill requires more practice and coordination to master. In general these are fundamental skills that for most children will be mastered later during the development of gross motor skills (Onyewadume, 2006). For learners with an intellectual disability mastery of motor skills takes longer time (Sherrill 2004).

4.2.3 Motor skill performance of male participants

As shown in table 13, significant differences were noted in the right hand grip $t(132) = -2.063 < .05$, left hand grip $t(132) = -2.942 < .05$ and right leg balance $t(132) = 2.917 < .05$. All the other variables did not produce any significant differences in the pre and

Table 13: Motor skill performance of male participants

Variable	Measure	N	Mean	Std Dev	Significance <0.05
RHGrip	Pretest	67	14.46	14.46	.041***
	Posttest		17.53	17.53	
LHGrip	Pretest	67	12.40	12.40	.004***
	Posttest		17.04	17.04	
Bal R	Pretest	67	12.70	11.197	.004***
	Posttest		19.06	13.902	

post-test measures. No significant differences were noted for all the motor skills performed except for the skill of balance $F(2) = 3.089, p < 0.049$. Similarly the

participants did not differ significantly in their performance on all the skills as a function of age.

As for the female participants (Table 14) significant differences were noted in the waist to hip ratio $t(62)=2.139<0.036$, right hand grip $t(62)=-2.179<.033$, left hand grip $t(62)=-3.301<.002$ and kicking using the preferred leg $t(62)=2.539<.014$. All other variables did not show any significant differences in pre/post tests. Whereas girls showed significant improvement in the kicking skill, boys improved significantly in balance. These differences could be explained as emanating from the sport specific skill of kicking that forms the basis for playing football. Girls rarely play football as it is considered a boys' sport and the two week training had a positive effect while for boys the skill of kicking is culturally normative hence not much difference in kicking were observed. On the reverse

Table 14: Motor skill performance of female participants

Variable	Measure	N	Mean	Std Dev	Significance(2 tailed) <0.05
RHGrip	Pretest	32	11.81	6.552	.033***
	Posttest		15.19	5.817	
LHGrip	Pretest	32	9.84	6.291	.002 ***
	Posttest		14.53	4.997	
Kicking	Pretest	32	2,84	1.051	.014 ***
	Posttest		2.28	.683	

girls tend to be good at activities that require the balance and therefore not much difference was noted in their performance at pre and posttest measurements.

The improved performance could be as a result of the peer training programme that ensured adequate practice of these skills under the supervision of the peer coaches. It

could also be due to confidence gained in the new activity that made girls perform better in the posttest measurement.

4.2.4 Motor skill performance of all partners

Table 15 indicates mean scores for the 50 partners involved in the study. The partners on the whole showed an improvement in all the parameters measured. These improvements however were significant in only four variables. These differences were noted in the right hand grip $t(98) = 2.371$, $p < 0.020$ and left hand grip $t(98) = -3.98$, $p < 0.001$, right leg balance $t(98) = 2.053 < p < 0.043$. These results can be explained from a learning perspective.

Table 15: Motor skill performance of partners

Variable	Measure	N	Mean	Std Dev	Significance <0.05
RHGrip	Pretest	50	13.84	6.348	.020 ***
	Posttest	50	17.06	7.204	
LHGrip	Pretest	50	11.88	6.035	.001 ***
	Posttest	50	16.54	7.962	
Bal R	Pretest	50	14.52	11.827	.0478 ***
	Posttest	50	19.48	12.346	

The activities the participants were involved in required enhanced use of both hands and balance. Through the peer tutoring programme each participant was given more personalized and partner support attention resulting from the two week skill learning intervention and also participants putting more effort in the task and/or confidence gained during the posttest measurements.

4.2.5 Motor skill performance for all Athletes

Table 16 indicates the results of measurements taken for all athletes who participated in the programme. The athletes improved in all the variables though this was again a very

Table 16: Motor skill performance for all athletes

Variable	Measure	N	Mean	Std Dev	Mean difference	Significance <0.05
LHGrip	Pretest	49	15.92	7.543	4.65	.015***
	Posttest	49	17.27	10.847		
Bal R	Pretest	49	11.82	12.355	6.20	.025***
	Posttest	49	18..02	14.579		

moderate improvement. No significant differences were noted in most of the variables except for left hand grip $t(96) = -2.465$, $p < 0.015$ and right leg balance $t(96) = -2.272$, $p < 0.025$ in the post test measures. In general, studies (Eichstaedt, et al., 1991; Pitetti, et al. 2001) have shown that individuals with intellectual disabilities demonstrate poor fitness levels on standard fitness tests than their counterpart peers without disabilities. This has also been reported on measures of cardiovascular endurance (Fernhall & Pitetti, 2001), body composition (Naude, Kruger & Pienaar, 2009) and muscular strength and endurance (Horvat, et al., 1997). What is encouraging from the results of the present study is that over time, individuals with disabilities can learn skills when appropriate peer tutoring methods of instruction are used.

4.2.6 Motor performance by Age Categories

As shown in Table 17, significant differences were noted among participants in the age bracket 8-12 years in the right hand grip $t(110) = -3.291$, $p < .001$; left hand grip $t(110) = -4.123$, $p < .000$; waist to hip ratio $t(110) = 2.618$, $p < .010$ and kicking $t(110) = 2.243$, $p < .027$. In the category of participants 13-19 years, significant differences were noted only in the waist to hip ratio $t(74) = 2.246$, $p < 0.028$ and the skinfold measures $t(74) = 3.337$, $p < 0.001$. In the category of participants aged between 20-25 years, there were no significant

differences noted in all the variables under study. The lack of significant differences in skill improvement in the 20-25year group could be attributed to the small sample size (5).

Table 17: Motor performance measures by age categories 8-12 yrs

Skill	Test	Number	Mean	Std. Dev	Significance
RHGrip	Pretest	56	11.00	5.431	0.001
	Posttest	56	16.04	10.105	
Kicking	Pretest	56	2.84	1.156	0.027
	Posttest	56	2.43	0.735	
Bal. R	Pretest	56	12.69	11.291	0.020
	Posttest	56	14.31	12.624	

Within the 13-19 year group only one variable (skinfold measure) had a significant improvement (Table 18). This is the adolescent stage where the growth spurt would lead to increased adiposity and hence the significant variability. The type of skill activities that the participants were involved in of basketball and football may have contributed to these results. In basketball they bounced, threw the ball to partner or goal while in football kicking is a common activity. It is therefore possible that they improved in strength and skill as directed by peer tutors.

Table 18: Anthropometric measures by age categories 13-19yrs

Skill	Test	Number	Mean	Std. Dev	Significance
Skinfolds (mm)	Pretest	38	8.66	5.430	0.001
	Posttest	38	14.65	9.634	

The participants played football daily for two hours and this could explain the improvement in kicking skill to target, while improvement in hand grip in both the left and right hand can be attributed to basketball skills that the participants were involved in daily.

4.2.7 Motor performance measures by Gender

As shown in Table 19 and 20, there was significant improvement in right hand grip $t(76) = -2.361, p < 0.05$, left hand grip $t(76) = -3.085, p < 0.003$ and skinfold measure among boys in the 8-12 year category. In the same category, girls showed significant improvement in the right hand grip $t(32) = -4.050, p < 0.05$ and left hand grip $t(32) = -5.097, p < 0.05$.

Table 19: Motor skill performance measures by gender Boys 8-12yrs

Skill	Test	Number	Mean	Std. Dev	Significance
RHGrip	Pretest	39	12.00	5.749	0.020
	Posttest	39	16.96	11.800	
Skinfolds	Pretest	39	9.35	6.149	0.006
	Posttest	39	13.29	6.167	

In the 13-19 and 20-25 year categories, no significant improvements between the boys and girls were noted.

Table 20: Motor skill performance measures by gender Girls 8-12yrs

Skill	Test	Number	Mean	Std. Dev	Significance
RHGrip	Pretest	17	8.71	3.853	0.05
	Posttest	17	13.94	3.682	
LHGrip	Pretest	17	6.85	3.815	0.05
	Posttest	17	13.29	3.549	

Based on the findings on motor performance measures of all participants in the study, the hypothesis that there would be no significant difference in skill and fitness level scores of participants with and without disabilities who were engaged in the peer tutor directed sports training programme was not accepted. This is because significant differences were evident in waist to hip ratio between athletes and partners and motor skill performance in the handgrip, balance and kicking activities.

4.3 Peer Tutor Demographics

4.3.1 Peer tutors

As shown in Table 21, thirty two students were selected for the study. Approximately two-thirds of the coaches were male 20(63%) while 12(37%) were female.

Table 21: Number of Peer tutors by gender

	Frequency	Percent
Male	20	63
Female	12	37
Total	32	100

On average each peer tutor handled about 4 learners with and without disabilities randomly assigned to them. This was to ensure close supervision and also for small group teaching of sports skills.

4.3.2 Year of Study

As shown in Table 22, most of the peer tutors 21(65%) were in their 3rd or 4th year of study with just over 10% having completed their undergraduate studies. This is not surprising as many students who volunteer for various activities at the university are in their third and fourth year study. They tend to be more alert to upcoming activities and enroll more. In addition they understand the value of volunteering as it boosts their curriculum vitae while those in first and second year of study are still not confident to take up challenges that may go beyond their sport skills competencies. There were also more male students participating in the programme than female students. This again was not surprising as many female students are not involved in sports on campus and would find the activities challenging.

Table 22: Year of study at the University

Year of Study	Frequency	Percent
1	4	13
2	2	6
3	10	31
4	11	34
Graduating/Completed	4	13
Not Specified	1	3
Total	32	100

4.3.3 Programme of Study

Majority of the peer tutors 20(63%) were drawn from the sports related programmes on campus while 12(37%) were drawn from other departments (Table 23). They were selected on the strength of their participation in University sports activities. Majority of the peer tutors were enrolled in Physical Education, Sports Science and Recreation Management courses. It was therefore easy to train them in event management as they were not totally new to the sports and skills that were the primary focus in the event management training.

Table 23: Programme of Study

	Frequency	Percent
Sport Related Degree Program	20	63
Education	3	9
Early Childhood Education	1	3
Other	7	22
Not Specified	1	3
Total	32	100

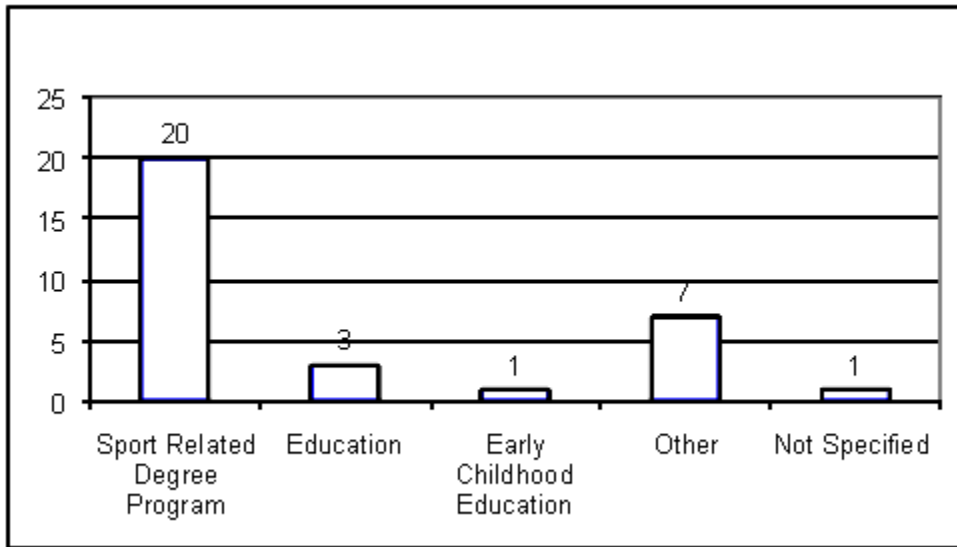


Fig. 4: Programme of Study

4.3.4 Prior Training

In addition, Table 24 also shows that just under half (44%) of the peer tutors had some prior training or academic background in working with individuals with disabilities.

Table 24: Prior Training or Academic Background Working with Individuals with Disabilities

	Frequency	Percent
Little or no training	18	56
Some training	12	38
A lot of training	2	6

The department of Physical and Health Education curriculum offers only one elective course in Adapted Physical Activities (Kenya University, 2010/2012 Calendar). Many of the students do not take this course as it is optional. Since this was not a condition for selection, it was therefore not surprising to have majority of the peer tutors having had no training in disability related issues.

4.3.5 Prior Contact with Individuals with Disabilities

Majority of peer tutors had prior contact with someone with a disability (Table 25 and figure 5), as over three-quarters of coaches (78%) personally knew someone with a disability. For many, this contact came from volunteering at the Saturday sports program for children with ID held at Kenyatta University.

Table 25: Prior Contact with Individuals with Disabilities

	Frequency	Percent
No	7	22
Yes	25	78

4.3.6 Prior Experience

As shown in Table 26, almost an equal number of peer tutors reported having no prior experience working with individuals with disabilities. Those who reported to have had some experience had participated in the Saturday Special Olympics programme on campus. Otherwise they had not had any experience elsewhere. When asked if they had worked as instructors in a sports camp for persons with disabilities, 69% reported in the negative. In Kenya, very few programmes exist that bring together youngsters with and without disabilities to play together. It is therefore not surprising to see such a big percentage who had never worked with persons with disabilities.

Table 26: Prior Experience with Individuals with Disabilities

	No	Yes
Do you have any experience working with individuals with a disability?	15(47%)	17(53%)
Have you worked as an instructor in a sports camp for individuals with disability before?	22(69%)	10(31%)

In a multinational study of attitudes towards individuals with intellectual disabilities (Special Olympics, 2006), it was noted that the more the opportunities people have to interact with individuals with intellectual disabilities, the greater their perception of those individuals' competence. This improved perception of competence leads to more positive attitudes toward individuals with intellectual disabilities. In addition, Block, (1995) found that having a family member or a close friend with a disability was related to favorable attitudes.

4.3.7 Interactions among the Participants

Overall, peer tutors reported that the participants got along well with each other, as 69% of peer tutors saw frequent conversations and joking among participants with and without disabilities and 56% saw frequent encouragement. Many peer tutors (63%) also noted that participants frequently helped each other by demonstrating or explaining sports skills to their peers. Although peer tutors did observe negative interactions like frustration, dominance, and teasing from time to time, they noted that these interactions occurred rarely or only occasionally.

Table 27: Participant Interactions as Observed by Peer Tutors

<i>How frequently did you witness the following behaviors among participants with and without disabilities?</i>	Rarely or never	Occasionally	Frequently
Conversation/joking	0%	31%	69%
Encouraging/cheering	0%	44%	56%
Demonstration/explanation of sports skill	7%	30%	63%
Frustration with peer	41%	50%	9%
Dominance/bossiness	48%	52%	0%
Teasing/bullying	50%	33%	17%

These results concur with an earlier research study among Japanese youth (Siperstein, Norins, and Corbin, 2005). The survey of more than 4,000 middle school students from across Japan examined their beliefs about the competency of their peers with intellectual disabilities, their willingness to interact with these individuals both in and out of school, and their feelings about including these students in their classes. The youth were more receptive to interaction with peers with intellectual disabilities. There is consensus among athletes, coaches and family members that there is significant improvement in athletes' sense of self, social skills and social interactions due to their participation in Special Olympics (Siperstein, et al., 2005).

4.3.8 Changes in Motor Skill Performance

As shown in Table 28, majority of peer tutors reported improvement in the athletes and partners in sports skills (88%); self-esteem and self-confidence (97%), social skills (94%), and ability/ease making friends (75%). In total they observed more improvement in all the participants with and without disabilities in all variables investigated. From the

peer tutors observations, the athletes gained sports and social skills but these skills were still lower than what was observed among participants without disabilities.

Table 28: Level of improvement noted by peer tutors among the participants

	No improvement	A little improvement	A lot of improvement
Participants with disabilities			
Sports skills	0%	12%	88%
Self-esteem and self-confidence	0%	3%	97%
Social skills	0%	6%	94%
Ability/ease making friends	3%	22%	75%
Participants without disabilities			
Sports skills	0%	6%	94%
Self-esteem and self-confidence	0%	6%	94%
Social skills	0%	9%	91%
Ability/ease making friends	0%	12%	88%

These findings are similar to previous studies (Mahoney, Robinson & Fewell, 2001; Wang & Ju, 2002; Whitt-Glover, O'Neill & Stettler, 2006; Shiels, Dodd, & Ablott, 2009) that showed people with intellectual disabilities can improve their skill level under guidance to equal the performance of those without disabilities albeit slowly. These results are also in line with an earlier study by Klavina and Block, (2008) which showed increased interaction behaviors between students with Severe Mental Disabilities (SMD) and other peers during peer-mediated intervention.

4.3.9 Experiences of Peer tutors

Table 29 presents themes that emanated from the peer tutors responses to the open ended questions.

Table 29: Lessons learned by peer tutors while working with individuals with ID

Major Themes	Select Quotes
Need for patience and encouragement	<p><i>“With patience, humility, and kindness, the campers with ID are very cooperative and feel loved and accepted when involved in events like sports camps.”</i></p> <p><i>“They are like most kids and only require a little more guidance and patience.”</i></p>
Potential/competence of campers	<p><i>“Disability is not inability. They need chances to show potential.”</i></p> <p><i>“All people have the capacity to attain self-actualization if given a chance.”</i></p>
Positive impact of giving back to community	<p><i>“I have felt inspired and more energized in working with such people.”</i></p> <p><i>“I feel good because I can change, and really changed, their lives.”</i></p>

Peer tutors learned and benefited in a number of ways. Working with the athletes and partners, they learned that with patience and encouragement it is possible for youth with disabilities to achieve their full potential. They also gained skills and experienced the fulfillment of giving back to the community.

4.3.10 Impact Programme on Volunteer Peer Tutors

Three major thematic areas were clearly noted. That is a) experience gained through working with youth with disabilities, b) new skills gained and c) personal growth. Table 30 presents themes that emanated from the peer tutoring programme and some of the views that were repeatedly mentioned in the open ended questionnaire.

Table 30: Benefits from serving as a coach

Major Themes	Select Quotes
Gained experience working with individuals with ID	<p><i>“I have gained experience and courage in working with the disabled persons.”</i></p> <p><i>“I have learned different ways of dealing with children with ID and appreciating them, and ways to improve their skills.”</i></p>
Learned new coaching skills	<p><i>“I learned new coaching skills in both basketball and soccer.”</i></p> <p><i>“I’ve been able to apply practically what I have been taught in class in the coaching and training areas.”</i></p>
General personal enhancement	<p><i>“I have gained self-fulfillment in knowing I have influenced and touched some of the athletes’ lives.”</i></p> <p><i>“I have learned to appreciate all people and share whatever I have always by giving my time.”</i></p> <p><i>“I have learned how to be a better teacher, coach, big sister, and person to others.”</i></p>

These findings concur with findings in a study by Special Olympics, (2009) that indicated that volunteers gain personal satisfaction, increased tolerance and got a chance to re-examine their personal values. A survey of Chinese youth after the Special Olympics Games in Shanghai showed an improved attitude toward peers with intellectual disabilities. This was as a result of their awareness and exposure to information about Special Olympics. Those youth who were directly involved in the Games expressed the most positive attitudes. There were dramatic changes, not only in their perceptions of the

capabilities of students with intellectual disabilities, but also their willingness to interact with a student with an intellectual disability, both in and out of school. Peer tutors reported a change in the way they viewed themselves after being involved in the programme.

4.4 Parents' Demographics

4.4.1 Number of Parents Attending Programme

In total 86 parents of athletes and partners attended the two week camp on different days. Majority of them were female parents (87%). Majority 60 (70%) of those who attended the camp regularly were parents of athletes. Majority of the parents of athletes were not comfortable allowing their children to be accompanied by partners alone as had earlier been envisaged. They were apprehensive of their safety and being bullied. However, as the days progressed the number of parents accompanying their children began to reduce. Anecdotal information gathered showed that as parents became more confident with partners and coaches they became more willing to allow their children to be escorted by partners and thus they did not have to come to camp as frequent as before.

4.4.2 Means of Transport

Majority of the parents of participants with disabilities reported that they walked to the camp daily as they either could not afford to pay for bus fare or that they lived close to the University. Only two parents drove their children to the camp daily. On the other hand, parents of partners were a mixed group with some driving their children to camp while some walked with their children on some of the days. This provided an opportunity for interaction between athletes and partners as they walked to the camp and back together.

4.4.3 Employment

Majority of parents of participants with disabilities indicated that they were unemployed and relied on petty jobs to survive. Conversely, majority of the parents of partners were employed at different levels and had a steady income. As can be seen in Table 31, majority of parents (64%) of athletes were unemployed, while most of the parents of partners were employed in the public sector. Mactavish and Schleien, (2004) have suggested that a child's disability, the family's ease of participation, and the extent to which modifications to activities are required may be associated with variations in participation and also family financial ability to provide opportunities for their children to

Table 31: Type of employment of parents of athletes and partners

	Type of Employment Athletes	Number & Percentage of Parents of Partners
Not employed	55(64%)	3(4%)
Public servant	5(6%)	21(24%)
Private sector	0(0%)	2(2%)
Total	60(70%)	26(30%)

participate in recreational activities. Families of children with disabilities may bear additional costs associated with caring for their child, which could make supporting participation in community activities more difficult. The difference in background of parents was at the beginning the source of worries from both groups. As noted from interviews conducted at the beginning and at the end of the training, both groups had worries about the safety of their children, ability to follow instructions, and behavioral problems. As shown in Table 32 these fears were erased later as parents reported surprise

at how well the groups had integrated and more so how this programme had introduced them to other parents. A study by Kersh and Siperstein, (2008) had also shown that parents were surprised when they saw their children interact with peers without disabilities in a unified sports programme. Families are critical to the success of sports programmes for individuals with intellectual disabilities. Worldwide, participation in Special Olympics programmes significantly boosts family members' perceptions of and

Table 32: Parents initial and later views about allowing their children to participate in an integrated programme

Initial reactions by parents	Later reactions by parents
My fear is that my child will be hurt by the other children	It is surprising how they work together
My fear is that my child will not cope with the other children	She talks about her friend (partner) often
I am not sure if this is the right thing to do	I think we parents are the hindrance to our children's learning
I am worried the others will make fun of my child	Although they live next to us, I had never talked to the parents of the athlete
I am worried that he will not cope with the exercises	but now we are friends

their children's future and improves family members' social networks both within the family and the wider community (Special Olympics International, 2009).

As noted by Shields, et al., (2009) parents are probably best positioned to influence the lifestyle habits of their children and to implement changes in their children's activity

behavior. Educating family members about the importance of regular activity to maintain good health and how to sustain vigorous activity for improved cardiovascular health might help to increase the level of activity in children with ID. Families should be encouraged to incorporate activity into their daily routine where possible. For example, they could encourage activities that can be pursued into adulthood such as swimming, dancing, cycling, and exercising at a local gym, as these activities can be completed by individuals of all levels of motor ability yet they would also include a social component which is a key facilitator of activity in people with ID.

In this study, parents of athletes and partners had similar negative views about their children participating in a unified programme at the beginning. Some feared that their children would be hurt by the other children or that those with ID would not cope with the other children. For those with children with ID a major worry was that others would make fun of them while parents of partners were not sure if this was the right thing to do. As the programme came to the end, parents described how their expectations had been positively impacted. One theme that emerged was that the programme had made them more aware of the extent of their children's capabilities and potential. Some parents explained it with excitement that "it was surprising how the children work together" and another summed it up "I think we parents are the hindrance to our children's learning". Another regretted that "Although they live next to us, I had never talked to the parents of the athlete but now we are friends". These views suggest that parents, as well as the general public, may underestimate their children with intellectual disabilities. When people with intellectual disabilities are challenged and given the opportunity to succeed in a variety of venues, they often demonstrate to others that they are highly capable

(Gersh & Siperstein, 2008). Parents may underestimate their children with intellectual disabilities but when they are given a chance to see what training can do towards skill acquisition they are able to change their views as their children interact. Attitudes towards persons with disability remain the major hindrance to access and participation of individuals with intellectual disabilities in unified sports such as this would be useful.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of findings, conclusions and recommendations based on the findings of the study.

5.2 Summary of the Findings

The study investigated the effects of a peer tutor training programme on physical activity level of athletes and partners engaged in unified programme in Nairobi County -Kenya. The participants were engaged in a sports programme directed by peer tutors camp that brought together 106 youth with and without ID to learn sports skills. The programme was managed by student coaches who served as cross age peer tutors. The number of participants was 53 each for those with and without ID. The participants were assessed at the beginning for fitness and motor skill abilities at the beginning and at the end of the camp. The study was guided by the following objectives and Hypotheses.

5.3 Objectives of the Study

- (a) To develop a peer tutor directed programme that would enhance physical fitness and sport skills of participants with and without disabilities.
- (b) To recruit and train volunteer peer tutors from among University students to provide guidance to learners with and without ID.
- (c) To find out the level of social interaction of participants with and without intellectual disabilities through a peer tutor training programme.
- (d) To find out the views of peer tutors towards teaching those with intellectual disabilities.

- (e) To find out the views of parents on the extent to which the peer tutoring programme helped their children to improve their motor and social skills.

5.3.1 Research Questions

The study aimed to answer two questions. That is: *Does participation of youth with and without intellectual disabilities in a peer-tutor programme lead to improved social skills?*

After two weeks of participation in the programme it was postulated that the peer tutor programme would lead to improved social interactions between participants with and without intellectual disabilities. The results showed an improvement in interaction the two groups as judged by peer tutors and parents.

The second question: *Are there any differences between views held by parents of participants with and without disabilities towards their children's participation in the peer tutor directed sports training programme?* The assessment was done qualitatively and the results indicated positive comments from a majority of the parents. Their earlier fears were changed from seeing their children participating and socializing with others.

5.4 Research Hypotheses

- i) It was hypothesized that there would be no significant difference in motor skills performance of athletes and partners who participate in the peer tutor directed sports training programme. The results showed that the participants improved in the right and left hand grip and kicking activities. The other motor skills did not change significant.
- ii) It was hypothesized that there would be no significant difference in fitness levels of athletes and partners who participate in the peer tutor directed sports training

programme. The results showed an improvement in some of the fitness parameters after two week training. These included hand strength, left leg balance waist to hip ratio. The other physical fitness parameters did not change significantly albeit showing a positive trend on a linear regression.

5.6 Findings on Skill and Fitness Level of Athletes and Partners Engaged in the Peer Tutor Directed Sports Training Programme

The study findings showed that:

- a) There was no significant difference in fitness levels for all variables measured except for the waist to hip ratio measure for both athletes and partners in the pre/posttest scores. This was expected as the intervention period was short. However the information gathered is useful as a basis for future comparisons.
- b) There was no significant difference in fitness measures between boys and girls in the athlete and partner groups.
- c) Partners recorded better fitness values than athletes but these were not significant for all variables measured.
- d) There was a significant difference between pre and post test scores in the kicking, balance and handgrip among the athletes and partners.

5.7 Findings on the Level of Interaction Behaviour between Athletes and Partners

The study findings showed that:

- a) Generally the participants had a high interaction during the activities
- b) Cases of support for the athlete by partners could be seen from time to time though not all the time for all participants.

- c) Some partners were still not cooperative and some kind of bullying could be noticed.

5.8 Findings on Attitudes of Peer Tutors towards Coaching Athletes and Partners involved in the Sports Programme

The study findings showed that:

- (a) Trained peer tutors had positive attitudes towards coaching children with and without ID.
- (b) They felt the programme gave them a chance to give back to society through volunteering at the sports camp.

5.9 Findings on the Views of Parents towards their Children's social and motor Skill Abilities after Participating in the Peer Tutor Directed Sports Training Programme.

The study findings showed that:

Both the parents of participants with and without ID were fearful that their children would not cope or would be hurt by others. In the posttest survey they had positive attitudes toward the Unified programme

- a) Majority of parents of children with ID were unemployed while many of the partners were either in public or private employment.
- b) The difference in socioeconomic status did not have an impact on the way the parents felt about their children

5.10 Conclusions

This study is an initial attempt to document a training methodology to support teachers in the congested classes arising from the influx of learners with different abilities who are now entering the Free Primary Education. The conclusions that can be made from the findings of this study are:

- a) Cross peer tutoring is an approach that could be used in our schools to support the adapted physical educator to provide more engagement of learners with intellectual disabilities in integrated sports activities.
- b) Individuals with intellectual disabilities though limited in skill performance do learn and improve if given correct support.
- c) Irrespective of their ability, children are able to participate in sports without focusing on the differences but are willing to help each other and make friends.
- d) Partners can be valuable, readily available sources of support to teachers who work with students who have severe disabilities and should be considered as resources for physical education teachers.
- e) Parental support is key to learners with disabilities participating in integrated sports.

5.11 Recommendations

Based on the conclusions described above, the following recommendations for policy formulation and further research are made.

5.11.1 Recommendation for Application

1. There is need to encourage more female athletes with intellectual disabilities to participate in community sports programmes. This has to be done from the family

level where parents are educated on the importance of the girl child participating in sports.

2. More opportunities should be availed for sports for persons with disabilities in schools and communities. In particular there is need for skills training for persons with disabilities to be able to cope in integrated activities. Physical educators have to be trained so that they acquire best practice skills to be able to include those with disabilities in sports.

5.11.2 Recommendation for Policy Formulation

The following recommendations for policy formulation are suggested:

1. The need for training of PE teachers and coaches in methods that allow for inclusion of individuals with intellectual disabilities in regular sports is now more urgent given the increasing numbers of such individuals in our schools.
2. New teaching methodologies that use collaborative teaching have to be utilized in settings where persons with disabilities are involved if any meaningful learning has to occur. Kenya Institute of Education, Universities need to relook at the training of teachers so as to incorporate techniques that involve peer tutoring models.
3. Guidelines on the use of peer tutors should be provided to adapted PE teachers to encourage the use of such a support group in the classroom.
4. Schools and sports centres should contract with parents to enhance skill learning among learners with disabilities. This could also mean training parents to become coaches of their children with disabilities so that skills practice opportunities are increased.

5.11.3 Recommendation for Further Research

Previous studies have focused on small groups of learners with disabilities in controlled settings. There is need for further research using larger population samples. The present study attempted to use a slightly large sample but it would be necessary to compare populations in different settings too. Similar studies should be done to replicate the findings of this research in other settings and for a longer time than two weeks to assess the effect of the peer tutoring on fitness levels improvement.

As noted by Broer, Doyle and Gangreco, (2007) there are no other studies that have sought the perspectives of participant with significant disabilities themselves. Other studies should be done that use research protocols that can assess the views of athletes and partners who should respond directly. This way the effect of peer tutoring would be best understood from the recipient perspective.

REFERENCES

- Allen, R. L. & Beattie, R. J. (1984). The role of leisure as an indicator of overall satisfaction with community life. *Journal of Leisure Research*, 99 – 109.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Auxter, D., Pyfer, J., & Huettig, C. (2005). *Principles and Methods of Adapted Physical Education and Recreation*. New York, NY. The McGraw-Hill Companies, Inc.
- Arreaga-Mayer, C. (1998). Increasing active student responding and improving academic performance through classwide peer tutoring. *Intervention in School and Clinic*, 34(2), 89-94.
- Ayvazo, S & Ward, P. (Winter 2009). Effects of classwide peer tutoring on the performance of sixth grade students during a volleyball unit. *The Physical Educator*. 79(4). 46-49.
- Barfield, J., Hanigann, S. & Liebermann, L. (1998). Implementing a peer tutor program: Strategies for practitioners. *The Physical Educator*, 55(4), 211 – 221.
- Benard, B. (1990). *A Case for Peers*: Northwest Regional Educational Laboratory, ED 327755.
- Blessings, O. I. McCrimmon, D. Stovall, J.; & Willford. N. (1993). The Effects of Regular Exercise Programmes for Visually Impaired and Sighted School Children. *Journal of Visual Impairment and Blindness*, 87, 50 – 52.

- Blinde, E. M. & McClung, L. R. (1997). Enhancing the Physical and Social Through Recreational Activity. Accounts of Individuals with Physical Disabilities. *Adapted Physical Activity Quarterly* 14, 327 – 344.
- Block, M.E. (2007). *A teacher's guide to including children with disabilities in general physical education* (3rd ed.). Baltimore: Paul H. Brookes.
- Block, M., Klavina, A., & Flint, W. (2007). Including students with severe, multiple disabilities in general physical education. *Journal of Physical Education, Recreation and Dance*, 78(3), 29–32.
- Block, M. Obersweiser, B., & Bain. M.(1995). Using class wide peer tutoring to facilitate inclusion of students with disabilities in regular physical education. *The Physical Educator*, 52, 47-56.
- Block, M. E.; Taliaferro, A; Campbell, A. L; Harris, N & Tipton, J. (April 2011). Teaching the self-contained adapted physical education class: each student has unique needs and skills that should be addressed individually. *The Journal of Physical Education, Recreation & Dance*
- Block, M.E. & Zeman, R. (1996). Including Students with Disabilities in Regular Physical Education: Effects on Nondisabled Children. *Adapted Physical Activity Quarterly*, 13 (1) 38-49.
- Borremans, E.; Rintala, P.; & Kielenen, M. (2010). Effectiveness of an exercise-training program on youth with Asperger Syndrome. *Adapted Physical Activity over Life-Span, European Congress of Adapted Physical Activity*.
- Bruininks, R. H. (1974). Physical and Motor Development of Retarded Persons. In N. R. Ellis (ed.) *Internal Review of Research in Mental Retardation* Vol. 7 pp. 209 – 216 New York, NY; Academic Press.

- Carmona R.H, Cabe J, & McCabe J. (2005). Improving the health and wellness of persons with disabilities: a call to action. *Psychiatric Rehabilitation Journal*, 29(2):122-127.
- Causton-Theoharis, J.N., & Malmgren, K.W. (2005). Increasing peer interactions for students with severe disabilities via paraprofessional training. *Council for Exceptional Children*, 71(4), 431–444.
- Carter, E.W & Hughes, C. (2005). Increasing social interaction among adolescents with intellectual disabilities and their general education peers: Effective interventions. *Research and Practice for Persons with Severe Disabilities*: 30 (4), 179-193.
- Cataneda & Sherrill (1999). Family participation in Challenger baseball: critical theory perspectives. *Adapted Physical Activity Quarterly* 16(4), 372-388.
- CDC -Center for Disease Control and Prevention (2011). *About BMI for Children and Teens*. (Online) Accessed on 4th Sep 2011
http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html
- Chow, B., Frey, G.C., Cheung, S. & Louie, L. (2005). An examination of health-related physical fitness levels in Hong Kong youth with intellectual disability *Journal of Exercise Science Fitness*, Vol. 3.No 1
- Cooper SA, Morrison J, Melville C, Finlayson J, Allan L, Martin G, & Robinson N. (2006). Improving the health of people with intellectual disabilities: Outcomes of a health screening programme after 1 year. *Journal of Intellectual Disability Research*, 50 (Pt 9): 667-77.

- Damon, W., & Phelps, E. (1989). *Strategic Uses of Peer Learning in Children's Education. Peer Relationships in Child Development*, edited by T. J. Berndt and G.W. Ladd. New York: John Wiley and Sons, 135 – 157.
- Dearing, E., Wimer, C., Simpkins, S.D., Lund, T., Bouffard, S.A., Caronongan, P., Kreider, H., & Weiss, H. (2009). Do Neighborhood and Home Contexts Help Explain Why Low-Income Children Miss Opportunities to Participate in Activities Outside of School? *Developmental Psychology*, 45(6): 1545-1562.
- De Paepe, J. L. (1985). The Influence of Three Least Restrictive Environments on the Content motor – ALT and performance of moderately mentally retarded students. *Journal of Teaching in Physical Education*, 5, 34 – 41.
- Depauw, K. P. (1990). *Sports, Society and Individuals with Disabilities*. In G. Reid (ed.); *Problems in Movements Control*, pp. 19 – 33) NY Elsevier.
- Dunn, J.M., Morehouse, J. W. & Fredericks, H. D. (1986). *Physical Education for the Severely Handicapped; A Systematic Approach to Data Based Gymnasium*. Austin, TX: Pro-Ed Publishers.
- Duran, F. S., Lugo, L., Ramirez, L., & Eusse, E. (2001). Effects of an exercise program on the rehabilitation of patients with spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, 82, 1349–1354.
- Durnin JVGA, & Wommersley J. Body fat assessed from total body density and its estimation from skinfold thickness: measurements on 481 men and women aged from 16 to 72 years. *British Journal of Nutrition* 1974: 32: 77–92.
- Ellery, P. J., & Stewart, M. J. (2000). Graduate adapted physical education personnel preparation programs receiving federal funding. *Adapted Physical Activity Quarterly*, 17, 54-68.

- Favazza P, & Siperstein G.(2006). *Evaluation of Young Athletes program*. Washington, D.C.: Special Olympics and University of Massachusetts-Boston.
- Feltz, I. D. & Weiss, R. M. (March 1982). Developing Self-Efficacy through sports. *Journal of Physical Education, Recreation and Dance*, 24, 26 – 36.
- Fernandez-Vivo, M., & Cordero, I. (April 2005). Effects of peer tutoring on academic learning time. *Physical education of elementary school* 12-16.
- Fernhall B, & Pitetti KH. Limitations to physical work capacity in individuals with mental retardation. *Clinical Exercise Physiology*, 3: 176–185.
- Fitzgerald, J. (Jan. – March 2001). Can Minimally Trained College Student volunteers help young at risk children read better? *Reading Research Quarterly*, 36, 8 – 46.
- Fontana, D. (1990): "Where Do We Go From Here? A Personal View By An Educationalist." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John.Wiley and Sons, 375-388.
- Fragala-Pinkham MA, Haley S.M, & Goodgold S. (2006). Evaluation of a community-based group fitness program for children with disabilities. *Pediatric Physical Therapy*, 18 (2): 159-67.
- Frey, G.C., Stanish, H.I., & Temple, V.A. (2008). Physical activity of youth with mental retardation: Review and research agenda. *Adapted Physical Activity Quarterly*, 25, 95-117.
- Gartner, A. & Riessman, F. (August 1993). *Peer Tutoring: Towards a new Model*. *ERIC Digest*. Washington, DC: ERIC Clearinghouses on Teaching and Teacher Education.
- Gaustad, J. (March 1993). *Peer and Cross age tutoring*. *ERIC Digest* 79. Eugene, or ERIC Clearinghouse Educational Management.

- Giesecke, D.; Cartledge, G.; & Gardner, R. (1993). "Low Achieving Students as Successful Cross-Age Tutors." *Preventing School Failure* 37/3: 34-43.
- Goodwin, D.L. (2001). The Meaning of Help in PE: Perceptions of Students with Physical Disabilities *Adapted Physical Activity Quarterly*, 18 (3) 289-303.
- Government of Kenya (2007). *Vision 2030: a competitive and prosperous Kenya*. The Government Printer, Nairobi.
- Greenwood, C. R.; Carta, J. J.; & Hall, V.(1988). "The Use of Peer Tutoring Strategies in Classroom Management and Educational Instruction." *School Psychology Review* 17/2: 258-275.
- Greenwood, C. M., Dzewaltowski, D. A. & French, R. (1990). Self-Efficacy and Psychological well being of wheelchair tennis participants and wheelchair non-tennis participants. *Adapted Physical Activity*, 7, 12 – 21.
- Hanna, R. S. (1986). Effect of Exercise on Blind Persons. *Journal of Visual Impairments and Blindness*, 80, 722 – 725.
- Halle, JU. W., Gabler-Halle, D., & Bembren, D. A. (1989). Effects of a peer-mediated aerobic conditioning program on fitness measures with children who have moderate and severe disabilities. *The Journal of the Association of Persons with Severe Handicaps*, 14, 33 – 47.
- Hall, J. W., Gabler-Halle, D., & Bembren, D. A. (1989). Effects of a peer-mediated aerobic conditioning program on fitness measures with children who have moderate and severe disabilities. *The Journal of the Association for Persons with Severe Handicaps*, 14, 33 – 47.
- Hall, T., & Stegila, A. (2003). *Peer mediated instruction and intervention*. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved

(20/7/2011) <http://aim.cast.org/learn/historyarchive/backgroundpapers/peer-mediated>

- Hands, B. & Larkin, D. (2006). Physical fitness differences in children with and without motor learning difficulties. *European Journal of Special needs Education, Vol 21(4), 447-456.*
- Hebert, B. & Bressan, E. (1995). The Value of Sport and Physical Activity Programmes for Children with Physical Disabilities. In E. H. Katzellenbogen (Ed.) pp 155 – 162. The Importance of children's participation in physical and sporting activities. *Proceedings of 7th International Rainbow week symposium 3 – 10 December, Cape Town, SA.*
- Hedrick, B. N. (1985). The effects of wheelchair tennis participation and mainstreaming upon the perceptions of competence of physically disabled adolescents. *Therapeutic Recreation Journal. 91(2), 34-46.*
- Horvat, M., Pitetti, K.H., & Croce, R. (1997). Isokinetic torque, average power, and flexion/extension ratios in nondisabled adults and adults with mental retardation. *The Journal of Orthopaedic and Sports Physical Therapy, 25, 395–399.*
- Houston-Wilson, C. Dunn, J. M., Van der Mars, H., & McCubbin, J. (1997). The Effect of peer tutors on motor performance in integrated physical education classes. *Adapted Physical Activity, 14, 298 – 313.*
- Houston-Wilson, C., Lieberman, L.J., Horton, M., & Kasser, S. (1997). Peer Tutoring: An effective strategy for inclusion. *Journal for Physical Education, Recreation, & Dance, 68(6), 39-44.*
- Invernizzi, M., Rosemary, C., Juel, C., & Richards, H. C. (1997). At risk readers and community volunteers: A3-Year perspective. *Scientific Studies of Reading, 1, 277*

– 300. Student skill, knowledge, and socialization. *The Physical Educator*, 55, 24-37.

Kamau, J. (2008). *Prevalence, Intervention and management of overweight and obesity among primary school children in Nairobi province, Kenya*, Unpublished PhD Thesis,

Kenyatta University 2010/2012 *Catalogue*.

Kalyvas, V., & Reid, G. (2003). Sport adaptation, participation, and enjoyment of students with and without physical disabilities. *Adapted Physical Activity Quarterly*, 20, 182-199.

Kersh J, & Siperstein G. (2008). *The Contributions of Special Olympics to Positive Family Functioning*. Boston: University of Massachusetts Boston;

King, G., Lawm, M., King, S., Rosenbaum, P., Kertoy, M., & Young, N. (2003). A Conceptual Model of Factors Affecting the Recreation and Leisure Participation of Children with Disabilities. *Physical and Occupational Therapy in Pediatrics*, 23(1): 63-90.

Klavina, A., Block, M. (2008). The effect of peer tutoring on interaction behaviors in inclusive physical education. *Adapted Physical Activity Quarterly*, 25, 132-158.

Kobberling, G., Janskowski, L.W.J., & Leger, L. (1991). The relationship between aerobic capacity and physical activity in blind and sighted adolescents. *Journal of Visual Impairments and Blindness* 85, 382 – 384.

Kosma, M., Gardner, R.E., Cardinal, B.J., Bauer, J.J., & McCubbin, J.A (2006). Psychosocial Determinants of Stages of Change and Physical Activity Among Adults With Physical Disabilities. *Adapted Physical Activity Quarterly*, 2006, 23, 49-64.

- Kozub, F. M., & Oh, H. (2004). An exploratory study of physical activity levels in children and adolescents with visual impairments. *Clinical kinesiology* 58(3), 1-7.
- Law, M.T., Petrenchik, G., King, P. & Hurley (2007). Perceived Environmental Barriers to Recreational, Community, and School Participation for Children and Youth With Physical Disabilities. *Archives of Physical Medicine and Rehabilitation*, 88(12): 1636-1642.
- Lejčarova, A. (2009). Coordination skills in 9 to 11 years old pupils at practical elementary schools in relationship to their degree of intellectual disability. *Acta Univ. Palacki. Olomuc., Gymn. 2009, vol. 39, no. 4*
- Levinson, L. J. & Reid, G. (1991). Patterns of Physical Activity among Youngsters with Developmental Disabilities. *Canadian Association of Health Physical Education and Recreation Journal* 57(3), 24 – 28.
- Lieberman, L., (2002). Fitness for individuals who are visually impaired or deaf blind. *Review*, 34 (1), 13-23.
- Lieberman, J. & Houston-Wilson (2002). *Strategies for Inclusion: A Handbook for Physical Educators*. Champaign, IL: Human Kinetics.
- Lieberman, L., Dunn, J., van der Mars, H., & McCubbin, J. (2000). Peer tutors' effects on activity levels of deaf students in inclusive elementary physical education. *Adapted Physical Activity Quarterly*, 17, 20-39.
- Lieberman, L.J., Newcomer, J., McCubbin, J., & Dalrymple, N. (1997). The effects of cross age tutors on the academic learning time in physical education of children with disabilities in inclusive elementary physical education classes. *Brazilian Journal of Adapted Physical Education & Recreation*, 4, 15–32.

- Long, E., Irmer, L., Burkett, L. N., Glasenapp, G., & Odenkirk, B. (1980). Project People
Journal for Physical Education and Recreation, 28 – 29.
- Lugaila, T.A. (2003). A Child's Day: 2000 (Selected Indicators of Child Well-Being).
Current Population Reports. Washington, DC: U.S. Census Bureau.
- Mahoney, G., Robinson, C., & Fewell, R.R. (2001). The effects of early motor
intervention on children with Down syndrome or cerebral palsy: A field-based
study. *Journal of Developmental and Behavioral Pediatrics*, 22, 153–162.
- McCubbin, A. J., Rintala, P. & Frey, C. G. (1997). Correlation study of three cardio
respiratory, fitness test for men with mental retardation. *Adapted Physical Activity
Quarterly*, 14 (1), 43 – 50.
- Mac Donncha C, Watson AWS, McSweeney T. & O'Donovan D. J. (1999). Reliability of
Eurofit physical fitness items for adolescent males with and without mental
retardation. *Adapted Physical Activity Quarterly* 16: 86–95.
- Mactavish J. B, Dowds MJ.(2003). Physical activity and sport for individuals with
intellectual disability. In: Steadward, RD, WheelerGD, WatkinsonEJ, eds.
Adapted physical activity. Alberta: University of Alberta Press, 559–587.
- Mactavish, J.B., & Schleien, J.S. (2004). Re-injecting Spontaneity and Balance in
Family Life: Parents' Perspectives on Recreation in Families That Include
Children with Developmental Disability. *Journal of Intellectual Disability
Research*, 48(2): 123-141.
- Marfell-Jones, M., Olds, T., Stewart, A. & Carter, L. (2006). *International Standards for
Anthropometric Assessment*. The international society for advancement of
kinanthrometry, Potchefstroom. pp.55.

- Morris, A. (1986). *Disabling and Handicapping conditions in V. Seepedt (ED). Physical activity and well being*, pp. 393 – 414. Reston, VA, American Alliance for Health, Physical Education, Recreation and Dance.
- Mugenda, M. & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Acts Press, Nairobi, Kenya.
- Murata, N.M. & Jansma, P. (1997). Influence of Support Personnel on Students with and without Disabilities in General Physical Education. *Clinical Kinesiology: Journal of the American Kinesiotherapy Association*, 51, 37-46.
- Murphy, AN; Carbone, S.P.; and the Council on Children with Disabilities (2008). Promoting the Participation of Children with Disabilities in Sports, Recreation, and Physical Activities. *Pediatrics Vol. 121 No. 5*, pp. 1057-1061.
- Naude, D.; Kruger, H.S, & Pienaar, A.E. (2009). Differences in body composition, body proportions and timing of puberty between stunted and non-stunted adolescents. *African Journal for physical Education, Recreation and Dance* 15, (4), 678-689.
- Oja P, & Tuxworth B, (eds.) (1995). *Eurofit for adults: A test battery for the assessment of the health-related fitness of adults*. Strassbourg: Council of Europe, Committee for the Development of Sport.
- Onyewadume, I.U. (2006). Fitness of black African early adolescents with and without mild mental retardation. *Adapted Physical Activity Quarterly*, 23, 277-292.
- Oyaro, K. (2008). Students pour in, teachers drain away. *Inter press services news agency*, <http://ipsnews.net/africa/nota.asp?idnews=42667>).
- Pan, Chien-Yu, & Frey, Georgia C. (2006). Physical Activity Patterns in Youth With Autism Spectrum Disorders. *Journal of Autism & Developmental Disorders*, 36:597-606. Springer Science=Business Media, Inc.

- Pang (2009). Intention and constraints of Hong Kong secondary school Physical Education teachers to promote Unified Sports. *African Journal for Physical Health Education, Recreation and Dance*, 15 (4), 575-582.
- Pitetti, K.H., Yarmer, D.A. & Fernhall, B. (2001). Cardiovascular Fitness and Body Composition of Youth with and without Mental Retardation. *Adapted Physical Activity Quarterly*, 18 (2) 127-141.
- Reid, G. (1987): Skill upgrading programs. *Canadian Association of Health, Physical Education and Recreation Journal*, 53(5), 6 – 11.
- Reid, G. & Todd, T. (2006). Increasing Physical Activity in Individuals With Autism. *Focus on Autism and Other Developmental Disabilities*. Vol. 21, Number 3.
- Rimmer, J.H. (2009). *Physical activity and disability*. In Brown D. R, Heather, G.W,& Martin S.L (eds).Promoting Physical Activity 2nd Edition. Human Kinetics, Champaign, USA.
- Rimmer J.H, & Braddock D. (2002). Health promotion for people with physical, cognitive and sensory disabilities: An emerging national priority. *American Journal of Health Promotion*, 16 (4): 220-4, ii.
- Rimmer J.H, Braddock, D, & Fujiura G. (1993). Prevalence of obesity in adults with Mental retardation: Implementations for health promotion and disease prevention. *Mental Retardation*, 31:105-110.
- Republic of Kenya. (2003). *The Persons with Disabilities Act, 2003*. Kenya Gazette Supplement No. 111 (Acts No. 14). Government Printer, 9 January 2003,Nairobi, Kenya.
- Safrit, M. J. & Wood, T. M. (1995). *Introduction to Measurement in Physical Education and Exercise Science*. (3rd ed). Mosby Inc. St. Louis, Missouri.

- Shapiro, D.R., Moffatt, A., Lieberman, L., & Dummer, G.M. (2005). Perceived competencies of children with visual impairments. *Journal of Visual Impairment & Blindness*, January, 15-25.
- Sherrill, C. (2004). *Adapted physical activity, recreation, and sport: Cross disciplinary and lifespan* (6th ed.). Boston: McGraw-Hill.
- Sherrill, C. & Williams, T. (1996). Disability and sport; psychosocial perspectives on inclusion integration and *participation*. *Sport Science Review* , 5(1), 42 – 64.
- Shields, N.J, Dodd, K.J., & Ablott, C. (2009). Do Children with Down Syndrome perform sufficient physical activity to maintain good health? A pilot study. *Adapted Physical Activity Quarterly*, 26, 307-320.
- Schleien, S.J., Stone, C.F., & Rider, C.Y. (2005). A paradigm shift in therapeutic recreation: From cure to care. In E.L. Jackson (Ed.), *Constraints to leisure* (pp. 295-310). State College, PA.: Venture Publishing
- Sinibaldi, R. (2001). Peers, Partners and Equals, *Exceptional and Regular Students Strategie.s* 14 (4) 9-11.
- Sinyolo, D. (2007). *Teacher Supply, recruitment and retention in six Anglophone sub-saharan African countries*. A report on a survey conducted by Education International.
- Siperstein, G.N., Leffert, J.S., & Wenz-Gross, M. (1997). The quality of friendships of children with and without learning problems. *American Journal of Mental Retardation*, 102, 111-125.
- Siperstein, G.N., Norins, J., Corbin, S., & Shriver, T. (June, 2003). *Multinational study of attitudes toward individuals with intellectual disabilities*. Special Olympics.

- Skaags, S. & Hopper, C. (1996). Individuals with visual impairments: A review of psychomotor behaviour. *Adapted Physical Activity Quarterly*, 13.
- Special Olympics Inc. (1999). *Summary of vision screening data. Special Olympics Opening Eyes Vision Health Program*. World Summer Games, NC USA.
- Siperstein, G.N., Norins, J., & Corbin, S. (2005). *Changing attitudes changing the world: A study of youth attitudes about intellectual disabilities*. Washington, DC: Special Olympics
- Special Olympics Inc. (2009). *Status and prospects of persons with intellectual disability*, Washington DC.
- Staub, D., & Hunt, P. (1993). The Effects of Social Interaction Training on High School Peer Tutors of Schoolmates with Severe Disabilities. *Exceptional Children* 60(1): 41-57.
- Stocchino, G.; Selis, A; Guicciardi, M. & Mereu, F. Full integration in Italian school during physical education and sports activities. In Higgs, C. and Yves, V. (eds.). *Perspectives The multidisciplinary series of physical education and sport science*, vol. 7, 105-126.
- Telama, R., Yang, X., Viikari, J., Välimäki, I., Wanne, O., & Raitakari, O. (2005). Physical activity from childhood to adulthood: A 21-year tracking study. *American Journal of Preventive Medicine*, 28, 267–273.
- Thahane, L. N., Myburgh, C. P. H., & Poggenpoel, M (2005). The life-world of visually impaired adolescents: An educational guidance perspective. *Education*, 125, 393-403.
- Tsai, E.H and Fung, L. (2009). Parents' Experiences and Decisions on Inclusive Sport Participation of Their Children With Intellectual Disabilities. *Adapted Physical Activity Quarterly* 26, 151-171
- Topping, K.J. (Dec. 2005). Trends in Peer Learning, *Educational Psychology*

Vol. 25, No. 6, pp. 631–645.

- Townsend M., & Hassall, J. (Sep. 2004). Mainstream students' attitudes to playing unified sports with students who have an intellectual disability. Paper presented at the European Conference on Educational Research, University of Crete. *Education online*
- Tripp A., French, R. & Sherrill, C. (1995). Contact Theory and Attitudes of Children in Physical Education Programs Toward Peers with Disabilities. *Adapted Physical Activity Quarterly*. 12, 323-332.
- UN enable (2010). World Programme of Action concerning. *Disabled Persons*. 4-10
- United Nations Food Programme (2007). *Sexual and Reproductive Health of Persons with Disabilities*. New York: United Nations Population Fund.
- U.S. Department of Health and Human Services (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville.
- U.S. Department of Health and Human Services. (2005). *The Surgeon General's call to action to improve the health and wellness of persons with disabilities*. Office of the Surgeon General. Retrieved from:
<http://www.surgeongeneral.gov/library/disabilities/calltoaction/calltoaction.pdf>
- Van Biesen, D., Verellen, J., Meyer, C., Mactavish, J., Van de Vliet, P., Vanlandewijck, Y. (2010). The Ability of Elite Table Tennis Players with Intellectual Disabilities to Adapt Their Service/Return. *Adapted Physical Activity Quarterly*, 27, 242-257.

- Van de Putte, A., Behets, D., Van Keer, H., & Van Hove, G. A systematic review of peer tutoring in inclusive physical education classes. *Adapted Physical Activity Over Life-Span, European Congress of Adapted Physical Activity*, 143.
- Van de Vliet, P., Rintala, P., Frojd, K., Verellen, J., Ann Houtte, Van Daly, J. & Vanlandewijck, Y.C. (2006). Physical fitness profile of elite athletes with intellectual disabilities. *Scandinavian Journal of Medicine and Science in Sports*, vol. 16(6), 417-425 Dec. 2006
- Van der Ploeg, H.P., van der Beek, A.J., van der Woude, L.H. & van Mechelen, W. (2004). Physical activity for people with a disability: A conceptual model. *Sports Medicine*, 34, 639-49.
- Vogler, E.W., Koranda, P. & Romance, T. (2000). Including a Child with Severe Cerebral Palsy in Physical Education: A Case Study *Adapted Physical Activity Quarterly*, 17 (2) 161-175.
- Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Process*. Cambridge, MA: Harvard University Press.
- Wang, W., & Ju, Y. (2002). Promoting balance and jumping skills in children with Down syndrome. *Perceptual and Motor Skills*, 94, 443-448.
- Ward, P. & Ayvazo, S. (2006). Classwide peer tutoring in physical education: Assessing its effects with kindergartners with autism. *Adapted Physical Activity Quarterly*, 23, 233-244.
- Webster, G. E. (1987). Influence of Peer Tutors upon academic learning time-physical education on mentally handicapped students. *Journal of Teaching in Physical Education*, 7, 393 - 403.

- Weiss, J. A. (2008). Role of Special Olympics for mothers of adult athletes with intellectual disability. *American Journal on Mental Retardation*, 113, 241-253.
- White, A., & Gager, C. (2007). Idle Hands and Empty Pockets? Youth Involvement in Extracurricular Activities, Social Capital and Economic Status. *Youth and Society*, 39(1): 75-111.
- Whitt-Glover, M.C., O'Neill, K.L., & Stettler, N. (2006). Physical activity patterns in children with and without Down syndrome. *Pediatric Rehabilitation*, 9, 158–164.
- Woodruff, M.E; Cleary T.E; Bader, D. (1980). The prevalence of refractive and ocular anomalies among 1242 institutionalized mentally retarded persons. *American Journal of Optomology physiology Optics*, 57(2): 70-84.
- WHO (2011). *World Report on Disability*. WHO Library Cataloguing Publication.
- Winnick, J. P. & Short,, F. X. (1985). *Physical Fitness testing of the disabled: Project UNIQUE*: Champaign, III: Human Kinetics.
- Wiskochil, B., Lieberman, L., Houston-Wilson, C., & Petersen, S. (2007). The effects of trained peer tutors on the physical education of children who are visually impaired. *Journal of Visual Impairment & Blindness*, 339-350.
- World Health Organisation (2011). *Disability and rehabilitation*. Retrieved August 17, 2011, from www.who.int/disabilities/publications/action-plan/en/index.html
- Zhang, J., Piwowar, N. & Reilly, C.J. (2009) Physical fitness performance of young adults with and without cognitive impairments. *Journal of Research*, 4(1), 46-51

APPENDIX 1

A Peer Tutor Survey for Peer tutors participating in a two week camp at Kenyatta University

A Little about You

Name: _____

Gender: Male Female Age: _____

Academic Program at Kenyatta University: _____

Year of Study: _____

Assigned Team: _____

Other Tutors on the Team: _____

A little About Your Background

1. Before camp, did you personally know anyone with intellectual disabilities (ID) or other disabilities? If so, which disability, and what is your relationship with this person?

Yes No

2. Prior to Camp, did you have any other training or academic background in working with individuals with disabilities?

A lot of training
 Some training
 Little or No training

3. Prior to Camp, did you have any training or academic background in working with individuals specifically with ID?

A lot of training
 Some training
 Little or No training

4. Prior to camp, did you have any previous experience working with individuals with ID or other disabilities? If so, explain.

Yes No

5. Was this your first experience working with children or as a camp counselor? Explain.

- Yes No

About the Campers

6. How did campers on your team appear to get along? (Select one.)

- They got along very well with each other.
- Most got along well, but one or two did not get along with others.
- A few got along well, but most did not.
- They did not get along at all

7. How frequently did you witness the following behaviors among campers? (Check one per row):

	Frequently	Occasionally	Rarely or Never
Conversation/Joking			
Encouragement/Cheering			
Demonstration/explanation of sports skill			
Frustration with teammate			
Criticism of teammate			
Teasing/Bullying			
Dominance/Bossiness			
Negligence/Inattention			

8. Describe free play. Who played with each other? What kinds of activities were kids involved in? Were any kids left out?

9. Over the two weeks of camp, how much improvement did you notice in most of your campers WITH disabilities in the following areas? :

	A lot of improvement	A little improvement	No improvement	No opportunity to observe
Sports skills				
Self-esteem and self-confidence				
Social Skills				
Ability/Ease in making friends				

(Please note any specific examples or exceptions. Use full names please!):

10. Over the two weeks of camp, how much improvement did you notice in most of your campers WITHOUT disabilities in the following areas? :

	A lot of improvement	A little improvement	No improvement	No opportunity to observe
Sports skills				
Self-esteem and self-confidence				
Social Skills				
Ability/Ease in making friends				

(Please note any specific examples or exceptions. Use full names please!):

11. How would you describe camper participation in camp activities?

- All campers participated actively
 Most campers participated actively, but a few campers “held back”
 Few campers participated actively

Examples:

A Little about Your Experience at Camp Shriver

12. A. What were your biggest challenges in working with campers with ID or leading your team?

B. How did you resolve these challenges?

13. How, if at all, could camp activities be improved?

14. Did you feel adequately prepared to be a counselor? Was there anything missing from the Events Management Training that would have been helpful in preparing you?

What have you learned about working with individuals with ID or other disabilities through your experiences at Camp Shriver?

15. How have you benefited personally from serving as a counselor? What have you gained?

16. What other comments or stories, if any, do you have about your experience at Camp Shriver?

APPENDIX 2

PARENTS QUESTIONNAIRE

BACKGROUND INFORMATION

1. Name of parent: -----

2. Name of child: -----

3. Age of child: -----

4. Location of residence: -----

5. Level of parent education

- never been to school
- primary level of education
- secondary level
- college education

6. Means of transport to camp (tick whichever is appropriate)

- walk
- cycle
- public transport
- personal vehicle
- any other

7. Are you employed?

If yes

Self employed

- public servant
- private sector
- any other.....

Tell us some more about:

8. What has this programme meant to you?

A) As a parent of a child with a disability.....

.....
.....

B) As a member of your community.....

.....
.....

C) Lessons learned from the programme.....

.....
.....

Now tell us about your child

9. Please indicate if your child has been assessed.

Yes

No

10. Now tell us something about your child before joining this programme

A) Physical ability.....

.....
.....

B) Social abilities.....

.....
.....

C) Daily living skills.....

.....
.....

11. Now tell us something about your child after participating in the two programme

A) Physical ability.....

.....
.....
.....

B) Social abilities.....

.....
.....

C) Daily living skills.....

.....

APPENDIX 3

MINISTRY OF EDUCATION

CHIEF INSPECTOR OF SCHOOL
INSPECTORATE
P.O. BOX 30426
NAIROBI

EDUCATIONAL ASSESSMENT AND RESOURCE SERVICES
EARS P.O. BOX 39733 TEL: 340957 NAIROBI

REFERRAL FORM

TO The Headteacher
Prv Sch. (Unit for M.H)

ASSESSMENT CENTRE <u>KISE</u>	PROVINCE <u>NRB</u>	DISTRICT <u>NRB</u>
CHILD'S NAME	NO <u>0101/05</u>	
SEX	DATE OF BIRTH <u>3/1/97</u>	AGE
SCHOOL		P.O. BOX
FATHER'S NAME		
PERMANENT ADDRESS		
MOTHER'S NAME		
PERMANENT ADDRESS	<u>Box 2 NRB</u>	
CHILD'S RESIDENTIAL ADDRESS	<u>'' '' ''</u>	
REFERRED FOR ASSESSMENT BY	<u>Family</u>	
TESTS USED	<u>School readiness</u>	
IMPRESSION/OBSERVATION	<u>Bandeline/Mitel M.H.</u>	
MEDICAL STATE OF CHILD	<u>Good</u>	

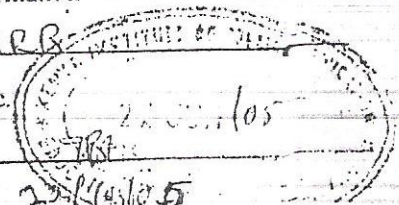
We would very much like you to see the above mentioned child for: admission in your school in the special class. She shy off from discussion and participating on given tasks. Requires alot of patience and encouragement. should move to the regular class once improvement is made. should be involved actively in reading and writing to build confidence.
After your examination/treatment would you please send any relevant information

To KISE ERRC Box 48413 NRB

Thank you for your help, if there are any further questions please contact the centre.

Name of Assessor MES

Signature



APPENDIX 4

CONSENT FORM

Physical Activity Level of Youth with Intellectual Disabilities participating in Special Olympics Programmes in Nairobi County – Kenya Department of Physical and Health education Kenyatta University – Kenya

Investigator

Peter W. Bukhala

I have volunteered to participate in a study being conducted by the above listed investigator. The main purpose of this study is to assess the physical activity level of youth with intellectual disabilities participating in Special Olympics programmes in the Nairobi County. The study will require that I participate in a one day fitness testing session under the supervision of the investigator. Throughout this period I will be tested on the skinfold and body segment measures. I will also be required to respond to a questionnaire relating to my nutritional status.

The research protocol will include the following procedures

1. Assessment of Physical Fitness Abilities

I will be required to have my height and weight assessed. The height measurements will be taken using a height metre while the weight measurements will be taken using a weighing scale. I will also have my percent body fat assessed using a skin fold caliper. The skin fold caliper will be used to take the skin measurements at the abdomen, triceps and chest for male. The thickness of the skin held by the caliper represents the measurements for assessing percent

body fat. These measurements will be taken at the beginning of the programme, and at the end of the 8-week programme. I will be required to participate in a physical activity programme of choice under the guidance of a peer tutor for 8 weeks. I will be required to perform the activities for one hour three times a week and my performance and improvement recorded. The activities will start with warm up activities that include stretching, curling and jogging. The second stage will involve my peer tutor demonstrating the skill activity to me before I practice the skill for some time. Throughout the training session my peer tutor will assist me to perform the skills correctly. The activity will begin at my present physical activity level and progression to higher skill levels will depend on my mastering the basic skills.

2. Self-Evaluation Protocol

I will be expected to respond to a Food Frequency Questionnaire. A booklet containing the results of all the above information will be given to me at the end of the study.

3. Exclusions

To my knowledge, I do not possess any condition, which would otherwise exclude me from participating in this study.

4. Confidentiality

I understand that the information collected in this study may be used for research purposes, including publications in research journals. All individual information will be coded and at no time will personal identity be revealed.

5. Voluntary Participation

The nature and purpose of the procedures and the known risks involved have been explained to me. I understand that participation in this study is voluntary and refusal to participate will involve no penalty or loss of benefits to which I am otherwise entitled. I may terminate my participation at any time I choose, without penalty. I may withdraw from participation at any point of the testing with no penalty.

6. Termination of Participation

My participation in this research may be terminated without my consent if the investigator(s) believe that any portion of the study will put me at undue risk. My participation may also be terminated if I do not adhere to the study protocol.

7. Benefits of participation

The benefits of participation in this study are:

- a. My participation will make a contribution to my own physical fitness improvement through information I receive.
- b. My participation will contribute towards further understanding of methods that can be used to enhance skill acquisition with disabilities.
- c. I will receive information on my physical fitness levels, at no charge.

8. Liability

I have voluntarily agreed to participate in this study. I release all involved researchers and any other personnel involved in the study from any liability for any injury or illness that I may suffer while participating in this research study or subsequently occurring in connection with the study.

9. Persons to Contact with Questions

I understand that the principal investigator in this study is Peter Bukhala and that I may contact him if I have any additional question (0725-829073). Should I do wish, I may also contact the Chair of the Ethics Committee, Kenyatta University on any issues related to this study.

10. Consent to Participate

I certify that I have read all of the above and received satisfactory answers to any questions that I asked. I willingly give my consent to participate in this research study. (*I will be provided with a copy of this signed informed consent*).

.....

Participant(s) Name (Print)

Date

.....

Participant(s) Signature

Date

.....

Guardian(s) Signature

Date

APPENDIX 5

EUROFIT PROTOCOL FORM

Fitness and motor skill score sheet

Student & Testing Information

Name:	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Date of Birth (d/m/y):
School:	Grade/CLASS:	Date of Evaluation (d/m/y):

Fitness Assessment

Station 1

Height: _____ cm

Weight: _____ kg

Station 2

Waist Circumference: _____ cm Hip Circumference: _____ cm

Station 3: Skinfolds

	First Measurement	Second Measurement	Third Measurement
Tricep	□□.□ mm	□□.□ mm	□□.□ mm
Bicep	□□.□ mm	□□.□ mm	□□.□ mm
Calf	□□.□ mm	□□.□ mm	□□.□ mm

Station 4Sit-and-Reach: 1st measurement _____ cm 2nd measurement _____ cm

Handgrip Strength:

Right hand 1st measurement _____ kg Right hand 2nd measurement _____ kgLeft hand 1st measurement _____ kg Left hand 2nd measurement _____ kg

STATION 5:

Fitness and motor skill score sheet

		Trial 1	Trial 2
		*Circle 1/2 (Yes) or 0 (No):	
Throwing (Overhand)	Windup initiated with downward movement of arm	1 / 0	1 / 0
	Hips and shoulders rotate	1 / 0	1 / 0
	Weight transferred to leg opposite throwing arm	1 / 0	1 / 0
	Follow-through forward after ball released	1 / 0	1 / 0
Throwing Score:			
Catching	Hands are in front of body to prepare for catch	2 / 0	2 / 0
	Ball is caught only by hands (not against body)	2 / 0	2 / 0
Catching Score:			
Kicking	Non-kicking foot placed even or slightly behind ball	2 / 0	2 / 0
	Kicks ball with inside of foot, toe or laces and follows through	2 / 0	2 / 0
Kicking Score:			
Dribbling	Hand contacts ball at approximately waist level	1 / 0	1 / 0
	Ball is pushed (not slapped) using fingertips	1 / 0	1 / 0
	Maintains ball control for 6 consecutive dribbles (allow 2 free @ start)	2 / 0	2 / 0
Dribbling Score:			
		Time 1 (s)	Time 2 (s)
Balance	Balance on left foot (45s = ceiling)		
	Balance on right foot (45s = ceiling)		
Best Time:			

APPENDIX 6



KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: director-crd@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844
Nairobi, 00100
Tel: 8710901/12

Our Ref: KU/R/COMM/51/14

Date: March 8th, 2011

Mr. Peter W. Bukhala,
Dpt. of Physical and Health Education,
Kenyatta University.

Dear Mr. Bukhala,

APPLICATION NUMBER PKU004/I03 OF 2010 - 'PHYSICAL ACTIVITY LEVEL OF YOUTHS WITH INTELLECTUAL DISABILITIES PARTICIPATING IN SPECIAL OLYMPICS PROGRAMMES IN NAIROBI PROVINCE: KENYA '

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic 'PHYSICAL ACTIVITY LEVEL OF YOUTHS WITH INTELLECTUAL DISABILITIES PARTICIPATING IN SPECIAL OLYMPICS PROGRAMMES IN NAIROBI PROVINCE: KENYA' dated 25th November 2010.

2. APPLICANT

Mr. Peter W. Bukhala,
Dpt. of Physical and Health Education,
Kenyatta University

3. SITE

KENYA

4. DECISION REACHED.

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

- i. Scientific design and conduct of study,
- ii. Recruitment of research participant,
- iii. Care and protection of research participants,
- iv. Protection of research participant's confidentiality,
- v. Informed consent process,
- vi. Community considerations.

APPROVED that the research proceeds for a period of ONE year.

The approval is for the period 8th March 2011 to 8th March 2012.

5. ADVICE

- i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study,
- ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur,
- iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.

Please sign in the space provided below and return to KU-ERC a copy of the letter.



NICHOLAS K. GIKONYO, PhD.
CHAIRMAN ETHICS REVIEW COMMITTEE

I Peter Bukhala accept the advice given and will fulfill the conditions therein.

Signature P. Bukhala Dated this day of 8/3 2011.

cc. Vice-Chancellor
Director: Institute for Research Science and Technology

AT/

APPENDIX 7

LETTER OF INVITATION OF ATHLETES

TO
HEAD TEACHER

.....
.....
.....

Special Olympics Sports Camp Department of Physical & Health Education Kenyatta University P.O Box 43844-00100 Nairobi

RE: TWO WEEK CAMP FOR YOUTH WITH DISABILITIES

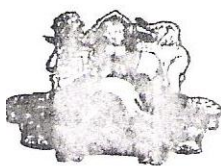
This is to request you to inform parents of pupils in your Special Unit that a two week sports camp will be held at Kenyatta University from 30th November -10th December 2009 at Kenyatta University sports ground. In addition to providing sports opportunities for youth with a disability, this camp will also be used as a forum to teach social skills in an inclusive environment. The participants will also be assessed on their physical fitness levels before and at the end of the programme. Participants will be provided with t-shirts and lunch for all the days of the camp. All those wishing to participate should register with the organizing committee at the University's Main Gymnasium between 8 am and 4pm before the commencement of the camp. Participants should be aged 8 years and above and should bring a long an assessment form from a recognized assessment centre.

Thank you

Peter Bukhala
Sports Camp Coordinator
Tel. 0725-829073

APPENDIX 8

CODE OF CONDUCT FOR PEER TUTORS



Kenyatta University
Dept. of Physical & Health Education



Camp Shriver
Kenyatta University

VOLUNTEER/COUNSELOR CONTRACT

Attendance: Volunteer and Counselors are expected to attend camp from 8-2:00pm Monday through Friday for the weeks to which they have committed. Any absence from camp must be reported by 10:00am via email (shrivercamp@ku.ac.ke) or phone (0725-829-073). Unreported absences will result in immediate termination of volunteer/Counselor service at Camp Shriver KU for the remainder of the session.

Code of Dress: Each volunteer/counselor will receive a Camp Shriver volunteer t-shirt. This shirt cannot be altered in any way (cutting, dying, tying, etc.) and must be worn everyday at camp. The following apparel is prohibited:

- a) Apparel deemed embarrassing to others because it promotes indecent exposure
- b) Clothing that is revealing or sexually suggestive and consequently is a distraction to the teaching and learning process at Camp Shriver
- c) Shorts that are not fingertip length when the volunteer's arms are extended at their sides and their fingers uncurled
- d) Pants or shorts not meeting the bottom of one's shirt
- e) Footwear other than closed-toe sports shoes (i.e. sandals, boots, Crocs, etc.)

Code of Conduct: As a camp Shriver Special Olympics at Kenyatta University Volunteer, I agree that while serving at Camp I will:

- a) Provide for the general welfare, health, and safety of all Camp participants in my charge during the course of my assigned duties
- b) Report any emergency to the Camp Director, Assistant Director, or senior Counselor after first taking immediate action to ensure the health and safety of the Campers
- c) Not engage in any type of inappropriate behavior, sexual activity, or physical abuse with Camp participants, volunteers, or counselors
- d) Actively participate in Camp Shriver activities to the best of my ability and provide assistance to Camp Shriver Staff as needed

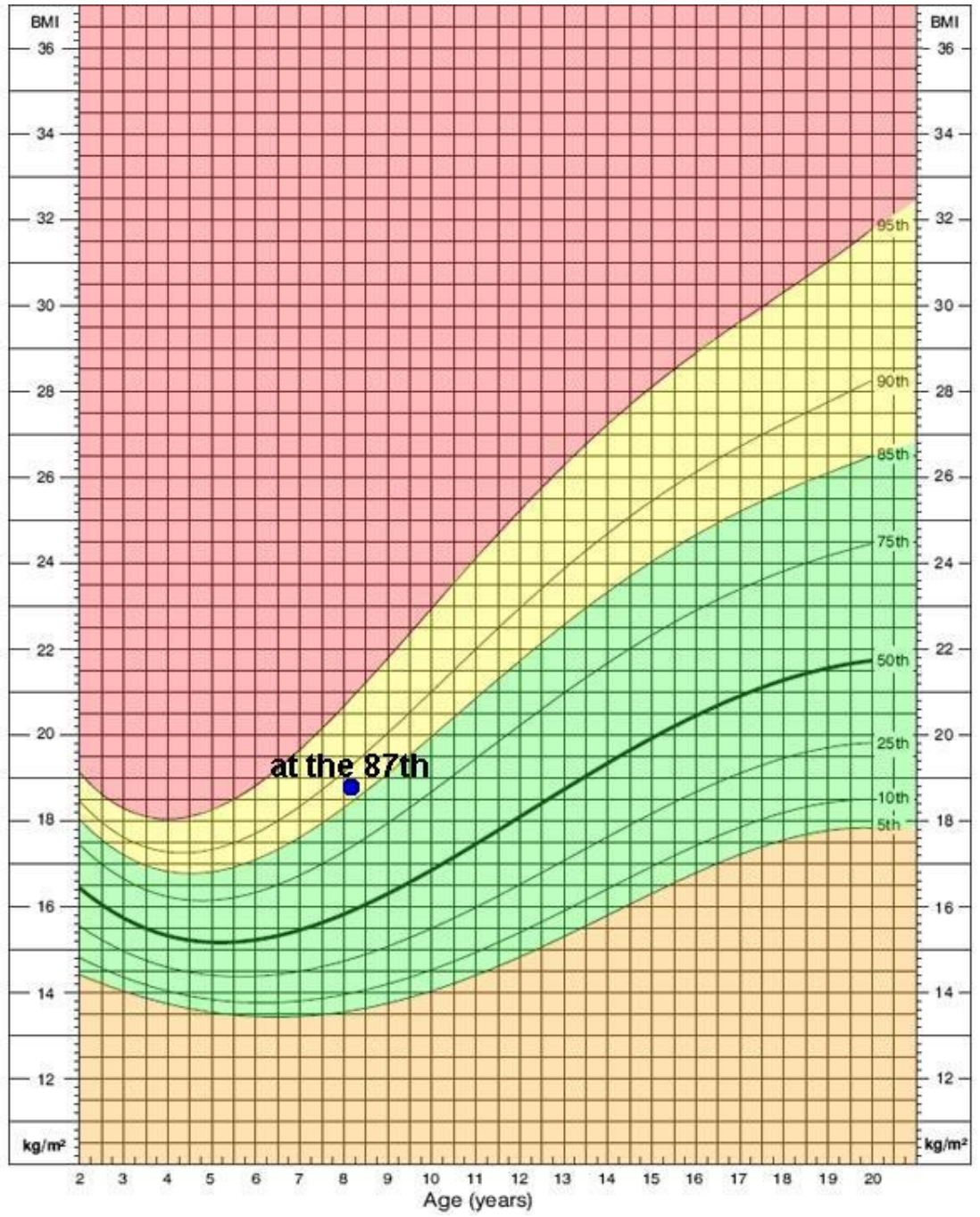
My signature below indicates that I _____ (*print name*) have read and understood the Volunteer Contract for Camp Shriver Special Olympics at KU. I understand that my volunteer service can be modified or terminated with or without cause, at any time, at the option of Camp Shriver Special Olympics at KU or at my option and that camp management may, in its sole discretion, decline to accept my application to volunteer with or without cause.

Volunteer/ Counselor Signature

Date

APPENDIX 9

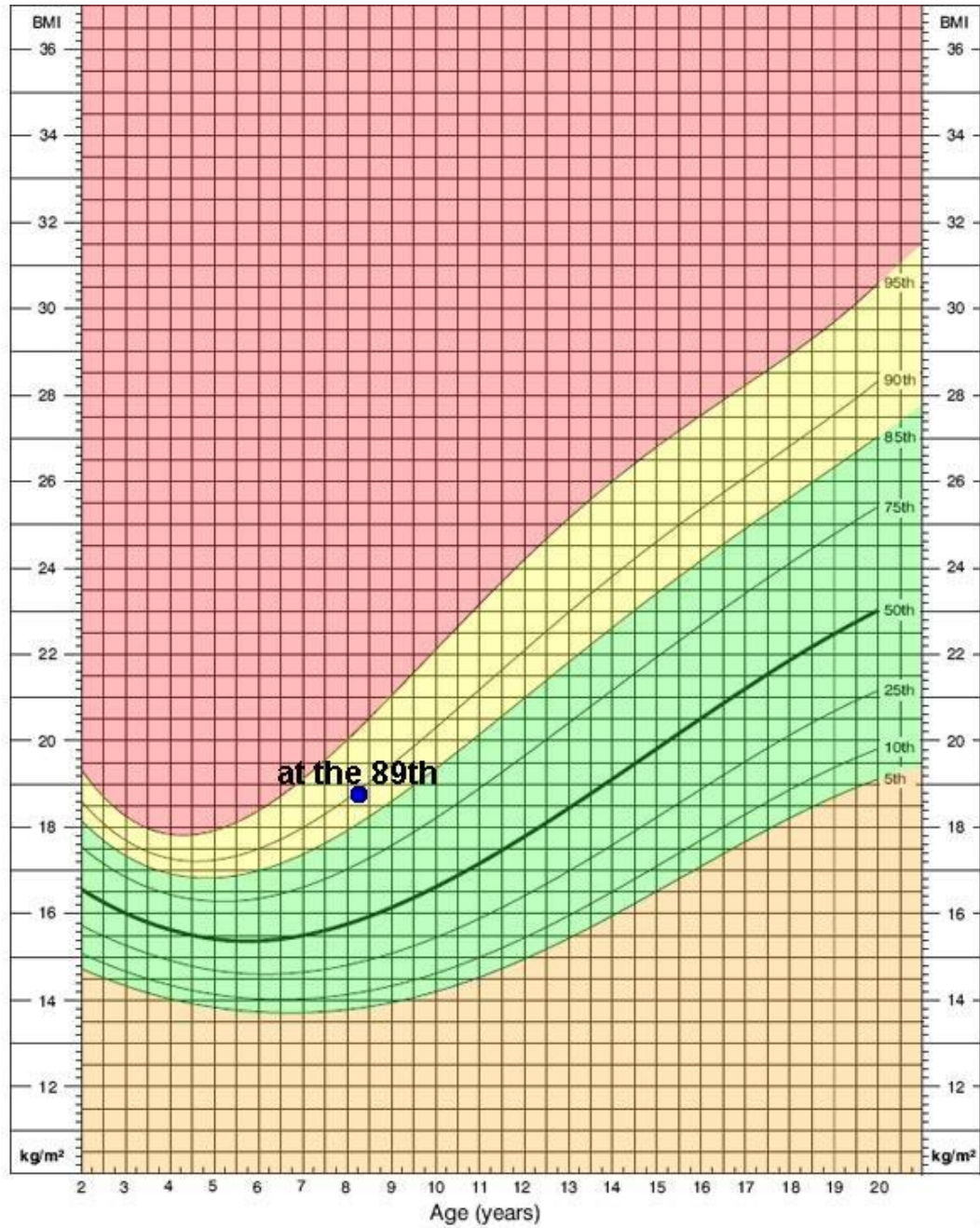
WHO (2011) BMI Percentile Rank Charts for Girls



Girls

APPENDIX 10

WHO (2011) BMI Percentile Rank Charts for Boys



Boys