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# Using Sport to Promote HIV/AIDS Education for at-risk Youths:

## An Intervention using Peer Coaches

DISSERTATION FROM THE NORWEGIAN SCHOOL OF SPORT SCIENCES • 2008

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*In press, Vulnerable Children and Youth Studies*

**Paper 2** **Using Sport to Promote HIV/AIDS Education for at-risk Youths: An Intervention Using Peer Coaches in Football**

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**Paper 3** **Combating HIV/AIDS in Sub-Saharan Africa: Effect of introducing a mastery motivational climate in a community based sport program.**

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**Paper 4** **Gender differences in HIV related, cognitive and behavioural intention variables following an intervention using peer coaches in sport with at-risk children in Tanzania.**

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# Summary

Most Human immunodeficiency Virus/Acquired immunodeficiency syndrome (HIV/AIDS) intervention programs provide only education (i.e., information) about HIV related transmission and prevention to help participants to reduce their risk of infection. A few studies have reported findings that have indicated improvement in risk reduction of educational programs by providing both information and behavioural skill training (DiClemente & Wingood, 1995; Kalichman, Rompa, & Coley, 1996; Hobfoll, Jackson, Lavin, Britton, & Shepherd, 1994; Kelly, Murphy, Washington, Wilson, Koob, Davis et al., 1994). At the moment, some interventions for HIV risk reduction contain both educational and skill building components, recruit adults such as teachers and nurses, and provide culturally sensitive and gender appropriate materials (Carey, Maisto, Kalichman, Forsyth, Wright, & Johnson, 1997; Klepp, Ndeki, Leshabari, Hannan, & Lymo, 1997). Although studies show that peer relationships can contribute to safer sex behaviours (Gallois & McCamish, 1989; Kelly, St Lawrence, & Brasfield, 1991) and the importance of peer support has been documented by various studies dealing with adolescent behaviours (Walter, Vaughan, Gladis, Ragin, Kasen & Cohall, 1992; Valdiserri, Lyter, Leviton, Callahan, Kingsley & Rinaldo, 1988), HIV/AIDS educational programs in Tanzania have not fully recognized the importance of skill training that involve peers in the delivery of the services (e.g., Lugoe, 1996; Klepp et al., 1997; National AIDS Control Program (NACP), Bureau of Statistics, & MEASURE project, 2004; Schueller, La Vake, Lugoe, Chuma, Mango & Humplick, 2003; UNICEF, 2004). In addition, it has been suggested that popular youth activities should be utilized to assist in the delivery of educational packages, and the United Nations has suggested that community based sport programs should play a major role in HIV prevention among young

people (UNGAOR, 2003; United Nations, 2003). To date, no systematic studies have been reported about the effectiveness of such programs in HIV risk reduction.

The primary aim of this thesis was to investigate the effectiveness of an ongoing AIDS education intervention program (EMIMA) that does use peers in a sport context. The secondary aim was to investigate a motivational strategy to enhance the effectiveness of peers in the sport context. Motivation is recognized to play an important role in developing HIV risk reduction interventions (Carey et al., 1997; Kelly, Murphy, Sikkema, & Kalichman, 1993; Kelly, 1995; Hobfoll et al., 1994; Miller, 1989; Carey & Lewis, 1999). In this thesis, we report the effectiveness of a quasi field experiment involving the EMIMA program. The thesis consists of four study reports on an intervention that involved peer coaches in a sport context with at-risk children (average age=13.6 years) in Dar es Salaam in Tanzania.

As part of the process of investigating the effectiveness of the EMIMA program, we decided to develop a questionnaire that gathered information regarding the HIV related cognitive and behavioural intention variables we used. We used scales that had been successfully used previously in Sub-Saharan Africa, and once we had recruited our participants, we gave them a pre test to determine their level of knowledge and behavioural intentions regarding safe sex variables. We then conducted our quasi- experiment with the youths, and gave a post test to determine whether the HIV/AIDS education messages were being received.

We stratified the participants into three subgroups. We recruited children into the EMIMA program following the procedures of the EMIMA program. As control groups, we also recruited a group of children who were educated about HIV/AIDS prevention through the normal school curriculum. These were termed *in school* children. We recruited also a group of children from the same communities that were out of school and who did not participate in the EMIMA program. We termed these children *out of school* street children.

These children recruited for the study are truly at-risk for HIV infection. These are disadvantaged children living in poorer semi-urban communities of Dar es Salaam city slums in Tanzania. Social and health problems such as HIV and sexually transmitted infections (STIs) are very common in these communities (see NACP et al., 2004).

The EMIMA children were recruited from these neighbourhoods and are a unique group comprised of some children who attend school regularly, others who do not attend school on a regular basis or have recently dropped out of school but have not moved away from their neighbourhoods. These children often have one parent or family member living in the community and although they are severely disadvantaged, they still have connections to the community. This group was enrolled into the intervention study through the community sport program-EMIMA. The EMIMA children were further divided into two groups purposely for the present study. The first group was termed "regular", and children in this group participated in the normal EMIMA program as had been practiced since 2001. The second group was termed "mastery", where we implemented the motivational enhancement strategies and children in this group participated in the normal EMIMA program with additional motivational strategies introduced (see below). To facilitate the participation of children in the EMIMA program, peer coaches were trained before the present study (see below; appendix A). Children in these groups were organized into football teams with at least two trained peer coaches and participated in AIDS life skills[1] sessions delivered through sport for the intervention period (see appendix D).

As a control group, we included a group of children who received AIDS education only through the school system, the more traditional approach. We selected 5 primary schools in the same communities and children were recruited from these school. The second control group - the out-of-school children, were the most likely to be orphans or have at least one parent who was deceased, and these children had all dropped out of school and many had moved to the city slums

[1] Unless otherwise stated, for the purposes of this dissertation, life skills refer to life skills for HIV/AIDS prevention.

of Dar es Salaam from more rural areas. The majority of these children lived in the streets and foraged in garbage collection areas popularly known as “dampos”, while some were accommodated in orphan institutions or drop in centres.

Thus, the research project had four groups of children involved in the investigation in a quasi field experimental study. We had two treatments groups within the EMIMA program (received AIDS education using trained peer coaches in football), and two control groups (children who had school based AIDS education; and out-of-school children who had received no AIDS education at a formal level) (see figure 1).

Before any intervention activities with the children, all children in the study completed the questionnaires, termed Time 1 assessment. Each participant was given a numeric code that allowed participants to be linked to their data in each assessment. Peer coaches conducted the intervention activities (i.e., AIDS education through sport sessions) over an eight week period for the children in the EMIMA intervention program (see appendix D). The children in the schools received AIDS education in the traditional manner during this period. The out-of-school children continued to forage in the “dampos”, no education was offered to these children. The second assessment (termed Time 2 assessment) took place after the eighth week of the EMIMA intervention sessions, and after the school had completed the educational modules on HIV/AIDS education. Thus, we had a pre-post testing schedule (see figure 1).

The data were reported in four studies. The first study looked at the pre-test data and investigated whether differences in HIV knowledge, beliefs, attitudes and perceived at-risk behaviours of youths were found within the 3 subgroups (N=950**)** of in-school children, out-of-school street children, and the community based children in the EMIMA program. The first study also investigated gender differences in these variables. We found that, in general, all youths showed low levels of HIV knowledge, experience with condom use and intention to use condoms. They exhibited moderate perceived behavioural control in using condoms and positive subjective

norms about the use of condoms, the value of sexual abstinence, and in having an exclusive sexual partner. Contrary to expectations, there were no significant differences between those in school and those out of school on HIV knowledge, intended condom use, subjective norm about condom use, and abstinence. The findings show that the in school children were arguably more at risk for HIV infection in that they reported the lowest condom experience and perceived behavioural control in condom use. There were systematic gender differences in that girls were lower than boys on all variables. The findings indicate that the HIV/AIDS education approach within the schools of Tanzania has not been as effective as desired, young people are at high risk of infection and gender is a factor for effective risk reduction.

In the second study, we reported on the quasi field experiment we employed in which the at-risk children (N=764) that were recruited were grouped into two treatment groups and two control groups. The treatment groups were children who experienced trained peer coaches who conducted the AIDS education to the children within sport, one with mastery motivational coaching strategies, and one that followed the normal EMIMA program as had been practiced since 2001. The two control groups were the in-school children, who received the traditional AIDS education as practiced in the whole of Tanzania, and the out-of-school children who received no education at all. The intervention lasted for eight weeks. The results indicated that the intervention using peer coaches in sport to deliver the education and behavioural skills, both mastery and the regular EMIMA procedure, was more effective in transmitting HIV prevention knowledge, cognitions and perceived behaviours than the two control groups. Contrary to expectation, the school based HIV education was no more effective than the informal education obtained by the out-of-school children. The group using the mastery based motivational strategies were effective in enhancing the education for some of the variables. The findings indicated that the use of peer coaches within the EMIMA program was reliably the most effective process for HIV/AIDS education for these at-risk children.

There is evidence that motivational enhancement approaches improve behavioural skills-based interventions and make individuals commit more to behaviour change (Carey et al., 1997; Carey et al., 1999; Fisher & Fisher, 1992; Miller, 1989). In the third study we reported, we specifically investigated whether the motivational strategies we employed could enhance the effectiveness of life-skill interventions for HIV education through sport. From the quasi experimental field study with the at-risk children (N=564), we looked at the differences between the two intervention groups, where children received AIDS education using trained peer coaches in football and followed the regular EMIMA program practices, and one group that also expressly used mastery motivational strategies. We included the out-of-school children as a comparison group, and these children received no AIDS education at a formal level. As expected, the findings indicated that relative to the controls, children in the intervention groups all reported significantly greater HIV knowledge, and positive attitudes and safe-sex behavioural intentions. Of interest in this study, the findings also revealed meaningful relationships of mastery strategies with some of the variables, where the strategies enhanced the risk reduction strategies. The community based sport program for HIV risk reduction was demonstrated to be effective, and mastery motivational strategies enhanced that effectiveness.

In the last study, we investigated the gender differences that emerged in key HIV-related cognitive and behavioural intention variables, and to investigate whether involvement in intervention approaches influenced males and females differently (N=764; [555 males, 209 females]). The results indicated that systematic gender differences occurred both at the pre-test (females were reliably lower on most of the variables) and after the intervention (females were systematically lower than males). Both males and females benefited from the interventions, both in school and through EMIMA, but the females remained lower even after the interventions. The findings also show that the interventions did not affect females differently to males, but the intervention through EMIMA empowered males more than females on condom related variables.

However, females were always lower on the cognitive and behavioural variables associated with HIV prevention knowledge and practices.

The findings in this dissertation indicate that the majority of young people are at risk of HIV infection, and that the AIDS education approach in school in Tanzania has not been as effective as desired. The research project demonstrated that youth friendly and community based programs that use peers in a sport context can effectively enhance the education and knowledge of the procedures that reduce the risk of HIV/AIDS infections for youths. The results further demonstrate that mastery motivational procedures can enhance the process. Thus, using peer coaches who are trained in strategies through sport to reduce the infection of youths may be one of the most effective means to reduce the risk of infection with HIV among young people in Tanzania**.** While using both male and female peer coaches was a successful strategy in changing gender norms in HIV prevention, gender is still a risk factor. Future interventions should recognize the strength of the cultural determined gender roles and design gender-focused skill based interventions using peers in female friendly activities that may or may not be sport

# Introduction

AIDS is one of the most serious public health and development challenges in Sub-Saharan Africa. In 2005, the region had 28.5 million people living with HIV with 3.2 new infections during 2005 (UNAIDS, 2006). In general, adolescents in Sub-Saharan Africa increasingly face the risk of contracting HIV with women more likely to contract the disease, and at an earlier age than men (Glynn, Carael, Auvert, Kahindo, Chege, Musonda, et al., 2001; Klepp, Mnyika, Ole-King'ori, & Bergsjø, 1995; Ministry of Health (MoH), 1994; Stover, 2004). In Tanzania, surveys estimate national HIV prevalence of 9% among young adults aged 15-25, and the impact of AIDS is now affecting all sectors of Tanzanian society (NACP et al., 2004; NBS & ORC Macro, 2005).

Unfortunately, as people do not get tested on a regular basis, many young Tanzanians are unaware that they are HIV-infected (Sangiwa, van der Straten, & Grinstead, 2000). Because there is neither a vaccine nor a cure for AIDS, efforts to reduce the incidence of AIDS have been focused on risk behaviour reduction. Young people constitute Tanzania's future workforce and hence they comprise a strategic target group for HIV prevention and control. In response to the HIV/AIDS epidemic, the Government of Tanzania, following a recommendation from the World Bank and assistance from the World Health Organization's Global Program on AIDS (WHO-GPA), formed the National AIDS Control Program (NACP) under the Ministry of Health. The Government of Tanzania began to implement school based AIDS education in the early 1990s. As part of the recommendation, from as early as 1992 the Tanzanian government recognized programs conveying information, education and communication about AIDS (known as "IEC" programs) as the major tool available to combat the epidemic (World Bank, 1992).

Countrywide, many prevention programs deliver messages for prevention through TV, radio and the printed media. The IEC activities have included awareness campaigns, training of

those involved in the spheres of health and education such as teachers and nurses, and incorporation of AIDS education in primary and secondary schools (Mgalla, Schapink, & Boerma, 1998); (MoH), 1995; NBS & ORC Macro, 2005; World Bank., 1992). Thus, the national response was implemented in short and medium term plans, consisting of strategies to prevent, control and mitigate the effect of the HIV/AIDS epidemic through health education in schools, multi-sectoral response and community participation (NBS & ORC Macro, 2005). Specifically for children in primary schools, the Tanzania government developed an AIDS educational curriculum for primary schools and teachers are actively involved in the delivery of this information (Mgalla et al., 1998; MOH, 1995; NACP et al., 2004). School-based HIV prevention programs can be an extremely important component of efforts aimed at reaching at-risk youths. In Tanzania, school based AIDS education is more feasible and AIDS education curricula became increasingly incorporated into school educational programs (MoH, 1995). Importance of education was recognized early in the epidemic based on the assumption that it was ignorance which led to risky sexual behaviour and the spread of AIDS.

The efforts of the Tanzanian National Government have been thwarted to some extent by the steady decline in the proportion of primary school-aged children attending school since 1991 and the high level of school dropout (Family Health International (FHI), 2004; NACP et al., 2004; World Bank, 2003). The media campaign has not been as effective as expected because: Firstly, exposure to the media has decreased among young people 15-24 years of age with the lowest levels of exposure among women (NACP et al., 2004); secondly, the majority of vulnerable children from the poorer communities have very limited exposure to the media; and thirdly, studies show that the degree of awareness and knowledge of HIV due to exposure to the mass media has not been associated with desirable changes in at-risk behaviour and practice (Nyamuryekunge, 1991). In addition, to this range of limitations, the National AIDS policy in the 1990s forbade information about the use of condoms for adolescents in primary schools (MoH,

1995). Coupled with the fact that children have an increased likelihood to be orphaned, and because school attendance requires the payment of fees, many children do not attend school, and thus more and more children are at risk. Consequently, there is an urgent need to re-think effective educational strategies aimed for at-risk youths (e.g., FHI, 2004; Klepp et al., 1997; NACP et al., 2004; Schueller et al., 2003; UNICEF, 2004).

Recommendations for HIV/AIDS educational programs for Tanzania suggest that to be effective, any new approach should recognize the role of peers, include employing peers as role models to serve as HIV/AIDS educators, should reach out to youths where they spend most of their time and use activities that youths are familiar with and value. This is because in areas where young people have been so involved, the incidence of HIV cases has declined (e.g., (Downer, Levine, & Weaver, 2003; Lugoe, 1996; Klepp et al., 1997; NACP et al., 2004; (Schueller et al., 2003; UNICEF, 2004).

Although there have been several HIV risk reduction strategies, these efforts have not been seen as successful in decreasing HIV infection in youth populations (Klepp et al., 1997; NACP et al., 2004; Sangiwa et al., 2000; UNAIDS, 2006). While surveys indicate that there is almost universal awareness of HIV/AIDS among Tanzanian youths aged 15-24 years (by 1999, 98% had heard about AIDS) (NACP et al., 2004), there is still a significant gap between this knowledge and the understanding of how the disease can be avoided (NACP et al., 2004; NBS & ORC Macro, 2005; Talle, Biswalo, Schreiner, & Klepp, 1995). However, because there can be substantial limitations, and controversies, in the implementation of HIV interventions to youths, there is a need to investigate alternative intervention approaches (Kirby et al., 1994; Millburn, 1995).

Thus, within this context, the EMIMA program was started in 2001 with the mission of using sport training and participation to introduce life skill messages to facilitate education about HIV/AIDS prevention for at risk children within the disadvantaged communities. The EMIMA

program utilizes a popular activity among youths, sport, as a medium to educate and influence youth behaviour. The program was started to harness the ability and potential of sport to attract children in large numbers and through carefully thought procedures, to foster positive attitudes and behaviour change for HIV/AIDS prevention. The research study specifically added another aspect to the program where motivational techniques were introduced to enhance effectiveness of peer coaches in the training of the life skills and enhance learning and mastering of the knowledge and skills for HIV prevention (see below, appendix E). The life skill components of the AIDS education provide information, knowledge and skills about effective prevention strategies (e.g., effective use of condoms, sexual abstinence, and having exclusive sexual relationships) (see appendices C; D). The program, in addition, through participation in sport facilitates youth development and they learn skills such as negotiation, decision making, conflict resolution, critical thinking, perseverance, self-esteem, efficacy and communication skills (e.g., Danish, 2002c; Danish & Forneris, 2006; ISSP, 1992; US Surgeon General Report, 1996).

Therefore, using sport as an agency to deliver the AIDS message was an experimental program at onset. At the same time, sport is rapidly gaining recognition worldwide as an effective means of promoting education and health, which led the United Nations General Assembly to adopt resolution 58/5 and proclaimed 2005 the International Year of Sport and Physical Education (UNGAOR, 2003). In particular, the United Nations has named sport as an effective platform to increase HIV/AIDS knowledge and awareness (United Nations, 2003). Sport is meaningful for children, they experience the benefit of membership and affiliation and in general children enjoy playing sport and being on a sport team (Siedentop, 1996; Roberts, 1984). Thus, the mission of this program was to harness the value of sport in making a difference in the lives of youths, in this case to enhance behaviours for HIV/AIDS prevention. For young people, sexuality, leisure, sport and health are so intertwined that effective intervention efforts aiming to prevent the spread of the epidemic to youths that incorporate sport should have a greater impact. There is

considerable evidence that shows that through sport children learn skills. Several programs that have been implemented show that sport play major role in preparing youths to learn the life skills that are later transferred to other life domains (e.g., Danish, Petitpas, & Hale, 1993; Danish, Nellen, & Owens, 1996; Mahoney & Stattin, 2000; Danish, 2001; Danish, 2002a, b, c ; Danish & Forneris, 2006). However, these programs have not investigated HIV prevention.

Therefore, we decided to investigate the effectiveness of the ongoing HIV prevention approaches for at-risk youths through the community based sport program termed EMIMA in Dar es Salaam, Tanzania. The program was initiated to enrol peers in the delivery of the educational messages. When HIV prevention information comes from their peers, it is assumed that youths are more likely to participate in discussions about infection with their peers and are more likely to see HIV infection and AIDS as personal dangers than when the same information is presented by adults (Stevens, 1997). For example, a study showed that the perception of youths about the condom use of other youths (which is the most effective way of HIV prevention) to be the best predictor for determining their own condom use (DiClemente, 1989). A recent review conducted for WHO and the joint United Nations Program on HIV/AIDS found that youth peer education programs in developing countries are generally effective in improving knowledge among youths and to some extent, attitudes and sexual behaviour (Maticka-Tyndale, 2006). It is argued that empathy and a perception that peers share similar life experiences, along with the fact that the receptivity of youths to messages delivered by adults diminishes with age and peers rather than adults become the major source of influence, adding more resonance that peers in the sport context may be effective in HIV risk reduction among youths (Jay, DuRan et al., 1984; Petersen & Hamburg, 1986; Stevens, 1997; Strouse & Fabes, 1985). Thus, the EMIMA community based program was one of the first in Africa to employ peers in a sport context to deliver HIV/AIDS and safe sex behaviour education for at-risk youths.

Promoting AIDS Education through Sport

The major purpose of this research was to investigate the effectiveness of the peer coach intervention through sport within the EMIMA program. We also wished to determine whether the EMIMA program could be enhanced were we to introduce specific motivation strategies to the intervention. The motivation strategies we decided to implement emanated from the social cognitive approach that has dominated research on motivation in sport over the past 30 years. The specific theory that informed our research in sport was achievement goal theory (e.g., Roberts, 2001; Roberts, Treasure, & Conroy, 2007). In particular, we used the research that has investigated the impact of the motivational climate on cognition, affect and behaviour (e.g., (Ames, 1992). As suggested by previous research (e.g., Carey et al., 1999), motivational enhancement approaches improve behavioural skills-based interventions and have been successful in behaviour change and risk reduction in several contexts (Kalichman et al., 1996; Kelly, St Lawrence, Hood, & Brasfield, 1989; Jemmott, Jemmott, & Fong, 1992; Jemmott & Jemmott, 1997; Miller, 1985; Miller, 1989; Miller & Rollnick, 1991; Miller, Roberts, & Ommundsen, 2005; Roserum-Borus, Koopman, Haignere, & Davies, 1991).

# CHAPTER 1

This chapter reflects on the severity of the AIDS pandemic in Sub-Saharan Africa, and in particular in Tanzania and elucidates major responses to the epidemic. Then the specific response to the HIV/AIDS epidemic among youth in Tanzania is presented showing the success of the program so far. Recommendations from various studies for effective HIV prevention among youths are then taken into consideration, and this provides the backdrop to the new approach of using peers in sport. The evaluation of this new approach leads to the research questions in this thesis. The chapter also presents the conceptual approach to motivation emanating from a social cognitive approach (e.g., Roberts, 2001) as argued through achievement goal theory in particular (Nicholls, 1984, 1989). Finally, the importance of improving the current AIDS intervention programs is discussed supporting the aim of this study and framing the three research questions investigated in the current thesis.

## Responses to the HIV/AIDS epidemic

The fight against HIV/AIDS is one of the biggest challenges facing Sub-Saharan Africa over the next decades. Young people (15-24 years) have been identified as one of the most vulnerable groups for acquiring HIV and young people now make up to 25% of the 38 million people living with HIV/AIDS world wide (UNAIDS, 2006). More than 50% of the 5 million new infections in 2003 were among people under the age of 25 (UNICEF, 2004). Unsafe sexual practices have been identified as the most prevalent mode of HIV transmission in Sub-Saharan Africa (UNAIDS, 2003). The HIV virus that causes AIDS is transmitted almost exclusively by behaviours that individual's can modify and change, thus changing sexual practice, and encouraging safer sexual behaviour among young adolescents must remain central to prevention efforts. Tanzania, like many other countries responded to the AIDS pandemic by endorsing and adopting the WHO/GPA comprehensive strategy of health promotion with respect to AIDS

(WHO, 1989). In addition to the informational and persuasive emphasis of the traditional health educational measures, the strategy deployed structural measures such as improvement of socio-economic conditions and the institutionalization of legal and regulatory measures in the fight against AIDS (Nyamuryekunge, 1991; NBS & ORC Macro, 2005).

Based on the assumption that it was ignorance which led to risky sexual behaviour and increased knowledge would elicit the expected preventive actions against AIDS, *information, education, and communication* (IEC) activities have included awareness campaigns, training of health workers and teachers, and introduction of AIDS education in schools ( e.g., Lindegger & Wood, 1995; Mgalla et al., 1998). Schools provide a natural place to target youths and AIDS education curricula have increasingly been incorporated into normal school curricula, and teachers have been mobilized and trained to provide AIDS education to school children in their classrooms. Typically, the programs have provided education (i.e., information) about HIV related transmission and prevention to help participants reduce their risk of infection by personal applications of the information (e.g., Klepp et al., 1997; Mgalla et al., 1998; MoH, 1995; NACP et al., 2004; NBS &ORC Macro, 2005; Rasch, Silberschmidt, Mchumvu, & Mmary, 2000).

However, implementing AIDS education for young people to date has not been successful and there is no perceptible decrease in HIV infection among youths in Tanzania (NACP et al., 2004; NBS & ORC Macro, 2005; Sangiwa et al., 2000; Schueller et al., 2003; UNAIDS, 2005, 2006). The reasons for the deficiency of the approaches for young people are varied and include controversies related to the national policy on not advocating condom use in schools, incomplete coverage, the high rate of school drop out, the orphanage crisis, cultural values and beliefs, and gender issues (MOH, 1995; Ndeki, Klepp, Seha, & Leshabari, 1994; NACP, 1998; UNICEF, 2004). More fundamental reasons are related to the complexities of introducing AIDS education in normal schools where approaches to teaching are very formal and more didactic and science – teaching oriented (Boler & Aggleton, 2005; Danish et al., 2006). For example, although teachers

are mobilized to provide AIDS education, many adults in Sub-Saharan Africa think AIDS education in schools is improper and it is often not implemented (Ijsselmuiden, Evian, Matjilla, Steinberg, & Schneider, 1993). In Tanzania, young adolescents indicated that schools were the least rated source of AIDS information and school teachers were rated as significant others who pupils had talked to *least* about AIDS (Ndeki, Klepp, & Mliga, 1994). Besides the controversies inherent in the school formal teaching approaches, there is also a problem of appropriate coverage. For example by 1998, it was admitted that a national AIDS curriculum for primary school in Tanzania had yet to be fully implemented (NACP, 1998).

Youths in Tanzania face another reality in that for various reasons, the Tanzania primary school gross enrolment has steadily declined since late 1990s (FHI, 2004; Ministry of Education and Culture (MoEC), 1994; World Bank, 2003). Reports using demographic health surveys indicate that 50% of children (aged 10-14 years) who have lost both parents and 30% who have lost one parent are not attending schools and only 15% of children completing primary school proceed to junior secondary school in Tanzania (MoEC, 1992; UNICEF, 2004). Thus, children in general, and orphans in particular are less likely to attend schools and hence, by definition, are not reached by the AIDS education approaches in schools. The use of the media to educate youths is not a viable option to compensate for this decline in school attendance. The majority of vulnerable children from poorer communities have very limited exposure to the media, and studies show that the degree of awareness and knowledge of HIV due to exposure to the mass media, was not associated with desirable changes in at-risk behaviour and practice (Nyamuryekunge, 1991; Swai & Asten, 1991). Moreover, exposure to the media has decreased among young people 15-24 years of age with the lowest levels of exposure being found among women (NACP et al., 2004). Therefore, the National Policy that focuses on school based HIV prevention programs remains deficient as a result of incomplete coverage of facets of the program (e.g., the use of condoms), and the high level of school dropout (NACP et al., 2004). Coupled

with the fact that children have an increased likelihood to be orphaned (one in every seventh child in Tanzania is an orphan), and thus do not attend school, more and more children are at risk (UNICEF, 2004).

Schools and religious bodies have taken the responsibilities in education and support related to HIV prevention. However, there is another inherited problem in that schools and religious bodies do not acknowledge youth sexuality, thus teaching of effective prevention methods such as condom use becomes controversial. As a result, the policy on AIDS in Tanzania in the early years of the epidemic forbade the teaching of condom use in schools fearing that such an approach encourages sexual promiscuity (MoEC, 1994; MoH, 1995).

These realities of Sub-Saharan Africa require alternative effective HIV education for at risk youths. Surveys and studies in Tanzania clearly show a deficiency of the approaches in schools. For example, although awareness of mode of HIV transmission is high in that over 90% of young people have heard of HIV/AIDS and how HIV is transmitted, (Tanzania Commission for AIDS [TACAIDS], 2005), knowledge on HIV and modes of prevention is still low (Bujra & Baylies, 2000; NBS & ORC Macro, 2005; Schueller et al., 2003; Talle et al., 1995.

Several recommendations have been made to suggest an urgent need to re-think effective AIDS educational strategies aimed for at-risk youths. In general, many recommendations pointed out that for HIV/AIDS educational programs for young people to be effective, there should be a clearly defined pedagogical framework for AIDS education that take the local context into account, recognize the gender social issues and involve peers as role models to serve as HIV/AIDS educators. In addition, programs should reach-out to youths where they spend most of their time and use activities that youths are familiar with and value (e.g., Boler et al., 2005; Bujra & Baylies, 2000; Downer et al., 2003; FHI,2005; Klepp et al., 1997; Lugoe, 1996; NACP et al., 2004; Schueller et al., 2003). Peers are currently recognized to potentially play an important role in HIV/AIDS prevention. Evidence shows that in areas where young people have been so

involved, the incidence of HIV cases has declined (UNICEF, 2004), because training by peers is culturally sensitive to the target population (e.g., Beatty, Wheeler, & Gaiter, 2004).

The major challenges for HIV prevention intervention targeting youths in Tanzania is how to develop a program that involve youths in the delivery using youth friendly activities, and that takes into account social and cultural realities and school circumstances. However, considerable evidence exists showing that through sports children and youths learn skills that serve them well in other areas of their lives and sports based programs when properly structured and implemented may enhance positive youth development (Danish, 2002c; ISSP, 1992; Mahoney et al., 2000; US Surgeon General Report, 1996).

For HIV risk reduction, behavioural studies have demonstrated that interventions that supplement basic HIV-related information with behavioural skills led to significant reduction in risky sexual practices and incidence of infections with a variety of populations including youths. (e. g., Kelly et al., 1989 ; Jemmott et al., 1992; St.Lawrence et al., 1995; Kalichman et al., 1996; Rotheram-Borus, Koopman, Haignere, & Davies, 1991). Further, studies within the Theory of Planned Behaviour context have underlined the role of attitudes, subjective norms, behavioural intentions and perceived behavioural control in predicting behaviours, including safe sex behaviours (Ajzen, 1988; 1991; Ajzen & Fishbein, 2000). Studies indicated that attitudes can be altered through practice and acquired knowledge (e.g., Theodorakis, Goudas, & Kouthouris, 1992). Thus, attitudes, norms, and perceived behavioural control towards preventive measures such as condom use, abstinence, and having an exclusive sexual relationship are important variables that influence behaviour and play a major role in HIV prevention in adolescents.

**The situation for at-risk youths in Tanzania**

Young people are facing unique realities influenced by cultural values and have different intervention needs than adults. Developmental factors and cognitive development have been found to influence adolescent sexual risk taking and must be taken into consideration for effective

HIV educational intervention (e.g., Irwin & Millstein, 1992; Zabin & Hayward, 1993). For example, studies show that peer relationships and support can contribute to safer sex behaviours (Gallois et al., 1989; Kelly et al., 1991; Walter et al., 1992; Valdiserri et al., 1988). The absence of peer support has been linked with unsafe sexual behaviour (McKusick, Coates, Morin, Pollack, & Hoff, 1990). In general, parents and the extended families are critical in guiding and supporting young people to make safe choices about their health and well-being. But Tanzanian children face a challenge in relation to support network provide by parents and siblings. With the high rate of orphans (1 in every 7) in Sub-Saharan Africa (UNICEF, 2004), many parents are not there and peers have assumed the role of parents in providing care and support for fellow children. Thus, HIV education intervention involving peers is more pertinent to influence youth's sexual behaviours for HIV prevention.

Another issue that affect young people in relation to HIV prevention is the gender relations that are perpetuated by the culture in Sub-Saharan Africa. Gender is a cultural construct for differentiating between roles, responsibilities, opportunities, power and needs of men and women in a given context. As a result of these relations, studies suggest that young women in the region are two to seven times more likely to be infected by HIV than young men (e.g., Glynn et al., 2001; Gregson & Garnett, 2000; Macphail, Williams, & Campbell, 2002). Several factors contribute to this difference ( e.g., biological differences between the sexes (Aral & Holmes 1991), but growing evidence indicate that the traditions and equitable gender relations in African culture are the major factors in the vulnerability to HIV of women (e.g., Bassett et al., 1992; Kapiga, Nachtigal, & Hunter, 1991; Setel, 1996). Studies show that gender differences in HIV related variables such as beliefs and attitudes affect the effectiveness of the prevention strategies such as condom use and exclusive sexual relationships (Kapiga, 1996; Mnyika, Klepp, Kvåle, Schreiner, & Seha, 1995; Mnyika, Kvåle, & Klepp, 1995). Thus, for effective HIV prevention within the Sub-Saharan context, there is a need for recognize the existing gender inequitable

relations and investigate effective way to reduce risk f HIV infection for young males and females.

**Effective HIV intervention for at risk youths**

Studies show a decline in the mean age of first sexual intercourse (from 16 to 13 years) and a high level of sexual activity among primary and secondary school students in Tanzania (Kapiga, Hunter, & Nachtigal, 1992; Klepp et al., 1997; Konings et al., 1994). Generally, early sexual experiences have been associated with inadequate use of condoms and having multiple sexual partners (Kraft, 1991). The consequences are quite profound. Not only have we had high HIV infections among adolescents, but unwanted teenage pregnancies are also high. According to the 1996 Tanzania Demographic and Health Survey, 60 % of young women have had a child by the time they reach 19 years of age, while teenage pregnancy rates increase from 3 % at 15 years to 60% by the age 19.

There is still no cure or vaccine to prevent HIV infection. And it is now clear that heterosexual contact is the predominant mode of HIV transmission in Tanzania (Swai & Asten, 1991) and elsewhere. Clearly, education alone is insufficient to reduce risky sexual behaviour and there is a need to provide both information and behaviour skill training for HIV reduction interventions for at-risk youths (Carey et al., 1997; Kirby, Barth, Leland, & Fetro, 1991). New approaches need to be explored. One of the youth activities that have received major attention in recent years is sport.

**Youth and the sport context**

As outlined in the introduction, sport is has gained recognition as an effective means of mobilizing youths and an effective tool to increase knowledge and skills for HIV prevention (United Nations, 2003). Research supports the benefits accrued from participation in properly organized sport for youths including youth development, life skill learning, enjoyment, fun, and general well being (Danish et al., 2006; Roberts, 1984; Siedentop, 1996; Stephens, 1988).

Because sport is so attractive for youths, particularly from the poorer communities, effective intervention efforts aiming to prevent the spread of the epidemic that incorporate sport should have a greater impact. Within Tanzania, the physical activity context has been found to influence youth behaviours (Maro, 2001). However, while in the developed world, millions of children participate in organized sport programs every year (Weinberg & Gould, 2003), community organized sport and physical activity programs in Tanzania are not widely available and youths are less active than recommended (Mbalilaki, 1997). In general in Tanzania, there is a lack of organized community based programs for young people (Massao, 2001; MoEC, 1995; Ndee, 1993).

In response to the realities facing at-risk youths, and the potential of sport to be an effective arena for HIV prevention education, following the recommendations for effective HIV education interventions for at risk youths, an AIDS education intervention using peers in a sport program (referred to as the EMIMA program) was initiated in Dar es Salaam, Tanzania, beginning in 2001.The program was initiated by the author of the thesis.

**The EMIMA program**

At the time of the intervention research reported in this dissertation, EMIMA was an ongoing community based sport program delivering HIV/AIDS information, education and life skills about safe sex practices to at-risk youths (see http://www.emima.org), and continues to this day. The name EMIMA is an acronym of Kiswahili words “Elimu, Michezo na Mazoezi” which stands for “Education, Sport and Exercises” meaning that young people learn life skills while participating in sport and exercises. The program is based in the eight semi-urban slum communities in three municipalities in Dar es Salaam city, Tanzania. Participants from three communities of Vingunguti, Mtoni and Buguruni participated in the present study. The program was developed in 2001 by the investigator in collaboration with local coaches and social workers.

## Promoting AIDS Education through Sport

One of the unique approaches used by the EMIMA program is the use of trained peer coaches as facilitators and educators for HIV prevention among young people. Children in these communities have the opportunity to participate in AIDS education through sport at least five days a week through the EMIMA program. Thus, the program builds a community capacity to deliver HIV/AIDS education within sport activities by training peer coaches to be the delivery mechanism. The training of the peer coaches in football skills and strategies in how to conduct HIV/AIDS prevention sessions is facilitated by trained football coaches and the staff of the EMIMA program (see below). The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed in how to coach football skills practice sessions that contain life skills messages. The training of football skills are aided by professional football coaches from EMIMA and a professional football club in Norway (Lyn Football Club). For HIV/AIDS prevention, the training of peer coaches is conducted by EMIMA qualified staff through specific training courses and according to the guidelines and manuals of the "Kicking AIDS Out" network. Several seminars, workshops, training sessions, demonstration sessions, and evaluation are organized as part of the training course (Kicking AIDS Out secretariat, 2006) (for summary of the training see appendix A).

The objective of the program was to assist at-risk youths to acquire sport skills, receive HIV/AIDS education, HIV prevention life skills and develop attitudes and knowledge about HIV prevention through participation in this project. All teaching and training of the participants of this research were conducted by the trained peer coaches in their respective communities. The acquisition of HIV/AIDS life skills is transmitted through a learner-centred approach including participatory learning, observation, demonstration, role modelling, and structured life skills training sessions. Thus, the trained peer coaches are responsible to lead training sessions in life skill games with young children often organized in teams in their community. This project was locally located in the community and launched by young trained peer coaches within the three

communities identified above. Previous studies have supported such approaches (Cottler et al., 1998). It is the experience of the EMIMA staff that this approach works well with the youths of Dar es Salaam. Combining the ability of sport to attract youths in large numbers, and the potential of peers to influence sexual behaviours, it was expected that community intervention through sport using peers would have some success in HIV risk reduction in youths. Thus, the present study investigated whether the ongoing EMIMA peer coach program was effective in delivering HIV/AIDS education and safe sex practices to the at-risk children in the study.

**Evaluation of the effectiveness of the EMIMA program**

The most appropriate short term outcome measures for the EMIMA program are: changes in HIV/AIDS knowledge, attitudes, norms and behavioural control related to preventive measures such as condom use, sexual abstinence and using exclusive sexual relationships. That was the focus of the present investigation. The long term effects of the EMIMA program are assumed to include impact on trends in the occurrence of HIV/AIDS within the targeted communities, the active lifestyle, and sustained changes in HIV risk behaviours among youths. We expect to reduce the AIDS related mortality rates, to reduce the vulnerability of youths and the community to HIV/AIDS, to reduce the gender inequitable norms and to improve youth responses to the HIV/AIDS epidemic in the communities in which the program operated. However, those long term goals are not the focus of the present research.

We acknowledge that HIV/AIDS community based prevention programs such as EMIMA need to be evaluated. However, because of the urgency of the need to reduce sexual transmission of HIV in young people in Tanzania, and the lack of resources needed to carry out a thorough formative evaluation research project, the EMIMA program began as an intervention through youth peer coaches based on the findings of a study on physical education in Tanzania completed in 2000 (see Maro, 2001). This previous research identified sport and the physical activity context in general as an effective arena for intervention for youths. The study focused on how cognitive,

motivational and affective variables influenced youth behaviours and attitudes within the Tanzania sport context. Building on these previous findings about the role of sport within the Tanzanian context and as a response to the need for effective interventions for at risk youths, the EMIMA program was developed and implemented in 2001. As the HIV epidemic continues to spread among youths throughout Tanzania, the effectiveness of EMIMA type interventions needs to be demonstrated. That is the primary objective of the present research project.

In addition to demonstrating whether the program is effective, the present dissertation was also concerned about improving the program. Thus, we investigated whether we could enhance the effectiveness of the program through using specific motivational strategies. There is evidence that motivational enhancement approaches improve behavioural skills-based interventions and make individuals commit more to behaviour change (Carey et al., 1999; Fisher et al., 1992; Miller, 1989). We hypothesized that the motivational procedures would augment the regular skill-based interventions currently used by EMIMA through sport (see Beatty et al., 2004; Carey et al., 1999) and enhance risk reduction among youths (see Miller et al., 1991). The motivational strategies that were implemented emanated from Achievement Goal Theory[2] (AGT) within the social cognitive approach[3] that has dominated research on motivation in sport over the past 30 years (e.g., Duda, 2001; Roberts, 2001; Roberts et al., 2007).

Most psychological theories define "motivation" with respect to forces that determine the direction and intensity of achievement behaviour. Theoretically, motivation derives from sources that can be categorized as: First, individual characteristics or personal dispositions (e.g., goal dispositions); second, as situational factors (e.g., motivational climate of the practice session); and the interaction between the dispositions and situational influences. Within the AGT perspective, the individual becomes motivated or demotivated through assessment of his or her competencies within the achievement context and the meaning of the context to the person. The

[2] This framework assumes that the individual is an intentional, goal directed organism that operates in a rational manner and that achievement goals govern achievement beliefs and guide subsequent decision making and behaviour in achievement contexts. (Roberts, 2001)
[3] By Social cognitive approach, we mean that motivation is considered as a process in which the individual becomes motivated or demotivated through assessment of his or her competencies within the achievement context and the meaning of the context to the person (Roberts, 2001)

major assumption in the achievement goal approach is that an individual's major focus in achievement contexts is to demonstrate competence (Dweck, 1986; Maehr & Braskamp, 1986; Nicholls, 1984). Achievement in this context is defined from a social-cognitive perspective and understood as attainment of personally or socially valued goals. However, the type of achievement goals adopted by individual in a given achievement context is assumed to be a function of interplay between dispositional and situational factors (see figure 1). While individuals may have different goals two types of achievement goals have emerged consistently in studies in the sport and physical activity context; task goals and ego goals (Roberts 2001) (see figure 1).

Those who are task involved hold a less differentiated conception of ability as they believe that ability equates effort and the harder you try the more able you feel. The highly task oriented individual views task completion or level of effort expended in a task to assess his/her competence in a self- referenced manner. Thus, task goals focus on demonstrating mastery, improvement or learning of a task and drives achievement behaviour where learning, understanding, or mastery are deemed important (Ames, 1984; Dweck, 1986; Maehr & Braskamp, 1986; Nicholls, 1984). Success or failure for task involved individuals is dependent upon the subjective assessment of whether one achieved mastery, learned or improved at the task or met self-imposed standards (Duda, 1992).

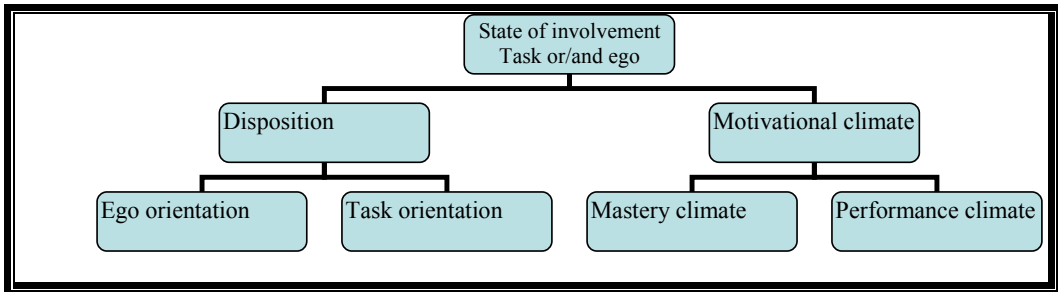


Figure 1. Motivational states of involvement (e.g., Roberts, 2001).

The second achievement goal is the goal of maximizing the probability of attributing high ability to oneself-ego involvement (Ames, 1984; Dweck, 1986; Maehr & Braskamp, 1986; Nicholls, 1984). Ability is perceived in a normative sense, and compared to the ability of others. Success and failure for ego-involved individuals is dependent upon the subjective assessment of comparing one's ability with that of relevant others. These individuals are keen to show their ability often at the expense of effort (Duda 2002; Roberts, 2001). Ego involved individuals hold a more differentiated view of ability in that ability and effort are clearly separated from each other. Having to try hard and exert effort to achieve a certain standard in performance can indicate low ability for an ego involved individual (Nicholls, 1989). The main concern for a person who adopts an ego oriented goal is demonstration of normative ability and avoids demonstrating a lack of ability.

A task oriented goal has been thought to lead to adaptive achievement behaviour such as persistence in the face of failure, exerting effort, selecting challenging tasks, and show genuine interest in the task (Roberts, 2001). Alternatively, when an ego oriented individual perceives him or herself as high in ability, he or she is likely to engage in adaptive achievement behaviours as the individual will seek demonstration of high competence pertinent to others. However, if perception of ability is low, the individual will realize that high ability is not likely to be demonstrated and maladaptive achievement behaviours are likely to be manifested (Nicholls, 1989). These behaviours are those where an individual avoid challenges, reduces persistence in the face of difficulty, fails to exert effort and drops out if attainment of the desired outcome appears difficulty (Roberts, 2001). According to Nicholls, (1989), the state of motivational goal involvement the individual adopts in a given achievement context is not only the function of motivational disposition but also a situational factor (referred to as motivational climate) (Ames, 1992; see figure 2). Thus, one avenue of research within the AGT has demonstrated that

perception of the motivational climate can make it more or less likely for achievement behaviours to be enhanced (Biddle, 2001; Duda, 2001; Treasure, 2001).

***Motivational climate***. Based on the work of Ames (Ames, 1992) two main motivational climates have been identified. A **mastery** motivational climate is perceived when the context is characterized by learning and mastery, trying hard to do one's best, focusing on self improvement and personal progress. This is perceived when the coach uses private evaluation, rewards effort rather than outcome, emphasizes learning and personal progress, choice is allowed and mistakes are considered as part of learning. On the other hand, a **performance** motivational climate is perceived when the context is characterized by being superior to others, and winning. This is perceived when the coach encourages inter-individual comparison, emphasizes "winning" and achieving outcomes, publicly recognizes the demonstration of ability and punishes mistakes.

Perceived motivational climate refers to the degree to which the motivational environment created by significant others such as coaches, peer coaches, teachers, parents, etc, is deemed task and/or ego involving. Thus, the prevailing motivational climate also affects the adoption of achievement goals (see Treasure, 2001). Therefore, the nature of the goals state (i.e., level of task or ego–involvement) that is activated in a specific situation will be determined by one's goal orientations and the perceived motivational climate.

In other words, in a practice/training session such as one being conducted by peer coaches, the goal orientation and motivational climate (created by the peer coaches) impact on whether the child is task or ego involved while participating in the AIDS education practice/ training. Because the motivational climate can be created by peer coaches, then the peer coaches created motivational climate can play an important role in enhancing the effectiveness of the program by influencing the learning environment for AIDS knowledge, skills, attitudes and information. Thus, in an effort to improve the EMIMA program, the present study investigate whether the motivational climate created by the peer coaches in practice/training sessions for

AIDS awareness, education and behaviour change improves the learning, understanding and mastering of these life skills for HIV risk reduction.

Studies in the physical education and sport environment have demonstrated that every child perceives his or her training environment or class or group, in a different way largely due to the approaches taken by the teacher or the coach (Goudas, Biddle, Fox, & Underwood, 1995; Papaioannou & Goudas, 1999; Treasure & Roberts, 2001). By being mastery or performance oriented coach, the coach plays a major role in influencing motivation in sport. Results from previous studies that have attempted to manipulate the motivational climate indicate that creating a mastery climate results in enhancing children's motivation (e.g., enjoyment, applying more effort, looking forward to their next lessons) (Goudas et al., 1995; Lloyd & Fox, 1992; Roberts, 2001; Treasure & Roberts, 1995). Thus, researchers have suggested that time and effort be spent in developing strategies and instructional practices to help youth sport coaches motivate children by creating a mastery motivational climate (Roberts, Treasure, & Kavussanu, 1997; Treasure & Roberts, 1995).

There is now considerable evidence that when a coach is performance oriented, it is more likely to lead to maladaptive achievement behaviours, especially when participants perceive competence to be low, are concerned with failure or invested in protecting self worth. More importantly, motivation ebbs, task investment is low, persistence is low, performance suffers, satisfaction and enjoyment are lower, and participants feel more negatively about themselves and the achievement context. In contrast when coaches are mastery oriented, this is more likely to lead to adaptive achievement behaviour and motivation is optimized. Participants are invested in the task , persist longer, performance is higher, satisfaction and enjoyment are higher, and participants feel more positively about themselves and the tasks (e.g., Goudas et al., 1995; Lloyd et al., 1992; Ntoumanis & Biddle, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005; Roberts et al., 2007; Treasure & Roberts, 1995, 2001). These studies underscore the importance of a

mastery climate in promoting positive psychological outcomes in sport. Given the fact that these findings point to a positive effect for a mastery climate and are related to a pattern of cognition and affect that is likely to enhance children's involvement and motivation as well as the quality of their involvement in learning, we hypothesize that a perception of mastery involvement in AIDS education through sport activities enhance the effectiveness of the program in fostering learning, understanding and mastering of the skills and attitudes for AIDS prevention.

Although more research is needed to develop our understanding of how the peer coaches can go about structuring mastery-oriented achievement contexts, various structural features of their achievement context are interdependent, and when taken together can define the motivational climate of the context. In order to ensure that mastery criteria are perceived in the context, Epstein 1989 developed the TARGET taxonomy summarizing the structures that have been found to influence individual motivation. These structural features of the motivational climate are organized in six areas and are known as: Task, Authority, Recognition, Grouping Evaluation and Time (with the acronym TARGET). These have been consistently identified as influencing a wide range of motivational processes (Epstein, 1988, 1989; Treasure, 2001). These situational structures are assumed to be independent and thus modifying one facet of the environment (e.g. how players are evaluated) has implications for the other aspects of the motivational climate (e.g., how outcomes are recognized). Thus through guidelines and instructional strategies, the TARGET features can be used to formulate coaching strategies to foster mastery climate in sport context (Ames 1992). By using these strategies we foster a mastery climate in training and practice session (see below; appendix E).

Although there are few intervention studies in sport and classrooms, those that exist support the positive influence of a mastery motivational climate and the negative influence of a performance climate ( see Digedis, Papaioannou, Laparidis, & Christodoulidis, 2003; Lloyd et al., 1992); Solmon, 1996; Theeboom, De Knop, & Weiss, 1995; Treasure et al., 1995). The

perception of the motivational climate affects the achievement patterns of the individuals through their views of what goals are reinforced in that setting (Treasure, 1997), and thus it is reasonable to expect different cultures to define achievement differently (Ames, 1984; Maehr & Nicholls, 1980). Unfortunately, there is still no published study that has utilized the TARGET procedures to foster mastery climate to enhance effectiveness of programs in HIV risk reduction for young people. In the present dissertation we were dealing with behaviour associated with safer sex and attitudes, beliefs and knowledges about sexual behaviour. There is evidence that a mastery motivational climate can positively affect moral functioning. For example studies have demonstrated that a mastery motivational climate has reduced cheating in sport (e.g., Kavussanu, Roberts, & Ntoumanis, 2002) and fostered sportspersonship (Miller, Roberts, & Ommundsen, 2003).

Contemporary interventions for HIV risk reduction for young people in developing countries are school based and contain both educational and skill building components, recruit adults such as teachers, as educators (Bujra et al., 2000; Carey et al., 1997; Klepp et al., 1997; Brooks-Gunn & Paikoff, 1992; Kirby, 1995; Kirby & Coyle, 1997; Oakley, Fullerton, & Holland, 1995). Recommendations for improvements of HIV/AIDS education for young people point to the involvement of peers and utilizing arenas which attracts more at-risk youth and where young people are more likely to be engaged in discussions about sexual behaviours (Schueller et al., 2003; NACP et al., 2004). However, studies dealing with adolescent behaviours show that peer relationships and support can contribute to safer sex behaviours (Gallois et al., 1989; Kelly et al., 1991; Walter et al., 1992; Valdiserri et al., 1988). Thus, the HIV risk reduction of educational programs for young people are constantly improving as more and more programs are evaluated

for effectiveness (see figure 2).

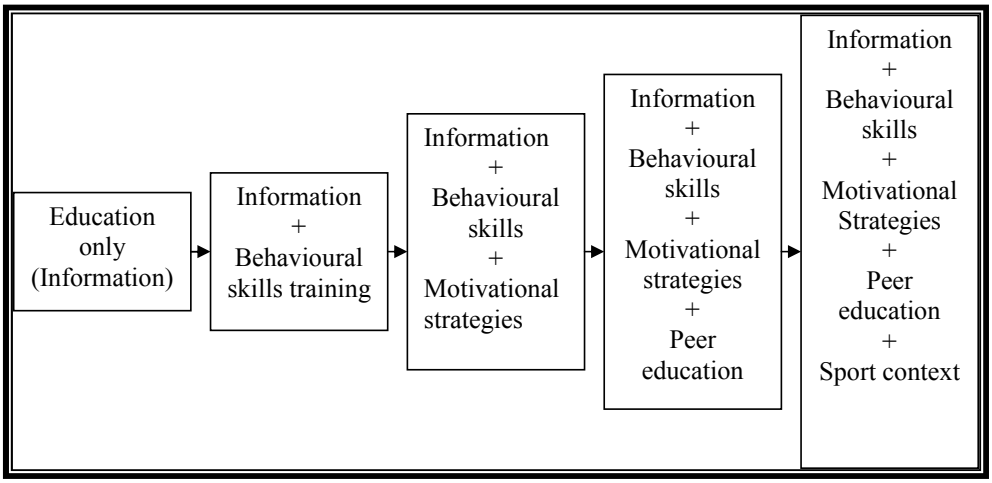


Figure 2: Continuum of improvement in HIV risk reduction of educational programs for young people

The major challenges for HIV prevention intervention targeting youths is how to develop a program that involve youths in the delivery, using youth friendly and culturally appropriate materials and activities (e.g., sport) and which take into account the youth realities and school circumstances.

## The purposes of the dissertation

The primary aim of this thesis was to investigate the effectiveness of an ongoing AIDS education intervention program (EMIMA) using peers in a sport context. This is an ongoing AIDS education intervention program for at risk youths in Tanzania aiming to reduce risk of infection with HIV and fostering safer sex behaviours. We hypothesized that using peers in sport context to deliver education, life skills and attitudes related to HIV/AIDS is an effective strategy for HIV risk reduction. Further using strategies from achievement goal theory, the study investigated whether a task involving climate enhanced the effectiveness of peers in the sport context to reduce the risk for HIV infections among youths. Thus, the secondary purpose was to

investigate a motivational strategy to enhance the effectiveness of peers in the sport context. Within the Tanzanian context, gender differences exist and have been shown to affect the effectiveness of intervention programs (e.g., Kapiga, 1996; Mnyika et al., 1995; Setel, 1996). The final purpose was to determine whether gender affected the responses of the participants.

The following research questions were formulated:

1. Is the EMIMA AIDS education intervention program using peers in a sport context effective for HIV risk reduction among at risk children in Dar es Salaam, Tanzania?
2. Does incorporating specific motivational strategies enhance the effectiveness of the EMIMA life skill interventions for HIV/AIDS education through sport for at risk children?
3. Are there gender differences in young people's responses to key HIV related cognitive and behavioural intention variables?

# CHAPTER 2

## Methods

In the following chapter, procedures used for the study will be presented. First, the process of recruitment of participants, assignment to groups, and the training of peer coaches (both regular and the additional mastery training) will be presented. Secondly, the research design and the procedures for the intervention study including procedures for enhancing mastery criteria in the training session will be presented. Lastly, the chapter will end with an overview and brief description of the questionnaires and the assessment procedures used for data collection.

**Participants**

Participants were 950 young adolescents (650 male and 300 females) aged 12-15 years (mean age 13.6 years, SD=1.07) from the three communities of Buguruni, Mtoni, and Vingunguti in Dar es Salaam, Tanzania. Of these, 480 were recruited by trained peer coaches to participate in the community sport program (EMIMA). We recruited and trained one hundred peer coaches (75 boys, 25 girls). Peer coaches are children who typically have been participants within the EMIMA program in the past. Peer coaches are usually somewhat older than participants (mean age 16.5 years) and are given some prestige by the EMIMA program who supply them with attractive bright red football shirts and the "Kicking AIDS Out" (KAO) training manual. When trained, the peer coaches were randomly divided into two groups. The first group of peer coaches was termed "regular" and they recruited 252 children at the beginning of the study in the usual fashion of the EMIMA program as had been practiced since 2001.The participants, completed pre and post assessments (see below). The second group were trained in the usual EMIMA program, but received additional training in motivational strategies (see below). These coaches were termed "mastery" coaches and they recruited 228 children at the beginning of the study. These participants

also completed pre and post assessments. In addition, 250 children were recruited from 5 selected primary schools (50 from each school) and completed both assessments. Lastly, 220 children from the streets and communities, who were not attending schools and were not in the EMIMA program, were recruited at the beginning of the study. However, the out-of-school group were more difficult to follow up and only 164 completed both assessments. Therefore, we had 950 children at the beginning of the study but only 894 children completed both assessments. For convenience, at the end of the intervention and after the second assessment (i.e., time 2 assessment), we randomly selected children who had completed both assessments so that we had 200 in the mastery, regular and in school groups, and 164 in the out of school group. Thus the total sample of participants in the present study after selection was 764 children. The mean level of education was 5.5 years (SD. 1.37); (mastery 5.5; regular 5.4; in school 6.5 years) and out-of-school youths had the lowest level (4.3 years).

**Research setting**

Three semi urban communities of Buguruni**,** Vingunguti and Mtoni in Dar es Salaam, Tanzania were involved in the study. These are the communities where the EMIMA program is active. Compared with other communities in Dar es Salaam, these communities by all standards are among the poorest. Social and health problems such as a prevalence of orphan children, HIV, and STDs etc are very common. The number of orphans is very high in Tanzania, NACP, 1997; NACP et al., 2004), and because AIDS orphans are less likely to attend school because fees have to be paid (UNICEF, 2004), very few of these children go to school. In addition, the drop out rate from school attendance is high. Some households are headed by a single parent, most often women, and sometimes by a child.

**The process of recruitment**

Through the EMIMA centres and the heads of street children organizations/drop-in centres, permission to recruit children for the project was obtained, and parental/guardian

permission was obtained, where possible. The participants were informed and recruited to take part in the research study. The participants were informed about the objectives of the study and their freedom to choose to participate. To be eligible for the study, the children had to: a) have voluntarily joined one of the EMIMA community teams; b) be in the schools; or c) be recruited from the street children/orphan centres and/or garbage dumps. The normal ethical procedures for the two universities associated with this research were adhered to, and in addition we obtained research clearance from the Tanzania government through the Commission for Science and Technology (appendix B).

Children who were to participate in the EMIMA program had to voluntarily join one of the teams under a peer coach who had already been recruited and trained (see below). Besides the expertise of the peer coaches, gender was a factor considered in the recruiting of the peer coaches. We attempted to recruit as many female peer coaches as possible, and managed to recruit 25 for the final intervention study, The normal procedure is to ask the trained peer coach to go into the community he/she is familiar with and recruit a group of children to become a football team and learn how to play football (boy peer coaches recruited boys, girl peer coaches recruited girls). The coaches are asked to recruit 15 players, and when there are 15 players registered, the roster is closed and the children are informed of other peer coaches who are still recruiting. These children then became a team (the first assignment is always to select a name for themselves), and participated in the football training program provided by EMIMA. EMIMA staff arrange the training of the peer coaches, the practice facilities and provide the equipment (donated by Lyn Football Club and the Norwegian Confederation of Sport). In addition, EMIMA provides the transport for teams to travel to venues to play matches against other EMIMA teams during the season.

In the schools, after obtaining consent from their parents/guardians, pupils had to voluntarily agree to participate by responding to the appropriate questionnaires within a class that

included AIDS education. The questionnaire was given before and after the module on HIV/AIDS education.

The out-of-school children were the most difficult individuals to recruit. They were recruited from orphan institutions and garbage collection areas in the following way. We set up informal soccer games in and around the popular garbage collection points/places locally known as “dampos”. The street children and orphans usually gather in these places to collect dumped materials such as plastic bottles and other things to salvage and sell. Soccer is a popular game in Africa, and after the informal games we talked to the children and tried to recruit them into responding to the questionnaire. Informal football games were set up and proved to play an important role in motivating the street children to take part in the study. Where possible, children delivered consent letters from their parents/guardians before they participated. However, consent for most of the children in the out-of-school group was obtained from the leaders of the orphan institutions.

**Training of Peer coaches for the EMIMA program**

To be able to conduct effective skill training sessions in their communities, peer coaches were trained before this investigation. The training of the peer coaches in soccer skills and strategies and in how to conduct HIV/AIDS prevention sessions is facilitated by trained soccer coaches and the staff of the EMIMA program.

The training of the football skills and strategies is aided by a professional football club in Norway, Lyn Football Club (see http:// www.lynfootbal.no). Each year, Lyn Football Club sends out coaches and staff to conduct training sessions for the EMIMA staff. In addition, Lyn is very generous and donates shirts and equipment to the EMIMA program. The EMIMA program also receives substantial funding from the Norwegian Confederation of Sport (NIF) and Norwegian People’s Aid to pay for the EMIMA headquarters and the staff of the EMIMA program. The program could not survive without this generous support.

In addition to the training in soccer skills and strategies, the mission of EMIMA is to use soccer training to introduce life skill messages to facilitate education about HIV/AIDS prevention. For HIV/AIDS prevention, the training of peer coaches was conducted by EMIMA qualified staff according to the guidelines and manuals of the "Kicking AIDS Out" (KAO) network, (ref. http://www.kickingaidsout.net). The training comprises of seminars and activities for peer coaches to qualify to become a peer coach level 1 (see appendix A). Young people active in sport and often soccer players received basic training in youth leadership, soccer training/coaching, role modelling, peer education and KAO to qualify to become peer coaches/leaders. Thus, the young soccer players are responsible to lead training sessions and life skill games with young children organized in teams in their community. The peer coaches in this study were fully trained KAO peer coaches at level 1 (see Kicking AIDS Out secretariat, 2006). Therefore, we had a group of 100 peer coaches (75 males; 25 females) who were trained in using the sport context to foster life skills related to AIDS prevention. The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed in how to coach football skills practice sessions that contain life skills messages (see appendices C, D).

**The EMIMA AIDS education through sport program**

In this study, each team with trained peer coaches (each team had at least 2 peer coaches) had a group of 12-15 young players (aged 12-15 years) organized into football teams. The peer coach was responsible for educating them about AIDS prevention through life skill sessions, in addition to the sport skills training. This process of training local peer coaches for the program builds a community capacity to deliver HIV/AIDS education within sport activities in the present and in the future. The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed in how to coach football skills practice sessions that contain life skills messages (see figure 3; Appendices, C, D). This is referred to as Kicking AIDS Out session, or in short, KAO session. Life skill games are

practiced by the participants to learn the life skills. A complete example of a life skill game is described in figure 3 below. It is recommended that KAO sessions be conducted by qualified peer coaches. The KAO sessions in the intervention in this dissertation (see below) were conducted by qualified peer coaches under constant supervision by EMIMA qualified staff guided by the "Kicking AIDS Out" network (Kicking AIDS Out secretariat, 2006).

**Name: common tag game**: **Life Skills**: To learn that condoms can protect HIV infection.
**Sport skill**: To develop running skills and skills to deliver and receive the ball
Number of participants: 7 or more, Equipment/materials: Balls, preferably home-made balls
**Description:** The object of this game is for the participants to be the last to get tagged. One participant is picked to be the "HIV". He/she must try to physically tag the other participants by touching them on any part of the body. A participant can only be tagged if at that moment, he/she is not in possession of the ball. As there are a limited number of balls, the players must pass the ball to the participant who is chased by the "HIV". The ball acts as the protection against "HIV". When a participant is tagged, he/she leaves the game to the counselling corner to learn that condoms can protect them from HIV infection. When everyone is tagged, a new game is started and all rejoins.


**Variation** The participants use actual condoms instead of the ball protection".- The "HIV" is allowed to tag only those outside a defined area within the playing field.
**Follow-up activity**: The peer leader explains that the ball in the game cannot protect against HIV infection, and that in real life a condom if properly used can protect against HIV. He/she initiates a discussion about the importance of using condoms and which actions one can take to start using them. (Source for illustrations: Changing kids' games" Moris & Stiehl, 1989)

Figure 3. An example of a life skill game with description of how to practice

The program provides opportunities, a supportive network and encouragement to children, to enhance participation in sport, and social interactions with peers allowing them to use their existing sport skills. The program also creates an interest to participate as peer educators in AIDS prevention and education. The program works to provide important knowledge, life skills and attitudes to young people for HIV prevention. It contributes to the health and psychological well being, and promotes mentoring and leadership development for young people. The approach used in this program for acquiring the HIV/AIDS life skills is a

learner-centred approach where demonstration, participatory learning, role modelling, and structured training sessions are used.

These peer coaches use life skill games, peer encounter sessions, role modelling and soccer matches to educate themselves and other younger players about AIDS prevention. The materials used in daily training session are compiled into a training manual (Kicking AIDS Out secretariat, 2006). Specifically for this study, additional training in mastery enhancement strategy was provided to a group of peer coaches.

**Additional training of Mastery peer coaches**

The peer coaches who were randomly selected for the mastery motivation intervention received 2 weeks additional training in mastery enhancement techniques (see Treasure & Roberts 2001). We followed the guidelines based on the TARGET principles (Epstein, 1989) to guide motivational enhancement components of the intervention (Ames, 1992; Lloyd & Fox 1992; Treasure & Roberts 1995).These coaching climate structural features have been consistently identified as influencing a wide variety of motivational processes (Roberts et al., 2007). These peer coaches were introduced into activities, coaching and instructional strategies that increases mastery engagement in soccer and AIDS education activities (see appendix E). These strategies are considered important because they provide a comprehensive framework for peer coaches to prescribe a wide range of motivational principles and instructional techniques that are consistent with a mastery climate. During the AIDS education intervention sessions in EMIMA, and based on previous interventions both in academic (e.g., Ames & Maehr, 1989) and sport settings (e.g., Treasure, 1997), strategies consistent with promoting a mastery motivational climate were implemented. The two weeks additional training for the peer coaches in the mastery group involved operationalizing the TARGET strategies and teaching implementation of the strategies in practice sessions. Thus, these peer coaches were introduced to coaching and instructional strategies that increase mastery engagement in football and AIDS education activities (see below;

appendix E). We selected strategies from each TARGET area (i.e., Task, Authority, Reward, Grouping, Evaluation and Time) to be practiced during the intervention period for the mastery group. The peer coaches were encouraged to use as many strategies as possible from each area and could repeat strategies from day to day. The following paragraph gives a brief description of each of the strategies involved during the intervention period.

**Task** concerns the games the participants were practising and the life skills they were supposed to learn. Strategies in this area focused on organizing the games and making the practice challenging and enjoyable. For example, during the intervention, a grid was provided to help the peer coach record which games the team have practiced as they were allowed to practice a variety of games (see appendices D, E).The peer coaches also utilized "stations" for practising life skills in order make the learning enjoyable, but also to give players flexibility over groupings, mixing the less skilled with the most skilled. Some games (e.g., "skill circuit") are practised in stations and thus made the work of the peer coaches more organized and enjoyable. Another strategy that was used by peer coaches to manage their work was "a game of the day" strategy. In this strategy, the peer coaches assigned a particular game a day (e.g., Monday-Risky game") to make sure that during that day, although many other life skills may have been practiced, that particular game was the highlight of the day.

**Authority** refers to how the players participated in the decision making and in the instructional program. Strategies in this area were directed towards giving the players opportunities for making choices of the life skill games, monitoring their work, setting rules, practice active learning and leadership roles. For example, during the intervention, each day a group of players (2 or 3) were asked to select any life skill game (refer appendices C, D) to demonstrate to the team. This gave the players opportunity to choose a variety of games and often they chose the games they could demonstrate and explain better to other players. It was very popular because these children in the groups were able to demonstrate their competence at

something. Another strategy that was used widely was the “nusurika na gunia” (in English “survival sack”) strategy in which paper balls marked with the name of the game were put in a sack and brought to the playing field by the peer coach. Three or four players are asked to pick any ball in the sack and the group practiced the games that were picked. This strategy gives an opportunity to practice a variety of life skill games and involve the players in deciding the games they wanted to practice. As the group of players found strategies to pick the games (such as using left hand, closing eyes, etc) they had the opportunity to set their own rules and communicate their decision.

**Rewards** refers to ways of recognizing improvements, progress and participation in learning the of the life skills so that all players have the opportunity to be recognized. As outlined in appendix E, peer coaches were encouraged to recognize and reward effort and talk to players privately and focus on improvement. Each day the session began with a slogan: Peer coach- “EMIMA”, the players “Kicking AIDS Out”, players play it safe”, etc. This strategy was used as a way for each player to feel competent and also get the day started by focusing attention on the issue: i.e., AIDS prevention.

**Grouping** strategies were utilized extensively in the formation of the teams and grouping of players during the practice of the life skill games. The nature of the games required cooperation from each other and the peer coaches, being players themselves, increased acceptance by the groups. Each game (see appendix C) has variation possibilities and peer coaches varied the groupings of participants from time to time.

**Evaluation** strategies involved providing feedback to the players in a way that increased confidence and feelings of competence and aiding the players in monitoring their own progress. The instructional procedures for peer coaches are summarized in appendix E. In addition, at the end of each training session, players were given an opportunity to label games that they thought

the majority had mastered and games they thought needed more practice. This strategy gave an opportunity for players to monitor their progress and to be able to see that learning is a process.

**Time** strategies focused on building flexibility into the schedule of assignments and accommodating different work rates and different interests. The life skill games contained a variety of sport skills and life skills that was attractive for players with differing skills. For example, some games required dribbling, coordination, and balance skills (e.g., magic shoe, blind folded,) while others required ball control, jumping, dodging and running skills (circuit, common tag, poppers, risky, games, see appendix C). As players had different working rates and skills, the peer coaches allowed flexibility for groups to practice the various games.

The coaching and instructional procedures for peer coaches in the mastery groups were translated into the Kiswahili language and were made to be simple and succinct for the peer coaches to use daily (see appendix E).

**Assignment to group**

Children in the EMIMA program were enrolled into the teams with peer coaches. The peer coaches did most of the recruiting within the communities, and this is the normal EMIMA practice. The children could enrol with any peer coach (each team had at least two peer coaches). One female coach was on 25 of the teams, and 12 teams had the opportunity to be instructed and trained by a female peer coach on a rotational basis during the intervention period. During training sessions and in particular KAO sessions boys and girls train together. However for competitions and small sided competitive games after training sessions, boys and girls are separated.

After a peer coach had reached 15 children, the roll was closed and any other children were requested to join the next peer coach. When peer coaches had enrolled their teams, because of their prior training, the teams and their peer coaches were in the regular EMIMA intervention through sport (referred to as “regular”), or a motivationally enhanced intervention with mastery

criteria specifically built in to the program (referred to as “mastery”). The 50 regular peer coaches recruited 252 children (who were not eliminated because of writing or reading problems, and who completed the questionnaires before and after the intervention) and these were formed into18 teams. The second group of peer coaches termed “mastery”, recruited 228 children (who were not eliminated because of writing or reading problems, and who completed the questionnaires before and after the intervention) and these were formed into 19 teams. Each team had at least 2 peer coaches. Simply for convenience, the children in these two intervention groups were cut to 200 in each group through random assignment after the second round of questionnaires.

For the in school group, after permission was granted by the head teacher, the children in the classes who were undergoing traditional classroom AIDS education in the appropriate age category were recruited from 5 schools within the communities where the EMIMA program is active. Originally, there were 250 children in this group who completed both assessments and they were cut to 200 for the study through random assignment.

Orphan and street children institutions that responded to the letters were approached for a meeting about the study. Some children were recruited with the help of these institutions, and some were recruited from the streets and nearby garbage collection points. These children were referred to as “out-of-school”. For the pre questionnaire, we had 220 children, but for the post questionnaire, we could only identify (find) 164 who had completed the pre questionnaire.

**Research design**

The research project had four groups of children involved in the investigation in a quasi field experimental study. We had two treatments groups within the EMIMA program (received AIDS education using trained peer coaches in football), and two control groups (children who had school based AIDS education; and out-of-school children who had received no AIDS education at a formal level) (see figure 4).

*EMIMA Regular Group*: Within the EMIMA program, we had one group of children who were subjected to the regular EMIMA program as it has been conducted since 2001 (see above; http://www. emima.org).

*EMIMA Mastery Group*: We had a second group of EMIMA children where we added a procedure aimed at enhancing the mastery perceptions of the children receiving AIDS education. This was done through a procedure designed to increase the frequency and quality of children's mastery experiences in AIDS education sessions (see above; appendix E).

*In School group*: As a control group, we included a group of children who received AIDS education only through the school system, the more traditional approach.

*Out-of-school group*: Finally, we included a group of children who experienced neither the EMIMA program nor the traditional classroom educational program of AIDS prevention conducted through the school system.

**Procedure**

Several research assistants helped the first author collect the data for the project. The research assistants had a two-day training session prior to actual field work. A pilot exercise with the questionnaire during the training suggested that the questionnaire package would take up to approximately 60 minutes. During the project, children filled the questionnaire in a group situation in their classroom, in their football playing fields, or in open spaces in the streets that allowed the research assistant to monitor and assist individuals with clarifications.

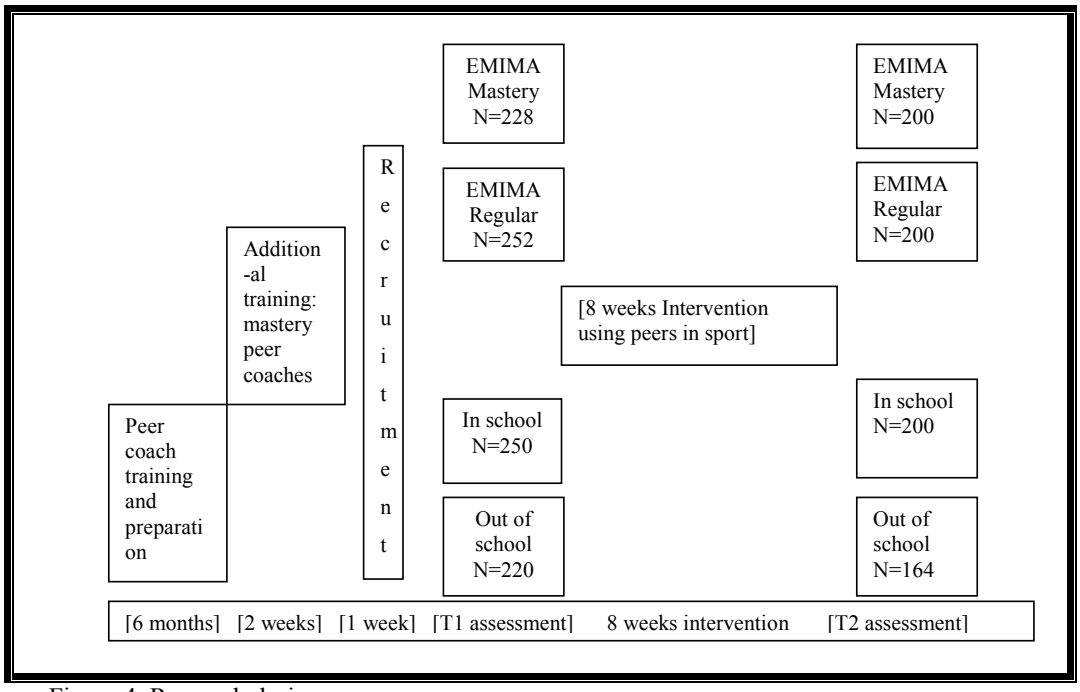


Figure 4. Research design

If any child had difficulty in reading the questionnaire or was unable to complete the questionnaire for any reason, then that child was not included in the project. However, that child still participated in the EMIMA program if he/she was in one of the EMIMA groups. All questionnaire assessments were anonymous, self administered and completed in group settings. The entire questionnaire took approximately 60 minutes to complete. Before any intervention, all the children in the treatment and control groups completed the questionnaire (termed Time 1 assessment). Each participant was given a numeric code to maintain confidentiality. The code allowed participants to be linked to their data in each assessment.

**The intervention**

For the children under the EMIMA program, the trained peer coaches, under supervision of the EMIMA staff conducted the intervention activities (i.e., AIDS education through sport sessions) over an eight week period. A summary of the description of the eight weeks' intervention modules is in appendix D. This is the regular procedure and inter-club matches are

arranged and played during the practice sessions. Each session was two hours in length with two breaks in between. It was possible to arrange short 7 or 5- a side competitions after the soccer training and AIDS life skills learning to make it more fun and exciting. Children were encouraged to join and form the teams with friends in order to maximize the positive social influence and foster social support in using peer norms to promote risk reduction. In order to assist the peer coaches in the intervention activities, the researcher visited the training sessions and talked to the peer coaches as they were working with the children. A program of seminars, meetings and regular communication was enacted to assist the peer coaches in their tasks during the project.

In addition, special seminars and meetings were organized with the peer coaches who were assigned to the mastery groups to facilitate the mastery character of the training sessions (see above; appendix E). The researcher also attempted to attend many of the training sessions to encourage the use of the motivational enhancement techniques. When a peer coach had a difficulty with a strategy, there were opportunities to meet with the researcher to give feedback and discuss problems and ways to modify the strategy.

The children in the schools continued to receive AIDS education in the traditional manner. Nothing new was introduced with these groups. The out-of-school children continued to forage in the "dampos", no education was offered to these children.

*Post-assessment*: The researcher visited the EMIMA centres, the schools and the orphan and street children institutions before the scheduled appointment to remind them of the second round of assessment. The second assessment (termed Time 2 assessment) took place after the eighth week of the EMIMA intervention sessions, and after the school had completed educational modules on HIV/AIDS education. Letters of appreciation were sent to the schools, centres and institutions thanking them for participating in the research study. As appreciation for their acceptance and time, all participants were given one bottle of juice, a pencil and one packet of biscuits at the end of each assessment they completed.

Following the study, children in the control groups (the school and street children) were invited to attend "Kicking AIDS Out sessions" that educate children about AIDS through sport at their nearby EMIMA centre.

One note should be added to the assessment of the out-of-school children. While we were able to follow up with the intervention and in school participants, many of the street children who were assessed at Time 1 were not available for assessment at Time 2. They simply did not attend the informal football games, nor was it possible to locate them through the orphan community institutions. A limited number of these out of school children are accommodated in orphan institutions, the majority live in the streets and move from place to place, especially to garbage collection areas looking for food and things to sell. Only 164 children were available for the follow up assessment.

**Measures**

A questionnaire format was used for the present research project. Participants completed the questionnaires in a group setting. Following an extensive review of the studies that have used similar participants in Sub-Saharan Africa (e.g., Lugoe, 1996; Klepp, et al., 1997; FHI, 2005), we chose scales that had been used successfully in the past. The measures were taken from a long set of questionnaires adapted from the Family Health International and World Health Organization's knowledge, attitudes, beliefs, and practices survey instruments for adolescents specifically aimed at HIV/AIDS information (WHO, 1989). The questionnaire investigated HIV/AIDS outcome variables that included HIV-related knowledge, beliefs, attitudes and risk behaviours. The measures included attitude to having an exclusive sexual partner, attitude to condom use, a scale of condom knowledge and experience, subjective norms about condom use, abstinence, and having an exclusive sexual partner, perceived behaviour control in using a condom, and behavioural intentions to use a condom (intended condom use). In addition, we used a questionnaire investigating the perceived motivational climate. The questionnaire also asked basic

demographic information including sport participation, age, gender, education, orphan status, and sexual debut (if appropriate). In addition to the demographic data and information about HIV related behaviour variables, the questionnaire gathered information about knowledge about and likelihood of obtaining and using condoms in a normal living context (see table 1; appendix F).

Table 1
Overview of the Questionnaires used in the research project

**Participant information: (**Papers 1, 2, 3 & 4).
- Do you participate in sport regularly?
- Do you live with your parents? Father…..Mother
- Are your parents alive? Father, mother
- How old are you?
- How many years of schooling have you completed?

**HIV related behaviour variable Questionnaires** (papers 1, 2, 3, & 4)
- HIV-Knowledge Questionnaire (HIV-K-Q).
- Intention to use condom Scale
- Attitude toward exclusive sexual partner scale
- Attitude toward condom use scale.
- Direct experience with condom scale
- Subjective normative beliefs about condom use, abstinence and exclusive sexual partner scales
- Perceived behaviour control for condom use

**Motivational assessment tool** (paper 3)
- Perceived Motivational Climate in Sport Questionnaire (PMCSQ).

**The likelihood of obtaining, buying or carrying of condoms among the young people in normal life contexts.** (paper 4)

Participants indicated whether:
- They know where one can buy or obtain condoms,
- One can buy or obtain condoms in any place even if it is a person of the opposite sex selling or distributing,
- One is not shy if a condom falls out of one's pocket in front of one's friends, and
- Whether one was sometimes worried to suggest using a condom because it implies distrust of one's sexual partner.

***Reliability and validity*** The instruments were all originally written in English and were translated and back translated from English to Kiswahili (national language in Tanzania) by experts in both languages before being used in the field. The final translated versions were submitted for peer review to EMIMA staff members and colleagues at the University of Dar es Salaam for content and face validity before being used for this study. Most of the items included in the present

study had also been used or tested in other settings both in East and Southern Africa in relation to HIV/AIDS research in schools (Lugoe, 1996; Wilson, Zenda, McMaster, & Lavelle, 1992). All responses were anonymous and only the principal investigator knew the code in order to match pre- and post treatment questionnaires. Although the researcher did formal pilot testing of the instruments during the pilot experiments prior to actual data collection, all reported tests of reliability were conducted during data analysis using the participants in the present study. Because all the scales had been translated from English to Kiswahili, we used exploratory factor analysis with all scales to determine the factor structures and whether the items within each scale contributed to the factor they were intended to represent. The factor analyses showed that most items loaded on the construct they were supposed to represent. If an item cross-loaded on two factors, that item was eliminated. Further, an item discrimination procedure was used, and if any item improved the alpha coefficient of the scale when it was eliminated, then that item was not used in the main analyses. When we followed these procedures, all scales were included as they all had adequate internal reliabilities ($\alpha > 0.70$, (Tabachnick & Fidell, 2001).

The measures for the present study included:

*Perceived motivational Climate*. The motivational climate was measured by the modified version of the Motivational Climate in Sport Questionnaire PMCSQ (Seifriz, Duda, & Chi, 1992). There were two assessments, one in the fourth and one in the eighth week (at the end of the intervention). The version of the PMCSQ we used consists of two scales, one measuring the mastery criteria of motivation, the other the performance criteria within the soccer coaching sessions of EMIMA. The mastery motivational climate scale consisted of 10 items that placed emphasis on children's task involvement (e.g., "trying hard is rewarded", "every player has an important assignment"). The performance oriented subscale consisted of 11 items emphasizing ego involvement with the outcome and unequal treatment due to skill level (e.g., "only the best players receive compliments and praise").The stem for each item was: "On my team". All the responses were indicated on a 5-

point Likert scale ranging from strongly disagree (1) to strongly agree (5). Only the two intervention groups were given this questionnaire, and it was used primarily as a manipulation check for the mastery intervention.

The principal components analysis revealed the presence of five components with eigenvalues exceeding 1. An inspection of the screeplot revealed a clear break after the second component. We decided to retain two components for further investigation using Catell's (Catell, 1966) scree test. A varimax rotation was performed and yielded two component solutions explaining a total of 30.20% of the variance. The interpretation of the two components was consistent with previous research on the PMCSQ scale (e.g., Miller et al., 2003; Roberts & Ommundsen, 1996; Seifriz et al., 1992), with mastery items loading strongly on the first component and performance items loading strongly on the second component. No items were excluded. Cronbach's alpha coefficients were 0.79 and 0.73 for mastery and performance climates respectively.

*HIV-Knowledge Questionnaire.* (HIV-K-Q) This was a modified version of HIV knowledge Questionnaire (Carey, Morrison-Beedy, & Johnson, 1997) and was used to assess the knowledge related to HIV transmission through blood and sexual intercourse, knowledge of HIV testing, basic HIV/AIDS facts, knowledge of prevention, and misconceptions. An example of an item is: An example of an item is: "Can a person get HIV by sharing a glass of water with someone who has HIV?" Responses to these items were recorded as 0 (false and don't know) and 1 (correct answer) and summed to form a knowledge score: A higher score indicating more accurate knowledge.

*Intention to use condom:* Intention to use a condom consisted of one item that assessed the behavioural intention to use a condom at the first/next sexual intercourse opportunity (Lugoe, Klepp, & Skutle, 1996; Rigby, Dietz, & Sturgess, 1993). A five point Likert- scale was used ranging from 1 very uncertain to 5 very certain.

*Attitude toward exclusive sexual partner*. To measure attitude, participants were asked to rate their attitudes towards exclusive sexual relationships on a 5-point Likert scale ranging from 1 strongly disagrees to 5 strongly agree. Four items based on previous studies (Ajzen & Fishbein, 1980; Rigby et al., 1993) were used for this measure: An example of an item is: "Sticking to one sexual partner for life is very difficult". Negative items were reverse scored.

*Attitude toward condom use scale*. Based on previous studies (Sheeran, Abraham, Abrams, Spears, & Marks, 1990; Rigby et al., 1993), five items scored on a 5-point scale from strongly agree =5 to strongly disagree =1 were used to assess attitude toward condom use. An example of an item is: "Condoms reduce people's pleasure in having sex." The negatively attitudinal items were reversed scored before all items were summed for an overall measure in which higher mean scores represented a more positive attitude to condom use.

*Direct experience with condom use.* A six item scale was used to determine whether condom was typically used during sexual intercourse (Fishbein & Ajzen, 1975). An example of an item is: "I used a condom during my last sexual intercourse". A five point Likert scale ranging from 1 (never) to 5 (always) was used.

*Subjective normative belief about condom use, abstinence and exclusive sexual partner***.** Respondents were asked how likely they thought the named significant others were in favour of them using a condom during first/next sexual intercourse (Ajzen et al., 1980; Rigby et al., 1993). An example of an item is, "My fellow players would approve of my using a condom at the first/next sexual intercourse". Similar questions were asked for abstinence and for having an exclusive sexual partner, with the appropriate wording. The significant others were fellow players, peer coaches, my best friends and present partner (if any). Responses were scored on a 5 point scale from very likely =5, to very unlikely =1.

*Perceived behaviour control for condom use*: Respondents were asked whether they perceived themselves as being in control of their condom use. An example of an item is: "How

certain are you that you will use a condom at your next sexual intercourse?" The responses ranged from very uncertain =1; to very certain =5. Ten items indicating different situations were used. The questionnaire was based on the methodology described by Fishbein and Middlestart (Fishbein & Middlestadt, 1989).The questionnaire has good reliability (Terry, Gallois, & McCamish, 1993) and the items have been crosschecked with relevant studies in Eastern and Southern Africa (Lugoe, 1996; Wilson et al., 1992).

In addition to HIV related behaviour variables, the questionnaire gathered information about knowledge about and likelihood of obtaining and using condoms. For this purpose, we used four items that were used to assess likelihood of obtaining or buying and using a condom in the normal living context. Participants indicated whether: (a) They know where one can buy or obtain condoms, (b) one can buy or obtain condoms in any place even if it is a person of the opposite sex selling or distributing, (c) one is not shy if a condom falls out of one's pocket in front of one's friends, and (d) whether one was sometimes worried to suggest using a condom because it implies distrust of one's sexual partner. One item was used to assess knowledge about what a condom was. Responses to these items were recoded so that "yes" was a scored as a 1, and "No" and "don't know" were scored as 0.

# CHAPTER 3

## Summary of papers

This chapter briefly describes and summarizes the **aims** and **findings** of the different papers that make up the dissertation. The data collection phase of the study took some degree of organising, especially the training of the EMIMA peer coaches. In addition, this was a "longitudinal" study and keeping track of participants was essential as we had a pre and a post test. The first paper in this summary reports data from the pre test, and describes the context and the participants as they were in Dar es Salaam in 2005. The other three papers report data from the post test. However, because we had reliable differences in the pre test, we had to employ procedures (using residual gain scores) to take the pre test scores into account. The papers are as follows:

**Paper 1** **HIV/AIDS education in Tanzania: The experience of at-risk children in poorer semi-urban communities.**

Maro, C.N., Roberts, G.C., & Sørensen, M.
*Vulnerable Children and Youth Studies*, (*in press)*.

The Tanzanian Government responded to the HIV/AIDS pandemic by developing strategies to prevent, control and mitigate the effect of the pandemic through health education, multicultural response and community participation and has implemented a National Policy on HIV/AIDS education for the populace and young people (NACP et al., 2004; NBS & ORC Macro, 2005). The media and institutions such as the hospitals, primary and secondary schools have played a major role since the early 1990s. Specifically for young people, an AIDS education curriculum for primary schools has been implemented (Mgalla et al., 1998). At the community level, the epidemic has caused serious social, economic and development

challenges. The children in poorer communities are more likely to be orphans, or have one parent who is deceased, and are least likely to be attending school. The semi-urban communities of Dar es Salaam city represent one of such contexts. Therefore, the aim of this study was to investigate HIV-related knowledge, beliefs, attitudes and perceived at-risk behaviours of 950 children aged 12-15 years.

The participants were recruited from three sources and formed three groups: the community based sport program (EMIMA), local schools, and out-of-school street children. The participants responded to a questionnaire assessing HIV related behaviour outcome variables. The findings revealed that in general, the youths have limited knowledge, attitudes and skills necessary for optimal HIV prevention. Levels of HIV knowledge, condom knowledge and experience, intentions to use a condom in the first/next sexual intercourse were low, and level of perceived behavioural control in using a condom was moderate. Thus, these children do not have the necessary levels of HIV/AIDS knowledge, and knowledge about the means by which they may protect themselves from HIV infection. AIDS education for young people in Tanzania has been school based since early years of the epidemic (Mgalla et al., 1998; NACP et al., 2004). We thus examined responses of young people within youth subgroups expecting schools to score higher on the variables under study. The study revealed unexpected findings indicating no significant differences on HIV knowledge, intended condom use, and subjective norms about condom use and abstinence between the children in school and those who were out-of-school. Further, the children in school reported lower condom knowledge and experience, and weaker perceived behavioural control than the other two groups.

We further investigated gender differences between males and females on the study variables. Results indicated that there were significant gender differences. Females were less knowledgeable about HIV, had significantly less direct experience and had reliably lower

positive attitudes towards condom use and to having exclusive sexual relationships. Further, females were reliably lower in perceived behaviour control in condom use and had a lower intention to use condom than males. Again because the AIDS education for young people has been based in school, we investigated gender differences within youth subgroups. The differences were systematic within groups in most of the variables. The only exception was that females in schools and out of school had significantly higher normative beliefs about condom use than males. However, the findings show clearly that female adolescents are more at-risk than male adolescents.

The findings in this study indicate that in general children are at risk of HIV infection due to limited knowledge, attitudes and skills necessary for HIV prevention. Low intention to use a condom during their first/next sexual intercourse implies that even if condoms were made available, these at risk children will not be able to use them for HIV prevention. The findings related to youth subgroups in school and out of school indicate that the current approach in schools is not as effective as intended. Clearly, there is a strong emphasis on abstinence only in schools as youths in schools had stronger subjective norms and more positive attitudes towards having exclusive sexual relationships. But at the present time, condoms are regarded as an effective way of HIV prevention. In fact, children in schools are sexually active at an earlier age (Klepp et al., 1997; Ndeki et al., 1994). By comparison, the children in school were found to be more at risk as they reported lower perceived behaviour control in condom use than the other groups. Programs for young people should promote all the three protective strategies; abstinences, exclusive sexual relationships and condom use to reflect the realities of young people's sexual life.

Thus, young people in Tanzania are in greater risk of HIV infection and there is a need to investigate and implement effective strategies that take into account the realities of teaching sexual related health issues within certain culture. AIDS education for at-risk children

requires different and more flexible approaches than the formal school subjects, and certainly one that take into account the cultural dynamics of the society. One such approach might be life skill teaching using peers as educators. Youth activities such as sport context might provide relevant arenas for youth involvement. Findings in this study indicate females are more at-risk than males although both are at risk. This suggests that effective interventions ought to provide skills for prevention for all children with special emphasis on young females. Involving them as peer educators is one step to enhance effectiveness of the intervention targeting young people. Involving more females as peer educators and designing gender sensitive interventions will reduce risk of infection for young people and females in particular

**Paper 2** **Using Sport to Promote HIV/AIDS Education for at-risk Youths: An Intervention Using Peer Coaches in Football.**

*Maro, C .N., Roberts, G.C. & Sørensen, M.*

*Scandinavian Journal of Medicine and Science in Sports,(in press).*

Until the present time, there is neither a vaccine nor a cure for AIDS and young people in Sub-Saharan Africa and in Tanzania in particular, increasingly face the risk of contracting HIV infection. Current efforts by the government and other agencies in reducing the incidence of HIV/AIDS among young people have resulted in the development and implementation of HIV/AIDS educational program for schools over the last two decades. In addition, campaigns through TV and printed media outlets have been used to deliver educational messages and teachers, nurses, doctors, politicians and parents have been heavily involved. Current prevention strategies have increased the awareness of HIV and AIDS but they have not made an overall difference in the rate of transmission (NACP, 1998; NACP et al., 2004; TACAIDS, 2005; UNAIDS, 2006). There are challenges and limitations within the Tanzanian context in

regard to HIV/AIDS education for young people, ranging from perceived inappropriateness and controversies with sex and AIDS education in schools, inadequate coverage of preventative strategies (other than abstinence), school drop outs and limited access to media (NACP et al., 2004; UNICEF, 2004). Thus, given the status quo, more effective prevention strategies are needed that take into account the challenges facing young people (e.g., Downer, Levine, & Weaver, 2003; Klepp et al., 2007; NACP et al., 2004; Schueller et al., 2003; UNICEF, 2004). The present study utilized the context of sport to conduct an experimental AIDS education intervention using peers within an ongoing HIV/AIDS program (EMIMA).

The major purpose of this research was to investigate the effectiveness of peer coach intervention through sport within the EMIMA program. A quasi field experimental study was employed where at-risk children in Dar es Salaam (N=764) were recruited (average age=13.6 years) and responded to pre and post assessment (Time 1 & Time 2). These children were placed into two treatment groups and two control groups. The treatment groups were children under peer coaches participating in the AIDS education and life skill learning within sport. One group in the intervention utilized additional mastery coaching strategies while the other group had normal life skill learning through sport. Children in the EMIMA groups were randomly selected to be one or the other group. The two control groups were children in schools who received the government mandated AIDS education, and out-of-school children who received no formal AIDS education at all. The participants in the treatment groups were organized in football teams with regular training and competition under the trained peer coaches while participating in the interventions. For convenience, after the post test 200 children were randomly selected in each of the regular, mastery and in school groups, but only 164 children were available to take the post test in the out-of-school group. Participants completed questionnaires assessing HIV-related knowledge, beliefs, attitudes and risk behaviours at pre and post intervention. The intervention activities (i.e., AIDS education and

life skill learning through sport sessions) were then conducted for eight weeks. The EMIMA intervention activities were conducted by the trained peer coaches. Concurrently, the children in schools received AIDS education in the traditional manner, nothing new was introduced. No education was offered for the out-of-schoolchildren.

The findings of the present study show that the use of peer coaches within the soccer coaching environment of the EMIMA program was effective in transmitting knowledge about HIV/AIDS and safer sex practices. Relative to the children in schools and out of schools, children in the EMIMA intervention groups reported significantly greater beliefs and perceived control in condom use, abstinence and in using exclusive sexual relationships to prevent HIV infection. In addition, children in the EMIMA intervention sport program were significantly more likely than children in schools who received AIDS education through the traditional approach to report reliably higher levels of HIV and condom use knowledge, more positive normative beliefs, and higher perception of control in the prevention of HIV infection. The results demonstrated that HIV/AIDS education using peers in sport was reliably more effective than the traditional HIV/AIDS education through the normal school program. The findings suggest that HIV/AIDS education using peers in sport may serve as an effective approach for young people, particularly those most at-risk. By incorporating the HIV prevention life skill messages into the sport practice sessions, we have demonstrated that this approach is an effective way of transmitting information, positive attitudes and behavioural intentions to at-risk children.

**Paper 3** **Combating HIV/AIDS in Sub-Saharan Africa: Effect of introducing a mastery motivational climate in a community based sport program.**

*Maro, C.N. & Roberts, G.C.*

*Applied Psychology: An International Review,(accepted pending revision).*

Promoting AIDS Education through Sport

The AIDS epidemic has caused serious social, economic, and developmental problems in Sub-Saharan Africa. As the prevalence of HIV/AIDS among young people is exceptionally high, there is a great need for appropriate and effective intervention approaches for risk reduction. Effective educational and prevention strategies continue to be the primary intervention strategy available to prevent and control the spread of HIV. Thus, it is important to investigate strategies to improve effectiveness of the educational and prevention intervention strategies (e.g., Kirby et al., 1994; Millburn, 1995).

Sport based programs have been recognized to play a potential major role in HIV prevention among young people (UNGAOR, 2003; United Nations, 2003). A program in Dar es Salaam (EMIMA) has demonstrated that sport interventions can be effective. The EMIMA program delivers life skills training for HIV education using trained peer coaches in sport settings.

The major focus of the present study was to determine whether introduction of specific motivation enhancement strategies increased the effectiveness of the EMIMA's HIV/AIDS life skills intervention program. Thus, the study investigated whether mastery motivational procedures (e.g., Ames, 1992; Treasure & Roberts, 2001) would augment the regular skills-based interventions using peers in sport in EMIMA (see Carey & Lewis 1999; Fisher & Fisher, 1992) and enhance risk reduction among youths (e.g., Miller & Rollnick, 1991).

The motivational strategies implemented in the present study emanated from achievement goal theory (AGT) where it has been demonstrated that the structure of the environment (i.e., motivational climate) make it more or less likely for achievement behaviours to be enhanced (e.g., Ames, 1992; Biddle, 2001; Treasure, 2001).Two motivational climates "mastery" and "performance" have been identified and with children, the fostering of a mastery motivational climate enhances achievement behaviour (e.g., Goudas, Biddle, Fox, & Underwood, 1995; Ntoumanis & Biddle, 1999; Treasure & Roberts, 2001). On the other hand, the emphasis on social

comparison that the performance climate fosters may hinder the learning of the life skills for AIDS prevention that is the central mission of EMIMA.

Children (N=564; aged 13.6 years) from three poor communities in Dar es Salaam, Tanzania were involved in this quasi field experimental study. Peer coaches (n=100) were recruited and trained in the EMIMA intervention program. The peer coaches were randomly assigned into “regular” and “mastery” (n=50 each). Prior the intervention, the mastery peer coaches group received two weeks additional training in facilitation of mastery characteristics in their training sessions. The peer coaches then recruited children into the EMIMA program, and 228 were in the mastery group and were placed into 19 teams, and 252 were in the regular group and were placed into 18 teams. The control group (n=164) were out-of-school street children who did not experience the EMIMA program and had received no AIDS education at a formal level. Participants completed questionnaires assessing HIV-related behavioural outcomes prior to and after the intervention. The intervention using peers in football lasted for eight weeks, where the children in the mastery group participated in life skills learning with mastery characteristics embedded in the training sessions. The regular group participated in life skills learning as normally done in the EMIMA program. The assessment of the motivational climate took place after the eighth week of the EMIMA intervention sessions.

The results of the present study indicated that the two weeks mastery training for mastery peer coaches was successful in creating a mastery climate in the groups. The participants were aware of the mastery strategies, reliably more so than the participants in the regular or typical EMIMA group. The findings of the present study show that the life skills intervention using peers in sport was effective and participants reported significantly greater HIV knowledge, condom experience, more positive normative beliefs in condom use, abstinence and the use of exclusive sexual relationships to prevent relative to the children in the control group. The results of the MANOVA analysis revealed that participants in the

mastery motivation group had more positive attitude and norms to exclusive sexual relationship, to abstinence as well as more positive norms and behavioural intention for condom use. We found no differences in HIV knowledge, condom attitudes, experiences, perceived behavioural control and subjective norms about the use of an exclusive sexual partner, thus the mastery motivation strategies enhanced some variables, but not all.

The findings from the canonical analysis revealed that children who perceived a high performance climate related negatively with HIV knowledge, perceived behaviour control with condom use and with subjective norm abstinence, while reporting a more negative attitude toward having exclusive sexual partners. Thus, participants perceiving the motivational climate as being characterized by an emphasis on winning and being superior to others had a negative association with safe sex beliefs and behaviours. In contrast, children who perceived a high mastery climate reported a positive attitude toward an exclusive sexual partner, intended to use a condom, and believed in abstinence. Thus, being in a mastery climate was more positively associated the variables important for HIV risk reduction.

Our research underscored the significant and influential role that trained peer coaches may have in community based activities designed to influence youth behaviours, and that mastery motivational strategies enhanced attitudes and normative beliefs crucial for HIV risk reduction.

**Paper 4** **Gender differences in HIV related, cognitive and behavioural intention variables following an intervention using peer coaches in sport with at-risk children in Tanzania.**

*Maro, C .N., Roberts, G.C. & Sørensen, M (in review).*

Women represent more than half of the 28.5 million individuals living with HIV in Sub-Saharan regions at the end of 2005 (UNAIDS, 2006). Young women in the region are

two to seven times more likely to be infected with HIV than young men (Glynn et al., 2000; Gregson & Garnett, 2000; Macphail, Williams, & Campbell, 2002; Stover, 2004; UNAIDS, 2004). Young women are biologically more susceptible to HIV infection than men, but gender inequalities in social and economic issues and in access to prevention increases women vulnerability to HIV (Bassett et al., 1992; Larson, 1989; Campbell & Macphail, 2002; Setel, 1996). The primary aim of this study was to examine gender differences in key HIV-related cognitive and behavioural intention variables and investigate whether involvement in interventions influences male and females differently.

From the same data source, we investigated children within the EMIMA community based sport program, school children who received their HIV/AIDS education through courses within the school curriculum, and out-of-school street children who did not participate in AIDS education at all. The in-school and out-of-school children were recruited to form control groups to determine the efficacy of the EMIMA program. The intervention using peers in sport lasted for eight weeks and both males and females peer coaches were involved as educators. Anecdotal reports and research findings (e.g., Amaro, 1995; Childhope, 1997; Greene et al., 2004) suggest that social norms and gender-based power relations influence the likelihood of young males and females to effectively utilize preventive measures, (e.g., using condoms). Participants in the study were 764 (Males=555, Females=209, M=13.7 years, SD=1.07) and were assessed two times , one at the beginning of the study (Time 1) and combining all participants together and another within groups at the end of the intervention (Time 2). To gain additional insight into the gender differences in normal life situations, we additionally assessed the likelihood of obtaining, buying and carrying condoms for young males and females.

Results of the MANOVA analyses indicated gender differences at the beginning of the study. Women were lower in all the HIV related behavioural variables. Similarly, in the

normal life context, women were less likely to obtain, buy or carry condoms than males. Further, while the findings show that males and females benefited from the interventions (both in school and through EMIMA), the interventions did not affect females differently to males. Findings indicate that females scored reliably lower on most of the variables under study, especially the behavioural intention variables involving the use of a condom. Thus, females were systematically lower on the cognitive and behavioural variables associated with HIV prevention knowledge and practices than males. The findings of the present study imply that interventions targeting young females that focus on improving attitudes, norms and perceived behaviour control in prevention methods such as condom use, abstinence, and exclusive sexual relationships are desperately needed.

In this study, the likelihood to obtain, buy and curry condoms is regarded as more appropriate for boys than girls. However increasing knowledge about condoms, and the ability and confidence to obtain and carry condoms in normal life situations is vital for both males and females. Thus, females were less likely than males to report being sexually active illustrates that the social norms expect females to be less sexually aggressive. The gender differences extant in this research highlight that a more conscious view of gender is required in HIV prevention approaches within the Sub-Saharan African context. Intervention programs need to pay more attention to gender norms especially issues related to power dynamics over sexual behaviour. The intervention using peers in sport in this study empowered young people to be able to take control of their sexual behaviours by improving attitudes, and perceived behaviour control.

# CHAPTER 4

## Discussion of the research questions

In this chapter, a brief summary of the findings from the four papers with respect to each research question will be presented.

**Question I**

**Is the AIDS education intervention program using peers in a sport context effective for HIV risk reduction among at-risk children in Sub Saharan Africa? (Papers, 1 and 2)**

Summary of the results:

- *Use of the peer coaches within the soccer coaching environment of the EMIMA program was effective for HIV-risk reduction among at risk children*
- *The AIDS education intervention using peers in a sport context was reliably more effective than the traditional HIV/AIDS education through the school system*
- *Initially children exhibited limited knowledge about HIV and prevention but benefited in reducing risk of infection through involvement in the AIDS education intervention using peers in sport*

The first question examined whether AIDS education intervention program using peers in sport was effective for HIV risk reduction among young people. Most of the previous intervention approaches for young people have been through formal settings such as schools, churches, hospitals; with adults such as nurses, teachers and parents used to deliver the educational messages. Previous findings show that with these approaches there is no decrease in HIV infections among young people (Klepp et al., 1997; NACP et al., 2004). Young people in Tanzania increasingly face the risk of contracting HIV infection, with young females being far more likely than young men (paper 4). Findings from study 1 of this thesis indicated that HIV knowledge, attitudes and norms toward prevention among young people were generally low and affect the adolescent's decisions to engage in safe sex practices (Gallois et al., 1989; Kelly et al., 1991; Leviton et al., 1990). The major challenge for HIV prevention intervention targeting

youths is how to develop an effective intervention program that is culturally relevant, youth friendly and take into consideration the cultural norms and socio-economic realities of Sub-Saharan communities in general and of the young people in particular.

The present study evaluated the effectiveness of an ongoing AIDS education intervention program that utilized the context of sport to conduct an experimental project with at-risk youth. The EMIMA intervention program used a popular youth activity to attract at-risk children and used peer coaches as educators to deliver the educational information, knowledge and skills through the sport program. Thus, the study examined the effectiveness of the intervention program in reducing risk for HIV infection for at-risk children in poorer semi-urban communities.

The findings from the intervention study indicate that using peer coaches within the soccer coaching environment of the EMIMA program was effective in transmitting knowledge and skills about HIV/AIDS prevention and safe sex practices. Children who participated in the EMIMA intervention program were more likely than children not in the program to demonstrate those knowledges and behaviours that reduce the risk of HIV infection. Even when compared to the traditional HIV/AIDS education through the normal school system, the EMIMA intervention was reliably more effective for all knowledge, attitudinal and behavioural variables investigated in this study. In particular, children in the EMIMA intervention groups reported significantly greater knowledge, beliefs and attitudes toward HIV prevention. It is evident from the findings that the life skill education using peers as educators through sport is clearly an effective means to impart these knowledges, skills and attitudes for risk reduction.

We found that a large proportion of children in the poorer communities have no parents and are out of school (study 1). Coupled with the complexity of introducing AIDS education into the formal didactic methods typical in schools, highlight the need for alternative approaches that use a more youth friendly approach. By incorporating the HIV/AIDS life-skill

messages into the soccer practice sessions that are instructed by peers demonstrated that sport can provide the setting where information and the life skills can be learned. Further, using peers within the sport context to disseminate information about the appropriate prevention behaviours, and involving children in learning the skills in an enjoyable and non-scary environment helps to reduce the normative and cultural barriers about sexual behaviour deeply-rooted in Sub-Saharan African culture. By incorporating youths as educators, in particular young females, then this challenges the cultural norms that perpetuate inequitable gender norms that has, in part, fuelled the epidemic. In the present study, children joined teams with friends and made new friends as they participated in sport and HIV/AIDS sessions. This has psychosocial benefits, and facilitates the learning of the life skills through providing an accepting context to discuss risk behaviour and to reinforce each participant's efforts at risk reduction. Thus, the AIDS education intervention using peers in sport is a promising approach and needs to be developed and expanded.

**Question II**

**Do mastery motivational strategies enhance the effectiveness of life-skill interventions for HIV/AIDS education through sport for at risk children? (Papers 2 and 3)**

Summary of the results:

- *Mastery motivational procedures enhanced mastery criteria and augmented the life skill based intervention (in EMIMA) to enhance risk reduction through the attitudinal, normative and behavioural intentions*
- *Participants perceiving mastery motivational criteria reported significantly more positive, believes, attitudes and norms and behavioural intentions to HIV prevention.*
- *Being in a mastery climate was more positively associated with variables important for HIV reduction*
- *Perception of higher performance climate related negatively with HIV knowledge, and safe sex beliefs and behaviours.*

The second question focused on whether specific motivation enhancement strategies increased the effectiveness of the EMIMA's life skill intervention using peers in sport program. The intervention program provide both information and life skills and involved young people in the interventions for effective HIV prevention for the at risk children. Findings in study 2 and 3 indicate that this approach is effective for at risk children within the Sub-Saharan African context. We included a group that was subjected to mastery motivational strategies in addition to a group typical of EMIMA. The findings in study 3 indicate that the integration of motivational strategies was generally effective. The peer coaches effectively manipulated the motivational climate of the training sessions so that participants perceived mastery criteria of success in the context. More importantly, the mastery group was superior to the regular group and demonstrated greater knowledge, attitudes and perceived behaviours relevant to HIV/AIDS infection.

The findings demonstrated that peer coaches can be trained to implement mastery motivational strategies in the EMIMA program. The findings revealed that the peer coaches in the regular program used more performance criteria in the training sessions. We know from previous research that performance criteria of success are not as effective in developmental settings. In the present study, children who perceived a performance climate related negatively to several of the HIV/AIDS variables we investigated illustrating that the emphasis on winning and being superior to others had a negative association with safe sex beliefs and behaviours.

In contrast, being in mastery climate was more positively associated with the variables important for HIV risk reduction. For increasing the effectiveness of such programs, deliberate incorporation of mastery criteria of success into the training of life skills for HIV/AIDS risk reduction may be beneficial.

**Question III**

**Are there gender differences in young people's response to key HIV related cognitive and behavioural intention variables of at-risk youth? (Paper 1 & 4)**

Summary of the results:

- *There were significant gender differences prior interventions with females scoring reliably lower in most of the variables under study.*
- *The intervention using male and female peer coaches in football was beneficial to both males and females.*
- *There were significant gender differences post intervention and females scored lower in most of the variables.*
- *Within youth subgroups there were systematic gender differences on the study variables.*
- *Within the normal life situation, gender differences exist in the likelihood of using the most HIV effective prevention strategy .i.e. condom use.*

Within the Sub-Saharan African context, studies suggest that young women are far more likely to be infected with HIV than young males (Glynn et al., 2001; Macphail et al., 2002). Although there are biological differences that are believed to contribute to the vulnerability of women to HIV (Aggleton, 2004; Aral & Holmes, 1991), there is growing evidence that the inequitable gender relations in African culture are the major factor in the vulnerability of women (Larson, 1989; Setel, 1996).

The third question pertained to the gender differences on the study variables. Papers 1 and 4 addressed the issue prior and after involvement into an intervention. First, we found that in general both boys and girls have limited knowledge, attitudes and skills necessary for optimal HIV prevention (study 1). This suggested that these children are at risk of HIV infection. An interesting issue is the question whether there were gender differences in the key HIV related cognitive and behavioural variables in the study from the beginning. The findings from paper 4 indicated that there were significant gender differences and that females scored relatively lower than males in most of the study variables. Females were less knowledgeable about HIV, less

experienced with condom use and were less likely to express favourable attitudes to condom use. Females were less likely to normatively believe in abstinence, and had less perceived behavioural control in condom use than men. Lastly, women had less intention to use a condom in the future than men.

The EMIMA intervention program utilizes male and female trained peer coaches as HIV/AIDS educators using football skills and training to provide information, skills and attitudes related to HIV education. Males coached males, females coached females. The findings from papers 2 and 3 indicated that the intervention was effective for both males and females to reduce risk behaviours for HIV infection. When we looked at the gender differences, we had to control for initial differences evident in paper 1. To control for the initial gender differences, we used residual gain scores. The findings from study 4 indicate that both males and females benefited from the AIDS education interventions through the EMIMA program and through school. However, there continued to be gender differences and women scored lower on the cognitive, behavioural variables associated with HIV prevention knowledge and practices. The gender differences were systematic across all the groups. The findings reflect the deep-rooted gender inequitable norms within the Sub-Saharan African context.

While using male and female peer coaches in increasing knowledge, attitudes and behavioural beliefs for optimal HIV prevention was effective, the gender differences that remained demonstrates how strong the gender roles are within Tanzanian society. We implemented a culturally relevant and youth appropriate intervention using peer coaches in youth friendly activities – football (e.g., St.Lawrence et al., 1995). Although the intervention was implemented through football which is considered to be a masculine sport (Hargreaves, 2000), the female peer coaches challenged the gender social norms and attempted to empower females for effective HIV prevention. But the findings indicate how powerful the inequitable

gender norms and gender roles within the society are. This can only be seen as a debilitating factor in HIV prevention, especially on condom attitudes and intended use for females.

There is growing evidence that social norms that promote unequal gender roles increases women's risk of HIV (Weiss, Whelan, & Rao Gupta, 2000). It is argued that sport participation and peer coaching by male and female peer coaches may empower youth, especially women and reduce common problems related to unequal gender roles and sexuality (Miller, Sabo, Farrell, Barnes, & Melnick, 1998). Sport has rapidly gained recognition as an effective means and platform to increase knowledge, awareness and reduce vulnerability for HIV/AIDS infection for both males and females (United Nations, 2003). Thus, using males and females peers in sport to educate about AIDS through programs like EMIMA is a promising avenue to reduce the HIV risk of infection as well as changing the gender social norms and promoting gender equity. However, the evidence from this study suggests that simply expecting that participation alone is sufficient is wrong. We experienced gender differences, especially involving norms, attitudes and intended behaviour with the use of condoms, with women being more at risk than men. Thus, while the EMIMA type approach may constitutes an important strategy to reduce risks of HIV infection among young people, and women in particular (see Mane & Aggleton, 2001; Pulerwitz, Barker, Segundo, & Nascimento, 2006; Weiss et al., 2000), clearly we have to develop and investigate specific strategies to enhance the empowerment of females within the Sub-Saharan context.

# CHAPTER 5

## General discussion

The next section of this thesis presents a general discussion of the main findings and implications for HIV prevention intervention among at-risk youths.

The AIDS pandemic continues its primary spread throughout Africa and at present there is neither vaccine nor cure for AIDS. The present research project is part of an ongoing effort to reduce the incidence of AIDS focusing on risk reduction for HIV infection. The present thesis evaluated an AIDS education intervention using peer coaches in sport (football) that provide both information and behavioural skill training to improve risk reduction. It was expected that using peers and providing both information and behaviour skill training would be generally effective in improving knowledge, attitudes and intended sexual behaviour related to HIV risk reduction (e.g., Gallois & McCamish, 1989; Kalichman, Rompa, & Coley, 1996; Kelly, St Lawrence, & Brasfield, 1991; Maticka-Tyndale, 2006). In recent years, recommendations have been made to involve peers and use sport as an avenue to educate about AIDS (United Nations, 2003), but to date no study has been published and the effectiveness of this approach has not been demonstrated with HIV/AIDS prevention.

It has long been known that sport is meaningful for children, it is enjoyable and it is a context sought by children (Roberts, 1984; Siedentop, 1996). More importantly, sport offers skills that are learned and are transferable to life situations (e.g., Danish, 2002). Thus, the current dissertation investigated the effectiveness of an ongoing AIDS education intervention program (EMIMA) in Dar es Salaam in Tanzania that uses peers in the sport context. This is the first experimental AIDS prevention program using peers in the sport context to imbue life skills for HIV prevention for at-risk children in Sub-Saharan Africa. As such, the study yielded useful and important information on the culturally relevant and effective strategies to reduce risk of HIV infection among at-risk children.

The most important finding of the present study is that the EMIMA program is an effective means of transmitting information and life skills to these at-risk children. The program targets peer coaches and educates the peer coaches to include HIV education and prevention life skills within the practice sessions for a football training program. Beforehand, the EMIMA staff conducted the program in the belief that the program helped the at-risk children. This study demonstrated that the program does indeed transmit life skills for HIV prevention. In addition, the study included mastery motivational strategies for one group of at-risk children to determine whether the additional motivational strategies may make the program even more effective. The motivational strategies, overall, did enhance the effectiveness of the program with some of the variables. This procedure clearly needs more investigation. In addition, this study revealed that a "gender-gap" exists in the education process. It was found that girls were less knowledgeable and more at risk than boys in the pre-test, but that the EMIMA program did not bridge the gap. While boys and girls did benefit from the program, the cultural values and gender roles prevented the girls from fully benefiting from the program. Again, this needs more investigation.

In general, it was found that young people in the study were at risk of HIV infection as they were lacking necessary knowledge, attitudes and behavioural skills for HIV prevention. Both in school and out of school youths have limited knowledge, attitudes and skills to engage in safer sexual behaviour for HIV risk reduction. Young people in schools are exposed to the formal AIDS education curriculum for primary schools and thus are expected to be at less risk for HIV infection. The Tanzania government has developed and implemented an AIDS education curriculum for primary schools conveying information, education and communication since the 1990s (Mgalla, et al., 1998; MoH, 1995; NACP et al., 2004). The findings of the present study, in addition to revealing the high risk of HIV infection facing young people, indicate that the AIDS education in schools has not been as effective as intended. We had

expected that there would be significant differences between the out-of-school and in school groups, and the latter would engage in less sexual at-risk behaviours and portray more positive attitudes, norms and behaviours about the prevention approaches. This was not the case!

Within the Sub-Saharan African context, children are sexually active at younger and younger ages and have multiple sexual partners. At the moment, the prevailing evidence indicates condom use being the most effective way for preventing HIV infection (Kapiga, et al., 1992; Klepp et al., 1997; Ndeki, et al., 1994). However, the children in schools were found to be at higher risk for HIV infection as they exhibited the lowest knowledge, attitudes and perceived behaviour control related to condom use. Thus, youths in school are most at risk for HIV infection. Government policy in the early 1990s restricted condom use education in schools for moral reason in that it was believed that condom education, promotion and distribution connotes encouragement of sexual activity in schools (e.g., MoH, 1995). The policy has been revised subsequently, but the findings in this study reflect the impact of the policy.

Most of the programs for young people have been characterized as targeting behavioural change through educational information that has meant making young people aware of AIDS as a serious problem and increasing level of knowledge about HIV and how HIV can be transmitted (MoH, 1995; Serwadda, Mhalu, Karita, & Moses, 1994). These strategies, while constituting a necessary first step in AIDS prevention for at risk youth, have proven to be of limited value in diminishing transmission of HIV among young people (NACP et al., 2004), because providing only education (i.e., information) about HIV related transmission and prevention do not reduce the risk of HIV infection (Choi & Coates, 1994). Schools provide natural settings for intervention for young people. However, there are realities that must be considered within the context. The steadily increasing school drop out rate (e.g., MoE & MSTHE, 1993), the complexities of introducing AIDS education in formal classes, and the cultural and geopolitical aspects surrounding teaching sexual issues to young people are

challenges to effective intervention for HIV risk reduction among youths. Thus there is a need for improvement of the educational and behavioural approaches for young people and investigation of alternative effective approaches for at-risk youths. We need less formal didactic approaches and more life skill and youth friendly peer based approaches. There is evidence that peer relationships and support contribute to safe sexual behaviours in adolescents (e.g., Gallois & McCamish, 1989; Kelly et al., 1991; Walter et al., 1992; Valdiserri et al., 1988).

The major finding of the present dissertation is that the use of peer coaches within a youth friendly environment, football coaching in the present case, was effective in transmitting knowledge about HIV/AIDS and safer sex practices. By approaching youths using peers in sport, the cultural and didactic limitations related to teaching sexual issues to young people diminishes dramatically (Ijsselmuiden et al., 1993). Participants in the intervention using peers in sport reported higher levels of HIV and condom use knowledge and significantly greater beliefs and perceived behavioural control in HIV prevention methods (i.e., condom use). Indeed, the intervention using peers in sport was reliably more effective than the traditional school approach for transmitting knowledge, attitudes and behavioural skills. This study is the first systematic intervention using peers in sport to document the effectiveness of this approach. The sport environment is an interactive, affect laden and attractive context for most kids. This facilitates the learning of the life skills for real life situations (e.g., Danish, 2002). The findings showing improvement in life skills for the intervention children demonstrated that life skills training for HIV prevention through sport is effective. Though not the focus of this study, other benefits such as positive psychological outcomes (e.g., general well-being) can be achieved (e.g., Ommundsen, Roberts, Lemyre & Miller, 2006; Stephens, 1988). However, we need more research to enhance the program and to improve the effectiveness of the peer coaches for HIV risk reduction.

One procedure to enhance the effectiveness of the peer coaches is the introduction of mastery criteria within the coaching environment. Generally, motivational enhancement approaches have indicated success in improving behavioural skills based interventions and make individuals commit more to behaviour change (e.g., Carey et al., 1997; Carey & Lewis, 1999; Fisher and Fisher 1992; Miller, 1989). Thus, we investigated the impact of the mastery motivational climate on the effectiveness of the EMIMA HIV/AIDS education intervention program. Young peer coaches were educated to introduce a mastery motivational climate in the football training sessions that involved life skills for HIV prevention in the EMIMA program. Results from previous studies indicate that creating mastery climate results in enhancing children's motivation (e.g., applying more effort, looking forward to their next lessons, satisfaction, enjoyment, etc) (Gouda et al., 1995; Lloyd & fox 1992; Roberts, 2001; Roberts et al, 2007; Treasure & Roberts, 1995). The findings indicated that the mastery intervention was effective in creating a more mastery motivational climate. Further, the findings (papers 2 and 3) demonstrated that motivational enhancement approaches enhanced the effectiveness of the behavioural life-skill program for risk reduction by enhancing the attitudinal, normative and behavioural intention variable. These are crucial variables for HIV prevention and are proximal determinants of youth sexual behaviours (e.g., Braithwaite & Thomas, 2001; DiClemente, Forrest, & Mickler, 1990). Thus, the findings indicate that utilizing mastery motivational strategies may enhance risk reduction strategies for HIV infection.

Children who perceived a mastery climate reported a more positive attitude toward an exclusive sexual partner, intended condom use and believed in abstinence. These are useful strategies for HIV prevention, especially for currently sexually inactive young people. Thus, being in mastery climate was associated with variables important for HIV risk reduction. Given that the mastery strategies were taught in a two week extra educational module to the peer coaches, the findings indicate that it is possible to train peer coaches in motivational strategies

rather efficiently. By focusing on learning and mastery of the life skills, trying hard to do one's best, focusing on self improvement and personal progress, this had the impact of increasing the perception of the participants that they were in control of the behaviours needed to prevent HIV infection. The current findings imply that it is feasible and effective to involve peers as educators in a favourable motivational climate for HIV risk reduction. Mobilizing and training peer coaches in greater numbers has promise to enhance risk reduction among at-risk children within the Sub-Saharan African context.

We found that a "gender gap" existed in the education process for young people within Tanzania. Girls were less knowledgeable and scored reliably lower on most of the variables under study, especially the behavioural intention to use condoms. Thus, girls were at more risk than boys within Tanzania. The socio-cultural context within Tanzania context put women at a higher risk of HIV infection than males (e.g. Kapiga, 1996; Mnyika, Kvåle, & Kleep, 1995; Setel, 1996). Women often have very little power within the cultural settings in Tanzania to initiate and lead sport activities for women, and in particular for mixed groups. In relationships, women have very little power to equally share responsibilities and roles with a boyfriend. There is evidence that the gender norms that promote inequitable gender roles increase both young males and females' risk of HIV infection (Weiss et al., 2001). In view of this, the present dissertation investigated gender differences among the participants after the EMIMA program.

The program trains both male and female peer coaches as educators and attempts to implement gender sensitive programs that challenges inequitable gender norms that put women at risk. The EMIMA program focuses on gender roles, responsibilities, and relationships in the intervention process, and promotes gender equity, while challenging gender inequitable norms and roles. However, the findings of the present study indicate that even after controlling for the initial gender differences, gender differences continued in a systematic fashion and female participants scored lower than males on these variables (study 4). Both males and females

increased knowledge and enhanced attitude and behavioural intentions for safer sexual behaviour, but the program did not bridge the gap. Thus, the intervention did not affect females differently to males, and both benefited from the program. But the cultural values and gender roles deeply rooted in the society prevented girls from fully benefiting from the EMIMA program. The condom related variables were most affected by the cultural values and gender roles within the Tanzanian context; and clearly, it has a debilitating effect on condom attitudes and intended use for females.

This dissertation made an attempt to view the male/female differences in a context where the predominant mode of transmission of HIV infection is through heterosexual contact. These findings suggest that gender is risk factor and highlights that a more conscious view of gender is required when designing interventions for at risk children within Sub-Saharan Africa. The evidence that gender norms that promote inequitable gender roles increases the vulnerability of young females (Weiss et al., 2001) suggest that in addition to the gender sensitive strategies employed in the current EMIMA program, investigation of more effective intervention strategies is needed to bridge the gender gap that put women at more risk.

The present study targeted youths between the ages of 12-15 years. In Tanzania, these age groups represent young children in primary and early secondary school. The majority of participants in this study were sexually inactive, many of them orphans, many not in schools, living in areas with limited resources, cultural taboos, strong gender inequitable norms and a high prevalence of HIV/AIDS infection. Young people engage in more risky sexual behaviours than older adults (Taylor, 1991) and surveys show that 27 percent of young people in Tanzania have already engaged in sexual activity before age 15 years (NACP, et al., 2004). These early sexual experiences have been associated with inadequate condom use and having multiple sexual partners (e.g., Elbadawi, 1992; Konings et al., 1994; NACP et al., 204; UNICEF, 2004).

These realities require an urgent re-thinking of strategies for HIV prevention among youths in Tanzania, and most likely in Sub-Saharan Africa in general.

Targeting AIDS education in schools is a correct choice of strategy. However, the efforts of the Tanzania government regarding AIDS education for young people have been thwarted to some extent by the steady decline in the proportion of primary school aged children attending school and high level of school drop out (e.g., FHI,2004; NACP et al., 2004). Introducing AIDS education in the normal school curriculum faces further challenges related to the teaching of life skills (e.g., Danish, 2002). Thus, there is a great need to target young people with effective youth friendly interventions. As the findings of this thesis demonstrate, interventions using peers in sport may serve as an effective approach for AIDS risk reduction interventions in Sub-Saharan Africa for at-risk youths who are similar to the youth in the present study. Intervention using peers in sport may be one such alternative avenue to transmit the important knowledge, attitudes and behavioural skills behind HIV education programs.

The approach taken by EMIMA in Dar es Salaam documented in this dissertation is a creative solution to accessing disadvantaged participants, many who are already traumatized and stigmatized by AIDS because they may be AIDS orphans. Approaching these children through football, which they like and are familiar with, and using peer coaches to recruit them and conduct the interventions, has been a useful intervention strategy to encourage involvement of at-risk children, and out of school street children in particular. The out of school and street children are the most difficult group to recruit for any program that seeks to educate. The approach of using peers in sport for HIV education intervention as illustrated in this dissertation, takes the advantage of the fact that playing football in Africa is generally popular for youths. Thus, not only we were able to reach out to the “hard to reach” groups, but also by incorporating the HIV messages into the practice sessions, the present study demonstrated that this is an effective way of transmitting the information, attitudes and behavioural intentions to

at-risk youths. This is important given the fact that, as is the rest of Sub-Saharan Africa, the number of orphans and out of school children in Tanzania is rapidly increasing (NACP et al., 2004; UNICEF 2004).

We recognize that behaviour change, however beneficial, is not achieved overnight. Considering that the intervention for this dissertation was only for eight weeks, with two-hour sessions per day, the major goal of the intervention was achieved and the results are very encouraging. First, the EMIMA program responds to a recommendation to involve young people in the delivery services for HIV prevention among young people (e.g., Klepp et al., 1997; Schueller et al., 2003). Secondly, the training of the peer coaches (both males and females) as educators is a resource for community involvement in AIDS education for at-risk children. The trained peer coaches reside in these communities, and because football is played many children will be introduced to this information, these attitudes and skills acquired by the peer coaches. Once trained, the peer coaches recruit many cohorts of children and involve at-risk children. The EMIMA staffs are heavily involved in providing the facilities and resources for the peer coaches to recruit and educate the growing legion of at-risk children. As the EMIMA program is an ongoing community program, we anticipate the long term effect of reduced youth vulnerability, a reduction of infection rates, and sustained changes in societal norms associated with safe sexual practices.

The process of implementing the intervention as illustrated in this dissertation is challenging the social, cultural, peer and gender norms that put young people at risk of HIV infection. Both young male and female peer coaches are being trained as educators and actively involved in the training sessions on a daily basis. This is a new phenomenon in Tanzanian culture. As outlined in the present study, it is culturally relevant for peers to lead life skills education and discussion regarding safer sexual practices. Participants are more likely to learn and master the skills than when the same information is given by adults. The peer coaches

become role models who can influence youth behaviours for safer sex practices. As the peers are also disadvantaged children who share similar life experiences, they become a major source of influence when it comes to sexual behaviours (Stevens, 1997). When this happens in a friendly, fun, enjoyable and non-scary environment, this facilitates the cognitive and behavioural skill acquisition for HIV prevention.

There are methodology issues involved in this study that need to be addressed. This study utilized self-administered questionnaires with questions adopted from existing surveys on HIV/AIDS conducted in various parts of Africa and modified to fit the Tanzanian cultural and linguistic setting. A self administered questionnaire was preferred because the research dealt with very sensitive and personal issues (i.e., sexuality) which most people, and young people in particular have great difficulty discussing face-to-face due to the age and cultural barriers that may prevail. The majority of Tanzanians consider it to be taboo or culturally inappropriate to discuss sexual issues with children and adolescents. In addition, children feel constrained to discuss sexual matters with adults who have implied authority such as teachers, parents (where present) or cultural leaders, or even researchers. In addition, the study took into consideration the fact that during face to face interviews, participants may conceal some information to save face, especially when the interviewee is involved in socially unacceptable behaviour such as premarital sex. Thus, we used self-administered questionnaires to gather data on attitudes, beliefs and sexual behaviour practices of the young people. Because many of the potentially modifiable risk factors for HIV/AIDS are behavioural in nature, it is likely that researchers will need to continue to rely on self report to assess their prevalence or changes in prevalence. The use of physiological or diagnostic outcomes measures such as HIV testing, could be used to complement self-report on behaviour. However, validating sexual behaviour data by assessing the degree to which reported behaviour reflect actual behaviour is not easy (and may be unethical). By implication, sexual behavioural data obtained through questionnaires may have

reduced validity because of recall bias and the potential that participants provide socially desirable responses.

The present study surveyed a sample of at-risk children in the semi urban communities of Dar es Salaam. These children are deemed most at risk for HIV infection (UNICEF, 2004; UNAIDS, 2006) and mostly likely to be orphans or have one parent deceased, and are least likely to be attending schools. At-risk children such as we had in the study are more vulnerable to high attrition rates as we found with the street children, However, those that were in the sport interventions had a low level of attrition. This alone attests to the power of sport to contribute to life skills education.

The selection of the disadvantaged communities with at-risk children represents a limitation for any generalizations. The condom attitudes, beliefs, and intentions observed in the present study may be unique to this sample of at-risk children and should not be generalized to other children groups who engage in at-risk behaviours. In addition, because of the design of the study we were unable to examine the direction of causality between attitudes, norms and beliefs towards HIV prevention and actual behaviour in relation to condom use, abstinence and having an exclusive sexual relationship. Although the findings in this study are limited to the participants of this study, we are fairly confident that the results may be generalized to at-risk children in similar contexts. However, we are less certain whether the findings related to children from these disadvantaged communities may be generalised to children of the same age cohort from other communities in Dar es Salaam. Factors such as access to information and other resources, education level of parents and orphan status, may contribute to any differences that may occur between the participants in this study and children from other communities. EMIMA plans to expand the program to additional communities in Tanzania including rural communities. Future research will help determine the generalizability of the findings.

The effects of a specific intervention project can only be truly measured through use of control and/or comparison groups. The study in this thesis employed a quasi-field experimental design with control groups. This design was appropriate for this research project, although it required extensive planning, funding and research resources. On an ethical level, the study necessitated withholding interventions for the schools and for the out of school street children. However, the non EMIMA children were invited to take part in the football intervention and the schools were attached with peer coaches and introduced KAO in schools program. The orphan children institutions were invited to participate in Kicking AIDS Out activities at nearby EMIMA centres.

**Conclusions and future directions**

The last part of the dissertation provides conclusions and potential future areas of research and interventions among at-risk youth.

Findings from the current research provide evidence that the EMIMA type intervention using peer coaches in a sport context may serve as an effective approach for HIV/AIDS risk reduction intervention in Africa for at-risk youths. The findings further provide evidence that motivational enhancement strategies are useful in enhancing the effectiveness of life skill educational interventions for HIV risk reduction. The results added another dimension on the usefulness of life skills learned in sport (Danish, 2002c; Danish et al., 1996; Danish et al., 2006). By incorporating the HIV messages into the practice sessions, the present dissertation has demonstrated that this is an affective way of transmitting information, positive cognitions and behavioural intentions to at-risk youths, both boys and girls.

Findings from the current research project provide evidence that a more child friendly skill training program using peers in sport is effective in strengthening intentions to engage in safer sexual behaviours for HIV prevention. This approach as outlined in the dissertation,

provide an opportunity in a child friendly activity for young people to learn and master life skills that focus on enhancing perception of control in HIV prevention. The findings show that the use of peers as educators in these contexts is effective for HIV prevention. Additionally, mastery motivational enhancement strategies seem to play a role in enhancing the effectiveness of the peers in facilitating life skills learning.

These findings clearly indicate that children in the poorer semi-urban communities of a large city in Sub Saharan Africa are at high risk of HIV infection. The programs in the school system of Tanzania are not working as desired. It may well be that the schools need to re-think AIDS education, and perhaps use a program that uses peers in schools. If possible, the use of the sport context for such education in schools will result in major improvement in AIDS education in Tanzanian schools.

The present study presented evidence of the effectiveness of a life-skills program that integrates sport and life skill training for HIV risk reduction. Children who participate in such a program do improve their sport skills (e.g., Danish, 2002c), while at the same time, the inclusion of the AIDS life skills training into sport practice serves as an effective model for learning life skills for HIV prevention. Moreover, the life skills program equips young athletes with knowledge and skills that are necessary for successful coping with the complex realities of life (Boler et al., 2005). Therefore, children with improved knowledge and life skills for enhanced problem solving, decision making, negotiation, positive thinking abilities, positive attitudes and norms, have an increased chance to become better citizens able to prevent themselves from becoming an AIDS victim.

Under the prevailing cultural norms, and as the findings in this study indicate, gender is a risk factor and there is still long way to go to eliminate the gender inequitable norms that put girls at increased risk for HIV infection. While young females benefited from the program, they still scored lower than young males. How we may change the EMIMA program

to better target young females particularly as they seem to be ones most at risk, is a task for future research. It would appear fruitful when designing gender-sensitive, peer and skill based interventions, to incorporate mastery criteria into the normal educational training of the peer coaches within AIDS educational intervention program. However, we should not lose sight of the fact that it is gratifying that the EMIMA program empowers young females to be more proactive in preventing HIV infection and thus challenging the social norms that put women at more risk.

One of the aspects of this intervention study is the training of peer coaches. This contributes in community building and social support for youth activities. The current findings have presented evidence that peers have a valuable role to play in HIV/AIDS interventions for young people. Further, the motivational enhancement strategies proved to be useful in enhancing the effectiveness of the peer coaches in the life skill training for HIV risk reduction. Future research investigating the efficacy of a peer coach created motivational climate in life skill training may contribute substantially in enhancing the effectiveness of HIV intervention programs for young people.

I conclude with a personal comment. The study design employed in this thesis where behavioural surveys were used to measure the effectiveness of the intervention program, where we had to intervene within an ongoing community based program to conduct the research study using research protocols without disturbing the running of the program unduly, was extremely complex. It necessitated carefully designed sampling plans, measurement of intervention exposure, data collection twice with children difficult to recruit, and multivariate statistical analyses of results. Typically, these skills and resources are not found in organizations that specialize in community based intervention such as EMIMA and the Norwegian Confederation of Sports (NIF). That is why the partnership with the Universities that provided the research competence and resources were vital for this research, and are

essential for future research in these communities in Sub-Saharan Africa. Community based organizations such as EMIMA are key elements in the fight against AIDS. And if we are to "Kick AIDS Out ", as the slogan goes, then these efforts should be continued, enhanced, and more fully funded.

# References

Aggleton, P. (2004). Sexuality, HIV Prevention, Vulnerability and Risk. *Journal of Psychology and Human Sexuality, 16,* 1-13.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational behavior and Human decision processes,* 179-211.

Ajzen, I. (1988). *Attitude, personality and behavior*. Chicago, IL: Doisey Press.

Ajzen, I. & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior* . Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I. & Fishbein, M. (2000). Attitudes and attitude-behavior relation: Reasoned and automatic process. In W.Stroebe & M. Hewstone (Eds.), *European Reviews of Social Psychology,* (pp. (-)). Chichester: Wiley.

Amaro, H. (1995). Love sex and power : Considering women's realities in HIV prevention. *American Psychologist, 50,* 437-447.

Ames, C. (1984). Competitive, cooperative and individualistic goal structures: A cognitive - motivational analysis. In R.Ames & C. Ames (Eds.), *Research on motivation in education:* (pp. 177-208). New York: Academic Press.

Ames, C. (1992). Achievement goals, motivational climate and motivational processes. In G.C.Roberts (Ed.), *Motivation in sport and exercise* (pp. 161-176). Champaign, IL: Human Kinetics.

Ames, C. & Maehr, M. (1989). [Home and school cooperation in social and motivational development]. Unpublished raw data. Project funded by U.S. office of education,

office of Special Education and Rehabilitative Services, Contract No. DE-HO23T80023.

Aral, S. & Holmes, K. (1991). Sexually transmitted diseases in the AIDS era. *Scientific American, 264,* 62-69.

Bassett, M., Woelk, G., Sherman, J., Chanetsa, S., Mabeleka, N., Noube, S. et al. (1992). Talking about sex with teenagers: Experiences in Harare area secondary schools. In VIIIth International Conference on AIDS in Africa,Younde.

Beatty, L. A., Wheeler, D., & Gaiter, J. (2004). HIV prevention research for African Americans: Current and future directions. *Journal of Black Psychology, 30,* 40-58.

Biddle, S. J. H. (2001). Enhancing Motivation in Physical Education. In G.C.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 101-127). Champaign IL: Human Kinetics.

Boler, T. & Aggleton, P. (2005). *Life skills education for HIV prevention: a critical analysis.* London: Save the children and ActionAid International.

Braithwaite, K. & Thomas, V. G. (2001). HIV/AIDS knowledge, attitudes and risk behaviours among African -American and Caribbean college women. *International journal for the advancement of counselling, 23,* 115-129.

Brooks-Gunn, J. & Paikoff, R. L. (1992). "Sex is a gamble, kissing is a game": Adolescent sexuality and health promotion. In S.G.Millestein, A. C. Petersen, & E. O. Nightingale (Eds.), *Promoting the health of adolescents: New directions for the twenty first century.* (pp. 180-208). New York: Oxford University Press.

Bujra, J. & Baylies, C. (2000). Responses to AIDS epidemic in Tanzania and Zambia. In C.Baylies & J. Bujra (Eds.), *AIDS, Sexuality and Gender in Africa. Collective Strategies and Struggles in Tanzania and Zambia* (pp. 25-59). London: Routledge.

Campbell, C. & Macphail, C. (2002). Peer education, gender and the development of critical consciousness:participatory HIV prevention by South African youth. *Social Science and medicine, 55,* 331-345.

Carey, M. & Lewis, B. (1999). Motivational strategies can enhance HIV risk reduction programs. *AIDS and Behavior, 3,* 269-276.

Carey, M., Maisto, S., Kalichman, S., Forsyth, A., Wright, E., & Johnson, B. (1997). Enhancing motivation to reduce the risk of HIV infection for economically disadvantaged urban women. *Journal of Consulting and Clinical Psychology, 65,* 531-541.

Carey, M., Morrison-Beedy, D., & Johnson, B. (1997). The HIV-Knowledge Questionnaire: Development and evaluation of a reliable, valid, and practical self-administered Questionnaire. *AIDS and Behavior, 1,* 61-74.

Catell, R. B. (1966). The scree test for number of factors. *Multivariate Behavioural Research, 1,* 245-276.

Childhope (1997). *Gender, sexuality and attitudes related to AIDS among low income youth and street youth in Rio de Jeneiro, Brazil.* (Rep. No. 6). New York: Childhope Working Paper, Childhope.

Choi, K. H. & Coates, T. J. (1994). Prevention of HIV infection. *AIDS, 8,* 1371-1389.

Cottler, L., Compton, W., Abdallah, A., Cunningham-Williams, R., Abram, F., Fichtenbaum, C. et al. (1998). Peer delivered interventions reduce HIV risk behaviors among out - of-treatment drug abusers. *Public Health reports, 113,* 31-41.

Danish, S. (2001). The First Tee: Teaching youth to succeed in golf and life. In P.R.Thomas (Ed.), *Optimizing performance in golf* (pp. 67-74). Brisbane, Australia: Australian Academic Press.

Danish, S. (2002a). *Going for the Goal: Leader Manual*. (4th ed.) Richmond, VA: Life skills centre, Virginia Commonwealth University.

Danish, S. (2002b). *SUPER (Sports United to Promote Education and Recreation) Program: Leader and Student Activity Book*. (3rd ed.) Richmond, VA: Life Skills Center, Virginia Commonwealth University.

Danish, S. (2002c). Teaching life skills through sport. In M.Gatz, M. Messmer, & S. Ball-Rokeach (Eds.), *Paradoxes of youth and sport* (pp. 49-60). Albany: State University of New York Press.

Danish, S. & Forneris, T. (2006). Teaching life skills in schools. In M.Elias & H. Arnold (Eds.), *The educator's guide to emotional intelligence and academic achievement: Social-Emotional learning in the classroom* ( Thousand Oaks, CA: Corwin.

Danish, S., Nellen, V., & Owens, S. (1996). Community-based life skills programs: Using sport to teach life skills to adolescents. In J.Van Raalte & B. Brewer (Eds.), *Exploring sport and exercise psychology* (pp. 205-225). Washington, DC: APA Books.

Danish, S. J., Petitpas, A. J., & Hale, B. D. (1993). Life development intervention for althetes: Life skills through sports. *The counselling Psychologist, 21,* 352-385.

DiClemente, R. (1989). HIV Infection and Youth: The greatest Challenge for All. In Presentation at HIV Conference in Washington, DC, April, 1989.

DiClemente, R., Forrest, K. A., & Mickler, S. (1990). College students' knowledge and attitudes about AIDS and changes in HIV preventive behaviors. *AIDS Education and Prevention, 2,* 201-212.

DiClemente, R. & Wingood, G. (1995). A randomized controlled trial of an HIV sexual risk-reduction intervention for young African-American women. *Journal of American Medical Association, 274,* 1271-1276.

Digedis, N., Papaioannou, A., Laparidis, K., & Christodoulidis, T. (2003). A one year intervention in 7th grade physical education classes aiming to change motivational climate and attitude towards exercise. *Psychology of Sport and exercise, 4,* 195-210.

Downer, A., Levine, R., & Weaver, M. (2003). *Critical reflections on Human Capacity Development for HIV/AIDS Prevention, care and Support* University of Washington: Centre for Health Education and Research (CHER).

Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 129-182). Champaign IL: Human Kinetics.

Duda, J. L. (1992). Motivation in sport settings: A Goal Perspective Approach. In G.C.Roberts (Ed.), *Motivation in sport and exercise* (pp. 57-91). Champaign IL: Human Kinetics.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040-1048.

Elbadawi, S. A. (1992). KAP of sexual behavior and contraception among school boys in Lushoto district, Tanzania. In VIIth International Conference on AIDS in Africa, Younde (Abstract TP 203).

Epstein, J. (1988). Effective schools or effective students? Dealing with diversity. In R.Haskins & B. MacRae (Eds.), *Policies for America's public schools* (pp. 89-126). Norwood, NJ: Ablex.

Epstein, J. (1989). Family structures and student motivation: A developmental perspective. In C.Ames & R. Ames (Eds.), *Research on motivation in education.* (pp. 259-295). New York: Academic Press.

Family Health International (FHI) (2004). *Reaching Out-of-School youth with Reproductive Health and HIV/AIDS Information and Services* Arlington, VA: Family Health International, YouthNet Program.

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fishbein, M. & Middlestadt, S. (1989). Using the theory of reasoned action as a framework for understanding and changing AIDS related behaviors. In V.M.Mays, G. W. Albee, & S. F. Schneider (Eds.), *Primary prevention of AIDS: Psychological approaches.* (pp. 93-110). Newbury Park, CA: Sage.

Fisher, J. & Fisher, W. (1992). Changing AIDS -risk behavior. *Psychological Bulletin, 3,* 455-474.

Gallois, C. & McCamish, M. (1989). *Assessment of AFAO national peer education program. Australian Federation of AIDS Organizations.* Canberra.

Glynn, J. R., Carael, M., Auvert, B., Kahindo, M., Chege, J., Musonda, R. et al. (2001). Why do young women have a much higher prevalence of HIV than young men? A study in Kisumu, Kenya and Ndola Zambia. *AIDS, 15,* 51-60.

Goudas, M., Biddle, S. J. H., Fox, K. R., & Underwood, M. (1995). It ain't what you do, it's the way that you do it! Teaching Styles affects children motivation in track and field lessons. *The Sport psychologist, 9,* 254-264.

Greene, M. & et al. (2004). Involving men in reproductive health: Contribution to development.: Unpublished Work

Gregson, S. & Garnett, G. P. (2000). Contrasting gender differentials in HIV-prevalence and associated mortality increase in Eastern and Southern Africa: Artifact of data or natural course of epidemic. *AIDS, 14,* 85-99.

Hargreaves, J. (2000). *Heroines of Sport: The Politics of Difference and Identity*. London: Routledge.

Hobfoll, S., Jackson, A., Lavin, J., Britton , P., & Shepherd, J. (1994). Reducing inner-city women's AIDS risk activities. A study of single pregnant women. *Health Psychology, 13,* 397-403.

Ijsselmuiden, C., Evian, C., Matjilla, J., Steinberg, M., & Schneider, H. (1993). AIDS in South Africa. *AIDS and Society, 4,* 10-11.

Irwin, C. & Millstein, S. (1992). Risk taking behaviors and biopsychosocial development during adolescence. In E.J.Susman, L. V. Feagans, & W. J. Ray (Eds.), *Emotion, cognition, and development in children and adolescents* (pp. 75-102). Hillsdale, NJ: Lawrence Erlbaum.

ISSP (1992). Physical Activity and Psychological Benefits: A position statement from the International Society of Sport Psychology. *Journal of Applied Sport Psychology, 4,* 94-98.

Jay, S., DuRan, R., & et al. (1984). Effect of peer counsellors on adolescent compliance in use of oral contraceptives. *Paediatrics, 73,* 126-131.

Jemmott, J. B. & Jemmott, L. S. (1997). Behavioural intentions with heterosexual adolescents. In NIH Consensus Development Conference on Interventions to prevent HIV Risk Behaviors. Bethesda, MD: National Institute of Health.

Jemmott, J. B., Jemmott, L. S., & Fong, G. T. (1992). Reduction in HIV associated sexual behaviors among black male adolescents: Effects of an AIDS prevention intervention. *American Journal of Public Health, 82,* 372-377.

Kalichman, S., Rompa, D., & Coley, B. (1996). Experimental component analysis of a behavioural HIV-AIDS prevention intervention for inner-city women. *Journal of Consulting and Clinical Psychology, 64,* 687-693.

Kapiga, S. (1996). Determinants of multiple sexual partners and condom use among sexually active Tanzanians. *East African Medical Journal, 73,* 435-442.

Kapiga, S., Hunter, D., & Nachtigal, G. (1992). Reproductive knowledge and contraceptives awareness among secondary school in Bagamoyo and Dar es Salaam, Tanzania. *Central African Journal of Medicine, 38,* 375-380.

Kapiga, S., Nachtigal, G., & Hunter, D. (1991). Knowledge of AIDS among secondary school pupils in Bagamoyo and Dar es Salaam, Tanzania. *AIDS, 5,* 325-328.

Kavussanu, M., Roberts, G., & Ntoumanis, N. (2002). Contextual influences on moral functioning of college basketball players. *The Sport Psychologist, 16,* 347-367.

Kelly, J. (1995). *Changing HIV risk behaviour: Practical strategies*. New York: Guilford.

Kelly, J., Murphy, D., Sikkema, K., & Kalichman, S. (1993). Psychological interventions to prevent HIV infection are urgently needed: New priorities for behavioural research in the second decade of AIDS. *American Psychologist, 48,* 1023-1034.

Kelly, J., Murphy, D., Washington, C., Wilson, T., Koob, J., Davis, D. et al. (1994). The effects of HIV/AIDS intervention group for high-risk women in urban clinics. *American Journal of Public Health, 84,* 1918-1922.

Kelly, J., St Lawrence, J., Hood, H., & Brasfield, T. (1989). Behavioural intervention to reduce AIDS risk activities. *Journal of Consulting and Clinical Psychology, 57,* 60-67.

Kelly, J. A., St Lawrence, J., & Brasfield, T. (1991). Predictors of vulnerability to AIDS risk relapse. *Journal of Consulting and Clinical Psychology, 59,* 163-166.

Kicking AIDS Out secretariat (2006). *Kicking AIDS out Training Manuals*. (3 ed.) Oslo: Kicking AIDS Out secretariat.

Kirby, D. (1995). Sex and HIV/AIDS education in schools have modest but important impact on sexual behaviour. *British Medical Journal,* 311-403.

Kirby, D., Barth, R., Leland, N., & Fetro, J. (1991). Reducing the Risk. Impact of a new curriculum on sexual risk taking. *Family Planning Perspectives, 23,* 253-263.

Kirby, D. & Coyle, K. (1997). School-based programs to reduce sexual risk-taking behaviour. *Children and Youth Services Review, 19,* 415-436.

Kirby, D., Short, L., Collins, J., Rugg, D., Kolbe, L., Howard, M. et al. (1994). School based programs to reduce sexual risk behaviors: A review of effectiveness. *Public Health reports, 109,* 339-360.

Klepp, K., Mnyika, K., Ole-King'ori, N., & Bergsjø, P. (1995). Local HIV/AIDS epidemic in Arusha and Kilimanjaro. In K.Klepp, P. M. Biswalo, & A. Talle (Eds.), *Young people at risk: fighting AIDS in Northern Tanzania* (pp. 3-17). Oslo: Scandinavian University Press.

Klepp, K. I., Ndeki, S. S., Leshabari, M. T., Hannan, P. J., & Lymo, B. A. (1997). AIDS education in Tanzania: Promoting risk reduction among primary school children. *American Journal of Public Health, 87,* 1931-1936.

Konings, E., Blattner, W. A., Levin, A., Brubaker, G., Siso, Z., Shao, J. et al. (1994). Sexual behaviour survey in a rural area of Northwest Tanzania. *AIDS, 8,* 987-993.

Kraft, P. (1991). Age at first experience of intercourse among Norwegian adolescents. A lifestyle perspectives. *Social Science and medicine, 33,* 207-213.

Larson, A. (1989). The social epidemic of Africa's AIDS epidemic. *African Affairs: The journal of the Royal African Society, 89,* 5-26.

Leviton, I., Valdiserri, R. O., Lylte, L., Callahan, C. M., Kingsley, L. A., Huggins, J. et al. (1990). Preventing HIV infection in gay and bisexual men: Experimental evaluation of attitude change from two risk reduction interventions. *AIDS Education and Prevention, 2,* 95-108.

Lindegger, G. & Wood, G. (1995). The AIDS crisis: Review of psychological issues and implications with special reference to South African situation. *South African Journal of Psychology, 25,* 1-11.

Lloyd, J. & Fox, K. R. (1992). Achievement goals and motivation to exercise in adolescent girls: a preliminary intervention study. *British Journal of Physical Education, 11,* 12-16.

Lugoe, W. (1996). *Prediction of Tanzanian Student's HIV risk and Preventive behaviours.* Unpublished Doctoral thesis, Department of Psychosocial Science and Research Center for Health Promotion, Faculty of Psychology, University of Bergen, Norway.

Lugoe, W., Klepp, K. I., & Skutle, A. (1996). Sexual debut and predictors of condom use among secondary school students in Arusha, Tanzania. *AIDS Care, 8,* 443-452.

Macphail, C., Williams, B., & Campbell, C. (2002). Relative risk of HIV infection among young men and women in South African township. *Journal of STD and AIDS, 13,* 331-342.

Maehr, M. L. & Nicholls, J. G. (1980). Culture and achievement motivation : A second look. In N.Warren (Ed.), *Studies in cross cultural psychology* (pp. 221-267). New York: Academic Press.

Maehr, M. L. & Braskamp, L. A. (1986). *The motivation factor. A theory of personal investment*. Lexington MA: Lexington Books.

Mahoney, J. L. & Stattin, H. (2000). Leisure activities and adolescents antisocial behaviour: The role of structure and social context. *Journal of Adolescence, 23,* 113-127.

Mane, P. & Aggleton, P. (2001). Gender and HIV/AIDS: What do men have to do with it? *Current Sociology, 49,* 23-37.

Maro, C. N. (2001). *Gender differences on cognitive, motivational and behavioural responses in PE within Tanzanian context. An achievement goal approach.* Unpublished Masters Thesis, Norwegian University of Sport Sciences, Oslo.

Massao, P. (2001). *Women in Sport: Feminist Analysis of the Sport Development Policy of Tanzania.* Unpublished Masters Thesis, Norwegian University of Sport Sciences, Oslo.

Maticka-Tyndale, E. (2006). Evidence of youth peer education success. In S.Adamchak (Ed.), *Youth Peer Education in Reproductive Health and HIV/AIDS* ( Arlington, VA: Family Health International (FHI)/YouthNet.

Mgalla, Z., Schapink, D., & Boerma, J. (1998). Protecting school girls against sexual exploitation: A guardian program in Mwanza, Tanzania. *Reproductive Health Matters, 6,* 19-30.

Millburn, K. (1995). A critical review of peer education with young people with special reference to sexual health. *Health Education Research, 10,* 407-420.

Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2003). Effect of motivational climate on sportspersonship among competitive youth male and female football players. *Scandinavian Journal of Medicine and Science in Sports, 13,* 1-14.

Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2005). The relationship of perceived motivational climate to moral functioning, moral atmosphere perceptions, and the

legitimacy of intentionally injurious acts among competitive youth football players. *Psychology of Sport and Exercise., 6,* 461-477.

Miller, K. E., Sabo, D. F., Farrell, M. P., Barnes, G. M., & Melnick, M. J. (1998). Athletic participation and sexual behavior in adolescents: The different worlds of boys and girls. *Journal of Health and Social Behavior, 39,* 108-123.

Miller, W. (1989). Increasing motivation for change. In R.K.Hester & W. R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives.* (pp. 67-80). New York: Pergamon.

Miller, W. (1985). Motivation for treatment. A review with special emphasis on alcoholism. *Psychological Bulletin, 98,* 84-107.

Miller, W. & Rollnick, S. (1991). *Motivational interviewing : Preparing people to change addictive behaviours*. New York: Guilford.

Ministry of Education and culture (MoEC) (1994). *Basic Education Statistics in Tanzania (BEST)* Dar es Salaam: United Republic of Tanzania.

Ministry of Education and culture (MoEC) (1992). *Basic Education Statistics in Tanzania (BEST)* Dar es Salaam: United Republic of Tanzania.

Ministry of Health (MoH) (1995). *National policy on HIV/AIDS/STD.* Ministry of Health, National AIDS Control Program, Dar es Salaam, United Republic of Tanzania.

Ministry of Health (MoH) (1994). *AIDS surveillance reports* (Rep. No. 8). Epidemiological unit, Ministry of Health, National AIDS Control Program, Dar es Salaam, Tanzania.

Mnyika, K., Klepp, K., Kvåle, G., Schreiner, A. H., & Seha, A. M. (1995). Condom awareness and use in the Arusha and Kilimanjaro regions, Tanzania: A population-based study. *AIDS Education and Prevention, 7,* 403-414.

Mnyika, K., Kvåle, G., & Kleep, K. (1995). Perceived function and barriers to condom use in Arusha and Kilimanjaro regions of Tanzania. *AIDS Care, 7,* 295-305.

National AIDS Control Program (NACP) (1998). *Medium Term Plan,* Dar es Salaam, Tanzania: National AIDS Control Program.

National AIDS Control Program (NACP) (1997). *HIV/AIDS/STD Surveillance* (Rep. No. 11). Dar es Salaam, Tanzania.

National AIDS Control Program (NACP), Bureau of Statistics, & MEASURE project (2004). *AIDS in Africa During Nineties: Tanzania Youth Report.* Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill.

National Bureau of Statistics (NBS) [Tanzania] & ORC Macro (2005). *Tanzania Demographic and Health Survey 2004-05.* Dar es Salaam, Tanzania: National Bureau of Statistics and ORC Macro.

Ndee, H. (1993). *A tentative model of planning physical education in primary education.* Unpublished masters thesis, Institute of education, Stockholm University.

Ndeki, S. S., Klepp, K. I., & Mliga, G. R. (1994). Knowledge, perceived risk of AIDS and sexual behavior among primary school children in two areas of Tanzania. *Health Education reasearch.Theory and practice, 9,* 183-191.

Ndeki, S. S., Klepp, K. I., Seha, A. M., & Leshabari, M. T. (1994). Exposure to HIV/AIDS information, AIDS knowledge, perceived risk and attitudes toward people with AIDS among primary children in Northern Tanzania. *AIDS Care, 6,* 183-191.

Nicholls, J. G. (1984). Achievement motivation: Conception of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge MA: Harvard University Press.

Ntoumanis, N. & Biddle, S. (1999). A review of motivational climate in physical activity. *Journal of Sport Sciences, 17,* 643-665.

Nyamuryekunge, K. (1991). Achievements, constraints and future perspectives of the Tanzania national AIDS Control program. *Tanzania Medical Journal, 6,* 39-42.

Oakley, A., Fullerton, D., & Holland, J. (1995). Behavioural interventions for HIV/AIDS prevention. *AIDS, 9,* 479-486.

Ommundsen, Y., Roberts, G., Lemyre, P. N., & Miller, B. W. (2005). Peer relationships in adolescents competitive soccer: Association to perceived motivational climate, achievement goals and perfectionism. *Journal of Sport Sciences, 23,* 977-989.

Ommundsen, Y., Roberts, G. C., Lemyre, P.-N., & Miller, B. W. (2006). Parental and coach support pressure on psychological outcomes of paediatric athletes in soccer. *Clinical Journal of Sport Medicine, 16,* 522-526.

Papaioannou, A. & Goudas, M. (1999). Motivational Climate of the Physical education class. In Y.V.Auweele, F.Bakker, S.Biddle, M.Durand, & R Seiler (Eds.), *Psychology for physical educators* (pp. 51-68). Champaign, IL: Human Kinetics.

Petersen A. & Hamburg, B. (1986). Adolescence: A developmental approach to problems and psychopathology. *Behaviour Therapy, 17,* 480-499.

Pulerwitz, J., Barker, G., Segundo, M., & Nascimento, M. (2006). *Promoting gender-equity among young Brazilian men as an HIV prevention strategy* Washington, D.C: Horizons Research Summary.

Rasch, V., Silberschmidt, M., Mchumvu, Y., & Mmary, V. (2000). Adolescent girls with illegal induced abortion in Dar es Salaam. The discrepancy between sexual behavior and lack of access to contraceptives. *Reproductive Health Matters, 8,* 52-62.

Rigby, K., Dietz, B., & Sturgess, S. (1993). The Theory of Reasoned Action as applied to AIDS prevention for Australian Ethnic Groups. In D.J.Terry, C. Gallois, & M. McCamish (Eds.), *The Theory of Reasoned Action: Its application to AIDS-Preventive behavior* (1st ed., pp. 93-117). Oxford: Pergamon Press Ltd.

Roberts, G. C. & Ommundsen, Y. (1996). Goal orientations and cognitive and affective correlates among team athletes. *Scandinavian Journal of Medicine and Science in Sports, 6,* 46-56.

Roberts, G. C., Treasure, D., & Conroy, D. E. (2007). Understanding the Dynamics of Motivation in Sport and Physical Activity: An achievement Goal Interpretation. In G.Tenenbaum & R. Eklund (Eds.), *Handbook of Sport Psychology* (pp. 3-30). New Jersey: John Wiley & Sons, Inc.

Roberts, G. C. (2001). Understanding the dynamics of motivation in physical activity. The influence of achievement goals on motivational processes. In G.C.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 1-50). Champaign IL: Human Kinetics.

Roberts, G. C. (1984). Achievement motivation in children's sport. In J.G.Nicholls (Ed.), *Advances in motivation and achievement. Development of achievement motivation* (vol.3 ed., pp. 251-281). Greenwich, CT: JAI Press.

Roberts, G. C., Treasure, D. C., & Kavussanu, M. (1997). Motivation in Physical Activity contexts: An achievement goal perspective. In P. Pintrich & M. Maehr (Eds.), *Advances in Motivation and Achievement* (pp. 413-447). Greenwitch, CT: JAI Press.

Rotheram-Borus, M., Koopman, C., Haignere, C., & Davies, M. (1991). Reducing HIV sexual risk behaviours among runaway adolescents. *Journal of American Medical Association, 266,* 1237-1241.

Sangiwa, G. M., van der Straten, A., & Grinstead, O. A. (2000). Clients' perspective of the role of voluntary counselling and testing in HIV/AIDS prevention and care in Dar es Salaam, Tanzania: The voluntary counselling and testing efficacy study. *AIDS and Behaviour, 4,* 35-48.

Schueller, J., La Vake, S., Lugoe, W., Chuma, M., Mango F, & Humplick, B. (2003). *Summary review: YouthNet program assessment conducted for Tanzania* YouthNet, Partners in Reproductive health and HIV prevention.

Seifriz, J., Duda, J., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise Psychology, 14,* 375-391.

Serwadda, D., Mhalu, F., Karita, E., & Moses, S. (1994). HIV and AIDS in East Africa. In M.Essex, S. Mboup, P. Kanki, & M. Kalenganyi (Eds.), *AIDS in Africa* (New York: Raven Press.

Setel, P. (1996). AIDS as a paradox of manhood and development in Kilimanjaro, Tanzania. *Social Science and medicine, 43,* 1169-1178.

Sheeran, P., Abraham, S. C., Abrams, C., Spears, R., & Marks, D. (1990). The post -AIDS structure of student's attitudes to condoms: Age, sex, and experience of use. *Psychological Reports, 66,* 614-628.

Siedentop, D. (1996). Sport education. *Teaching secondary physical Education, 3,* 8-9.

Solmon, M. (1996). Impact of motivational climate on students' behaviours and perceptions in a physical education setting. *Journal of Educational Psychology, 88,* 731-738.

St.Lawrence, J., Brasfield, T., Jefferson, K., Alleyne, E., O'Bannon, R., & Shirley, A. (1995). Cognitive Behavioural intervention to reduce African American adolescents' risk for HIV infection. *Journal of Consulting and Clinical Psychology, 63,* 221-237.

Stephens, T. (1988). Physical activity and mental health in the United States and Canada: Evidence from four population surveys. *Preventive Medicine, 17,* 35-47.

Stevens, J. (1997). *Peer Education: Promoting Health behaviours.* Washington, DC: Advocates for Youth.

Stover, J. (2004). Projecting the demographic consequences of adult HIV prevalence trends: The Spectrum Projection Package. *Sex Transm Infec, 80,* 14-18.

Strouse, J. & Fabes, R. (1985). Formal versus informal sources of sex education: Competing sources in the sexual socialization of adolescents. *Adolescence, 20,* 269-270.

Swai, R. O. & Asten, H. V. (1991). Epidemiology of HIV-1 infection in Tanzania. An update. *Tanzania Medical Journal, 6,* 33-39.

Tabachnick, B. & Fidell, L. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn and Bacon.

Talle, A., Biswalo, P. M., Schreiner, A. H., & Klepp, K. I. (1995). Introduction. In K. I. Klepp, P. M. Biswalo, & A. Talle (Eds.), *Young people at risk: Fighting AIDS in Northern Tanzania* (pp. xviii-xxviii). Oslo: Scandinavian University Press.

Tanzania Commission for AIDS [TACAIDS] (2005). *Tanzania HIV/AIDS Indicator Survey (2003-4)* Dar es Salaam, Tanzania: TACAIDS.

Terry, D. J., Gallois, C., & McCamish, M. (1993). *The theory of Reasoned Action. Its application to AIDS preventive Behaviour.* Oxford, Pergamon Press Ltd.

Theeboom, M., De Knop, P., & Weiss, R. M. (1995). Motivational climate, psychological responses, and motor skill development in children sport: a field based intervention study. *Journal of Sport and Exercise Psychology, 17,* 294-311.

Theodorakis, Y., Goudas, M., & Kouthouris, H. (1992). Change of attitudes towards skiing after participation in a skiing course. *Perceptual and Motor Skills,* 272-274.

Treasure, D. C. (1997). Perception of motivational climate and elementary school children's cognitive and affective responses. *Journal of Sport and Exercise Psychology, 19,* 278-290.

Treasure, D. C. (2001). Enhancing young people's motivation in youth sport: An achievement goal approach. In G. C. Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 79-100). Champaign IL: Human Kinetics.

Treasure, D. C. & Roberts, G. C. (1995). Application of achievement goal theory to physical education: Implication for enhancing motivation. *Quest, 47,* 475-489.

Treasure, D. C. & Roberts, G. C. (2001). Student's perception of motivational climate, achievement beliefs and satisfaction in physical education. *Research Quarterly for Exercise and Sport, 72,* 165-175.

UNAIDS (2003). *Questions and Answers: Prevention success ,* Online UNAIDS publications.

UNAIDS (2005). *UNGASS Indicators Country Report 2003-2005. United Republic of Tanzania* Geneva: UNAIDS.

UNAIDS (2006). *2006 Report on the global AIDS epidemic.* Geneva, Switzerland: Joint United Nations Program on HIV/AIDS (UNAIDS).

UNGAOR (2003). *Sport as a means to promote education, health, development, and peace.* General Assembly Resolution. 58/5 , United Nations, Dic.A/58/l.2/add./.

UNICEF (2004). *Girls, HIV/AIDS and education.* New York: United Nation's Children Fund (UNICEF).

United Nations (2003). *Inter-Agency Task Force Report on Sport for Development and Peace: Towards achieving the millennium Development Goals* Geneva: United Nations.

US Surgeon General Report (1996). *Physical activity and health: A report of the Surgeon General.* Atlanta, GA: U. S. Department of health and Human Services, Washington D.C.

Valdiserri, R. O., Lyter, D., Leviton, l. C., Callahan, C. M., Kingsley, L. A., & Rinaldo, C. R. (1988). Variables influencing condom use in a cohort of gay and bisexual men. *American Journal of Public Health, 78,* 801-805.

Walter, H., Vaughan, R. D., Gladis, M., Ragin, D., Kasen, S., & Cohall, A. T. (1992). Factors associated with AIDS risk behaviours among high school students in an AIDS epicentre. *American Journal of Public Health, 82,* 528-532.

Weinberg, R. S. & Gould, D. (2003). *Foundations of Sport and Exercise Psychology*. (3rd ed.) Champaign, IL: Human Kinetics.

Weiss, E. D., Whelan, D., & Rao Gupta, G. (2000). Gender sexuality and HIV: Making a difference in the lives of young women in developing countries. *Sexual Relationship Therapy, 15,* 233-245.

Wilson, D., Zenda, A., McMaster, J., & Lavelle, S. (1992). Factors predicting Zimbabwean students' intention to use condoms. *Psychology and Health, 7,* 99-114.

World Bank (2003). *World Development Indicators 2003.* Washington , D.C: World Bank.

World Bank. (1992). *Tanzania: AIDS Assessment and Planning Study.* Washington: World Bank.

World Health Organization (WHO) (1989). *Guide to planning health promotion for AIDS prevention and control.* (Rep. No. 5). Geneva: WHO AIDS series.

Zabin, L. S. & Hayward, S. (1993). *Adolescent sexual behavior and childbearing.* Newbury Park, CA: Sage.

# List of papers

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**Paper 1** **HIV/AIDS education in Tanzania: The experience of at-risk children in poorer semi-urban communities.**

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*Vulnerable Children and Youth Studies*, (*in press)*.

# HIV/AIDS education in Tanzania: The experience of at-risk children in poorer semi-urban communities.

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Promoting AIDS Education through Sport

Abstract

This study investigated HIV knowledge, attitudes, and sexual at-risk behaviors of youths from disadvantaged communities of Dar Es Salaam, Tanzania. Participants were 800 youths aged 12-15 years within three youth sub-groups in these poorer communities: Those children attending school; children who were not attending school but were still residing within their communities; and children who were street children (over 50% of them being orphans). Participants responded to questionnaires. In general, all youths showed low levels of HIV knowledge, experience with condom use and intention to use condoms. They exhibited moderate perceived behavior control in using condom and positive subjective norms about the use of condoms, the value of sexual abstinence and having an exclusive sexual partner. Contrary to expectations, there were no significant differences between those in school and those out of school on HIV knowledge, intended condom use, subjective norms about condom use, and abstinence. Indeed, the in school children were more at risk for HIV infection in that they reported the lowest condom experience and perceived behavioural control in condom use. There were systematic gender differences in that girls were lower than boys on all variables. The policy of basing HIV/AIDS education within the schools of Tanzania has not been as effective as desired. To be effective in "Kicking AIDS out of Africa", then we need to re-evaluate the educational strategies being used.

**KEY WORDS**: HIV/AIDS education, at-risk youth, effective approaches,

**HIV/AIDS education in Tanzania: The experience of at-risk children in poorer semi-urban communities.**

In 2005, there were more than 3 million new infections in sub-Saharan Africa (UNAIDS, 2006). Studies and population based surveys from Tanzania show that young people (15-25 years) increasingly face the risk of Human Immunodeficiency Virus /Acquired Immunodeficiency Syndrome (HIV/AIDS) infection and the national prevalence rates are estimated to be 9 % among sexually active young adults aged 15 years and above (Ministry of Health (MoH), 2000); (National AIDS Control Programme (NACP), Bureau of Statistics, & MEASURE project, 2004; Sangiwa, van der Straten, & Grinstead, 2000; Stover, 2004). Young people aged 15-24 now make up to 25% of the 38 million people living with HIV/AIDS world wide (UNAIDS 2006). One of the reasons is that it is known that adolescents and young adults engage in more risky sexual behaviors than either children or older adults (Taylor, 1991). Although the median ages of the first sexual experience for young Tanzanian women and men are calculated to be 17.3 and 17.4 years old respectively, five national demographic surveys indicate that 27% of women and 28% of men had already engaged in sexual activity before age 15 years (e.g., NACP et al., 2004). These early sexual experiences have been associated with inadequate use of condoms and with having multiple sexual partners (Klepp et al., 1997; NACP et al., 2004; UNAIDS & WHO, 2000). As such, young people are at great risk of HIV infection (UNICEF, 2004). On average each year, youths (15-25 years) are believed to account for over half of all the new HIV infections in Tanzania (Obasi et al., 2001; NACP, et al., 2004).

As a response to the epidemic, following recommendations from the World Bank, school based AIDS education was implemented in the early 1990s. Specifically for children in primary schools, the Tanzania government developed an AIDS educational curriculum for primary schools (Mgalla, Schapink, & Boerma, 1998; NACP et al., 2004). Countrywide,

many prevention programs deliver messages for prevention through TV, radio and the printed media. But only a small percentage of Tanzanians are exposed to various media outlets. School based AIDS education is more feasible. However, the Tanzanian National AIDS policy in the early 1990s forbade information about the use of condoms for children in primary schools (MoH, 1995). In addition, as late as 1998, it was admitted that the national AIDS curriculum for all primary schools had yet to be implemented (NACP, 1998). However, AIDS education curricula became increasingly incorporated into school educational programs and are now fully implemented (NACP et al., 2004). But the fact remains that exposure to school based HIV prevention programs remains deficient as a result of incomplete coverage of the program, and the high level of school dropout (NACP et al., 2004).

*Children at risk*

This means that many children are at risk, especially those who have dropped out of school. There has been a decline in primary school gross enrolment since the mid 1990s (with an annual 1.4% drop rate). Only 15% of children who complete primary school proceed to junior secondary school in Tanzania. The out-of-school group of children has steadily increased since 2001, mainly due to the large number of AIDS orphans. Children aged 10-14 years who have lost both their parents are less likely to be in school than their peers who are living with at least one parent (UNICEF 2004). Limited numbers of these out-of-school children are accommodated in orphan institutions, the majority are left to live in the streets of the slums of big cities, often moving there from more rural communities. Thus, in Tanzania there is a large group of children who are out of the school system and are not exposed to systematic HIV/AIDS education.

In Tanzania, in addition to the children who attend schools and the out-of-school children, there is a third group of children. This group is comprised of children who mostly do not attend school on a regular basis or have recently dropped out, but have not moved away

from their neighborhoods. This is a unique group of children who although they are disadvantaged, they have not lost hope and still have links to their neighborhoods through family members or guardians. Often these children have one parent, or other family members living in the community, but do not attend school.

## Aim of the study.

The aim of the study was to investigate HIV knowledge, believes, attitudes and perceived at–risk behaviors of youths within these 3 subgroups: in school children, the out-of-school street children, and the out of school (mostly) children who still lived in their communities. We recruited 3 sub-samples of at-risk children where we wished to determine whether the HIV/AIDS education messages were being received, and were they being received differentially by the sub-groups. It was expected that there would be significant differences between the out-of-school and in school children because the latter are exposed to the HIV/AIDS education and prevention approach in Tanzania aimed at children within the school system (Ndeki et al., 1994; Klepp et al., 1997). The children who were out of school but still lived in their neighborhoods (for convenience termed *neighborhood children* in this study) were in between these two groups, but had not been exposed to the HIV/AIDS education programmes. It was hypothesized that the in school sub-group would have more accurate knowledge about HIV, more positive attitudes toward condom use, and would engage in less sexual at-risk behaviors than the neighborhood and out-of-school children.

## METHOD

### *Participants*

A total of 950 participants aged 12-15 years from the poorer neighbourhoods of Dar es Salaam were recruited to the study. Of these, 480 were recruited from a community based sport programme (EMIMA) and formed the group called neighborhood children; 250 from 5 schools (50 from each); and 220 from street children centres, orphan drop in centres,

and garbage collection places to form the out-of-school group. We recruited 480 participants from the EMIMA program because we were going to place these children into two groups for an intervention study that was to take place later (see Maro, Roberts & Sorensen, in press). However, we tested the children immediately they were recruited before the intervention began, and that is the data that is reported in the present study. Participants' mean age was 13.6 years (SD=1.07; range 12-15). Within each category, participants were selected at random so that 800 children were selected in total (555 boys; 245 girls). The final samples were 400 neighborhood children, 200 from schools, and 200 from the out-of-school population. The socio-demographic characteristics of the participants are presented in table 1.

*Recruitment and procedures*

Participants were informed about the research study through the EMIMA community centres, the school class teachers, and the heads of street/orphan children organizations/drop in centres. To be eligible for the study, the children had to: a) have voluntarily joined one of the EMIMA community teams; b) be in school; or c) be recruited from the street children/orphan centres and garbage dumps. Where possible, children delivered consent letters from their parents/guardians before they participated. However, consent for most of the children in the out-of-school group was obtained from the leaders of the orphan institutions. Children were excluded if they were identified as having reading and writing problems. All participants were recruited from Buguruni**,** Vingunguti and Mtoni disadvantaged communities of Dar es Salaam, Tanzania.

The out-of-school children were the most difficult individuals to recruit. Many were recruited from garbage collection areas. Informal football games were set up and proved to play an important role in motivating the street children to take part in the study. All assessments were anonymous, self administered and completed in group settings. The entire questionnaire took approximately 60 minutes to complete. As appreciation for their

acceptance and time, all participants were given one bottle of juice, a pencil and one packet of biscuits.

*Measures:*

These questions and scales were taken from Family Health International and World Health Organization's knowledge, attitudes, beliefs, and practices survey instruments for adolescents (World Health Organization (WHO), 1989) previously used in studies in East and Southern Africa (Wilson, Zenda, McMaster, & Lavelle, 1992; Lugoe, 1996). The instruments were originally written in English and were translated and back translated from English to Kiswahili (national language in Tanzania) by language experts. The translated version was submitted for peer review to staff at the community based EMIMA sport programme and colleagues at the University of Dar es Salaam for content validity before being used. To protect privacy and promote candid self-reporting, the participants responded anonymously. Because all the scales had been translated from English to Kiswahili, we used exploratory factor analysis with all scales to determine the factor structures and whether the items within each scale contributed to the final scale. The measures for the present paper included:

*HIV-Knowledge Questionnaire.* (HIV-K-Q) This was a modified version of HIV knowledge Questionnaire (Carey, Morrison-Beedy, & Johnson, 1997) and was used to assess the knowledge related to HIV transmission through blood and sexual intercourse, knowledge of HIV testing, and basic HIV/AIDS facts. An example of an item is: "Can a person get HIV if he or she has sex with an infected person only once?" Responses to these items were recorded as 0 (false and don't know) and 1 (correct answer) and summed to form a knowledge score: A higher score indicating more accurate knowledge. The HIV-K-Q has good internal consistency ($\alpha = .91$). Exploratory factor analysis in the present study revealed that all items contributed to the final score, and the internal consistency of the scale was acceptable ($\alpha=.81$) (Tabachnick & Fidell, 2001).

*Attitude toward condom use*. Based on previous studies (Bernard, Hebert, de Man, & Farrar, 1989; Sheeran, Abraham, Abrams, Spears, & Marks, 1990; Rigby, Dietz, & Sturgess, 1993), five items scored on a 5-point scale (from strongly agree =5 to strongly disagree =1) were used to assess attitude toward condom use. An example of an item is: "Condoms are inconvenient to use". All items were summed and meaned for an overall measure in which higher mean scores represented more positive attitude to condom use. The exploratory factor analysis revealed that all items contributed to the final scale and, the scale had an acceptable internal consistency coefficient ($\alpha$=.70).

*Intention to use condom:* Intention to use a condom consisted of one item that assessed the behavioral intention to use a condom at the first/next sexual intercourse opportunity (Lugoe & Rise, 1996; Rigby et al., 1993). A five point Likert- scale was used ranging from 1 very uncertain to 5 very certain.

*Subjective normative beliefs about condom use, abstinence and an exclusive sexual partner scales:* To assess the normative beliefs about condom use, the respondents were asked how strongly they thought (the named) significant others were in favor of them using a condom during the first/next sexual intercourse opportunity to reduce the chances of getting HIV (Rigby et al., 1993). An example of an item is: "My best friends would approve of my using a condom at the first/next sexual intercourse" Similar questions were asked for abstinence and for an exclusive sexual partner. The significant others were: my best friends, fellow players (if appropriate), peers, present partner (if any). Responses were scored on a 5 point scale from very likely =5 to very unlikely =1, and meaned. The exploratory factor analysis revealed that all items contributed to the final score of each scale and the internal consistency coefficients of the scales were satisfactory: $\alpha$ =.89; .90; .90 for condom use, abstinence and exclusive partner scales respectively.

*Condom direct experience:* A six item scale was used to determine whether a condom was typically used during sexual intercourse (if appropriate) (Fishbein & Ajzen, 1975; Lugoe & Biswalo, 1996). An example item is: "I used a condom during my first sexual intercourse". A five point Likert scale (ranging from 1=never to 5 = always) was used. The exploratory factor analysis showed that all items contributed to the final score and the scale achieved an acceptable level of internal reliability coefficient (α= .81).

*Perceived behaviour control for condom use*: Perceived behavior control in terms of "how certain are you that you will use a condom at the next sexual intercourse?" was measured. The responses ranged from very uncertain (=1; to very certain =5). Ten items indicating different situations were used. The questionnaire was based on the methodology described by Fishbein and Middlestadt (Fishbein & Middlestadt, 1989). The questionnaire has good reliability (Terry et al., 1993) and the items have previously been used in Eastern and Southern Africa (Wilson et al., 1992; Lugoe et al., 1996). The exploratory factor analysis revealed that all items contributed to the final score and the scale had an acceptable internal reliability coefficient (α=.85).

*Attitude to exclusive sexual partner*: Four items were used for this measure: (Ajzen & Fishbein, 1980; Rigby et al., 1993). An example of an item is: "Sticking to one sexual partner for life is very difficult". A 5-point scale was employed with responses ranging from 1 strongly disagree to 5 strongly agree. Negative items were reversely scored. The exploratory factor analysis indicated that the items contributed to the final score and achieved an acceptable alpha value (α=.70).

Additionally, selected demographic characteristics including sport participation, age, gender, sexual debut, education, orphanage (parents alive), and family status (living together with one or more parents) were also asked.

*Statistical Analysis*

We recruited both girls and boys into the study, therefore we determined whether there were any gender differences. Descriptive statistical information (e.g., means, standard deviations, frequencies, percentages) for all variables is shown in tables 1 and 2. Multivariate analysis of variance (MANOVA) was used to examine differences between the youth subgroups on HIV knowledge, attitudes, beliefs, and at-risk behaviors. Given significant differences on the MANOVA, we used ANOVA procedures on each dependent variable as part of the post hoc tests.

## RESULTS.

*Demographic characteristics*

As illustrated in table 1, participants mean age was 13.6 years (SD=1.07; range 12-15). The mean level of education was 5.5 years (SD. 1.37), with the out-of-school children reporting the lowest level. Youths from school were less sexually active than those in the out-of-school and community based programs. While few children in the neighborhood group and in school were orphans, over half of the children termed out-of-school were orphans.

*Descriptive analyses*

Descriptive analyses are reported in table 2 showing the scores of the children in the subgroups. In general, the children showed low levels of HIV knowledge (M=8.9, SD 2.7), low levels of direct experience with condoms (M=2.6, SD 0.9), and had a low intention to use a condom in the first/next sexual intercourse (M=2.3), SD= 1.2). The children in this study exhibited a moderate level of perceived behavioral control in using a condom (M=3.20, SD .75). The children reported fairly positive subjective norms about the use of condoms (M= 3.62, SD= .66), the value of sexual abstinence (M=3.62, SD= .63) and having an exclusive sexual partner (M=3.60, SD=.66). Finally, the sample reported a fairly positive attitude towards having an exclusive sexual relationship (M=3.35, SD=.70).

*Subgroup differences.*

Multivariate analysis of variance (MANOVA) was used to determine whether there were significant differences between the subgroups on the study variables. The MANOVA revealed that there were statistically significant differences between the three groups, F (9, 789) =24.2, p< .001, (lambda=.61, eta squared =.22). We used univariate ANOVAs as post hoc analyses to look at the simple main effects (table 2).

Contrary to expectation, no differences emerged between the in school and out-of-school groups on HIV knowledge, intended condom use, subjective norms about condom use and subjective norms about abstinence. However, differences were found in unexpected directions: The in school children reported *lower* experience with condoms as well as *lower* perceived behavioral control in condom use than did the children who were out-of-school. The findings that the children in school reported stronger subjective norms about having an exclusive relationship and a more positive attitude to having an exclusive sexual partner than the out-of-school children were expected (see table 2 for means, and F values).

There were interesting differences between the neighborhood children and the in school and out-of-school children. The neiborhood children reported stronger subjective norms for condom use and abstinence than the in school and out-of-school children. The neighborhood children indicated higher knowledge on HIV and direct experience with condom use and stronger perceived behavioral control in condom use. However, the neighborhood children reported a lower intention to use a condom at the first/next sexual intercourse than the in school children. When compared with the out-of-school group, the neighborhood group reported stronger subjective norms and positive attitudes towards an exclusive sexual relationship than the out-of-school group (see table 2 for group means and F values).

*Gender differences*.

We used a two way MANOVA procedure to determine whether an overall difference occurred between boys and girls (table 3). We found a significant main effect for the subgroups as expected F (9,786) =16.36, p<.001; Wilk's lambda= .7; partial eta squared=.16. We had also a main effect for gender F (9,786) =5.82, p<.001; Wilk's lambda= .94; partial eta squared = .06, but the interaction effect was not significant, F (9,784) =1.31, p=.17, Wilk's Lambda .97; partial eta squared .02. Inspection of the gender differences indicated that there were systematic gender differences within the groups in nearly all variables (table 3). The post hoc analyses indicated that the gender differences were systematic across groups: Boys were more knowledgeable about HIV, had significantly more direct experience with condom use, had significantly higher normative beliefs about abstinence, had reliably more positive attitudes to condom use and to an exclusive sexual relationship, were reliably higher in perceived behavioral control in condom use, and had higher intention to use condoms than girls in all three subgroups. The only exception was normative beliefs about condom use: Girls in schools and out-of-school had significantly higher normative beliefs about condom use than the boys. However, in the neighborhood group, the boys were higher than the girls (see table 3).

## DISCUSSION

In this study, we targeted disadvantaged children living in the poorer communities of Dar es Salaam in Tanzania in Sub-Saharan Africa that are deemed most at-risk for HIV infection (UNICEF, 2004; UNAIDS, 2006). These children are more likely to be orphans, or have one parent who is deceased, and are least likely to be attending school. In this study, we wished to determine the levels of HIV/AIDS knowledge, and knowledge about the means by which individuals may protect themselves from HIV infection. It is a "bad news" scenario! We found that in general, the children showed low levels of HIV knowledge, low levels of condom knowledge and experience, low intentions to use a condom in the first/next sexual

intercourse, and exhibited a moderate level of perceived behavioral control in using a condom. There was some better news, in that the children in this sample reported fairly positive subjective norms about the use of condoms, the value of sexual abstinence, and having an exclusive sexual partner. However, it is clear that the children in this study all have limited knowledge, attitudes, and skills necessary for optimal HIV prevention.

Embedded in our findings is more "bad news"! Contrary to our expectation, the findings in this study indicate that there were no significant differences on HIV knowledge, intended condom use, and knowledge about condom use and abstinence between the children in school and those who were out of school, both the neighborhood children and the street children. In addition, the in school children reported lower condom knowledge and experience, and weaker perceived behavioral control than the children in the other two groups. Given the fact that current AIDS education for youths in Tanzania is school based (Mgalla et al., 1998), the findings between the children who were not attending school and the in school children over the variables in this study indicate that the current policy of basing AIDS education within schools is not the most effective for at-risk children.

In fact, from the findings of this study, it may be argued the in school children were found to be *more* at risk than the other children in the study. The in school children reported lower condom knowledge and experience as well as lower perceived behavior control in condom use than did the other children. We know from other research that perceived behavior control is such a key variable that can influence behavior to use condoms for HIV prevention (e.g., Fishbein & Middlestat, 1989).

The findings reflect the fact that in the early 1990s, the National policy on HIV infection and AIDS demanded that information on the use of condoms was not to be distributed in primary schools but only in secondary schools. Even after changing the policy to allow school based education related to HIV/AIDS and other sexually transmitted diseases

to include information on condom use to primary schools, condom education and distribution is forbidden because it is argued that such practices connotes encouragement of sexual activity for children in school (MoH, 1995).

There were interesting differences between the children who were still based in their family communities and enrolled in the community sport programme (EMIMA) and the children who were in school and out-of-school. The children enrolled in EMIMA reported stronger subjective norms for condom use and abstinence than the in school and out-of-school groups. These children indicated higher knowledge on HIV and direct experience with condom use and stronger perceived behavioral control in condom use. It may be speculated that living within the family community allowed these children to be influenced by family values and mores. This is supported by the finding that the children enrolled in EMIMA reported stronger subjective norms and positive attitudes towards an exclusive sexual relationship than the children who were termed out-of-school.

However, there was some good news too. The results show that children in school reported stronger subjective norms and more positive attitudes to having an exclusive sexual relationship than the neighborhood and out-of-school children. The strong message of abstinence given within the school AIDS education setting is clearly getting through!

Despite almost 20 years of HIV/AIDS education that has been targeted at schools, it is clear that all the children in this study have limited knowledge, attitudes, and skills necessary for optimal HIV prevention, whether they were in school or not. In addition, given the current orphanage crisis (1 in 7 children in Tanzania is an orphan; (UNICEF, 2004)) and the increasing rate of school dropouts especially in the poorer communities, this implies that prevention efforts should target all children (in school and out of school). Further, more child friendly skill training programmes are needed to strengthen intentions to use condoms and/or refuse sexual intercourse, or resist pressure to have unprotected intercourse. The school

didactic method is not working well enough! In order to promote condom use, children need to learn and practice life skills that focus on enhancing perceptions of control in child friendly activities. One such context may be community based sport programs. The United Nations has recommended using sport as an effective tool to increase HIV knowledge and reduce risky behavior for young people (United Nations, 2003). Because parents are absent for so many of these children, the use of peers within sport programmes as significant others may be effective in influencing children's behaviors to adopt safer sexual practices. Thus, life skill training using peers in child friendly activities such as sport may be more effective for AIDS education for at-risk children within the Sub- Saharan context (e.g.,Maro, Roberts, & Sorensen, in press). This avenue requires further research.

Congruent with other studies (Kapinga et al., 1992; Klepp et al., 1997; Ndeki et al., 1994) our findings indicate that some children are sexually active at a young age (13 years). Because early sexual experiences in Tanzania is often associated with inadequate condom use and having multiple sexual partners (Kraft, 1991; Konings et al., 1994; Nnko et al., 1992; Elbadawi, 1992), these children are at risk of HIV infection. Given that most of the children in the present study had a low intention to use condoms in the future; this implies that even those who are not yet sexually active may not use a condom during their first sexual experience. In addition, the government AIDS policy that allows only "theoretical" discussion of condom use (not allowing condoms to be shown in schools) means that students may not able to understand condom use properly (e.g., physical appearance, texture). A further complicating factor is the lingering belief held by some Tanzanians that condoms are HIV implanted and thus they express fear about using them even if they were made available (Elbadawi, 1992).

*Gender differences.*

Although it is evident that young females are at a higher risk of infection than young males, there is little documentation regarding gender differences in key HIV related behavior

variables (Gallois, Statham, & Smith, 1992; Baylies, 2004). Given the socio-cultural context in Tanzania and the rather traditional gender roles, we decided to investigate gender differences within the child subgroups on the study variables. In this study there were significant gender differences between boys and girls. Girls were less knowledgeable about HIV, had significantly less direct experience with condom use, had significantly lower normative beliefs about abstinence, had reliably lower attitudes to condom use and to exclusive sexual relationship, were reliably lower in perceived behavioral control in condom use, and had lower intention to use condoms than boys in all three subgroups. The differences were systematic in that no interactions occurred (with one exception, girls in school and out-of-school had significantly higher normative beliefs about condom use than the boys).

Although knowledge of HIV/AIDS in itself is not enough to produce behavior change, young girls having lower levels of knowledge of HIV infection does not stimulate confidence that they will be able to identify their behavior as being risky--the first step in the process of behavior change (see Catania, Coates, & Kegeles, 1994). Further, low levels of condom knowledge and experience may perpetuate the misconceptions held among some in the society about condoms: e.g., condoms are HIV implanted (Nnko et al., 1992). Thus, successful negotiation about condom use between boys and girls becomes more unlikely.

*Limitations.*

A recognized difficulty in studies of this type is that the data were collected via self-report instruments. The nature of schools, the sensitivity of the information sought, social cultural barriers and characteristics of the child subgroups might have led participants to under-report (or over-report) their sexual knowledge and behaviors (see Catania, Gibson, Chitwood, & Coates, 1994; Dare & Cleland, 1994). We attempted to minimize this source of erroneous reporting by encouraging the participants to answer honestly, assuring their confidentiality by not involving teachers or project coordinators in the data collection.

The findings of this study are limited to the participants of this study. They were disadvantaged children that were living in the poorer communities of a large metropolitan city in Sub-Saharan Africa. These participants were more likely to be orphans, or have one parent who was deceased, and were least likely to be attending school. However, these children are also most at risk of becoming infected with HIV/AIDS. The findings related to children from these disadvantaged communities may not be generalized to children from the middle class or upper class families of the same age cohort in the same cities. Factors such as access to information and other resources, educational levels of parents, and orphan status, may contribute to any differences that may occur between the participants of this study and children from other communities.

*Conclusions and implications.*

The study illustrates that children in the poorer communities of a large city in Sub-Saharan Africa are at-risk for HIV/AIDS because they have limited knowledge of HIV/AIDS and the dynamics of HIV infection. Of particular note is the fact that the Tanzanian National policy on focusing HIV/AIDS education within the school structure is clearly not working. Indeed, it may be argued that the children within the school system are more at risk than the children who are not currently in school because of their lower condom related responses to questions. In addition, female adolescents are more at risk than male adolescents.

The implications are very sobering! Two decades of deliberate education within the schools of Tanzania has not had the desired effect of fully educating the students about the dynamics of the AIDS pandemic. Even the street children we investigated within this study were as informed about HIV and better informed about preventing HIV infection than the students within school. If we are to be effective in "Kicking AIDS out of Africa" as the slogan has it, then we need to re-evaluate the educational strategies being used. We need to recognize that a large proportion of children have no parents, or parents that cannot afford to send their

children to school, and are therefore at real risk for HIV infection through ignorance or inadequate knowledge. We need to investigate and implement alternative strategies as a matter of international priority that recognizes the realities of young people living in Sub-Saharan Africa. Anything else, including the status quo is likely to be ineffective!

## References

Baylies, C. (2004). Perspectives on gender and AIDS in Africa. In C.Baylies & J. Bujra (Eds.), *AIDS, sexuality and gender in Africa. Collective strategies and struggles in Tanzania and Zambia.* (pp. 1-24). New York: Routledge.

Bernard, J., Hebert, Y., de Man, A., & Farrar, D. (1989). Attitudes of French-Canadian students towards the use of condoms: A structural analysis. *Psychological Reports, 65,* 851-854.

Carey, M., Morrison-Beedy, D., & Johnson, B. (1997). The HIV-Knowledge Questionnaire: Development and evaluation of a reliable, valid, and practical self-administered Questionnaire. *AIDS and Behavior, 1,* 61-74.

Catania, J., Coates, T., & Kegeles, S. (1994). A test of the AIDS risk reduction model: Psychological correlates of condom use in AMEN cohort survey. *Health Psychology, 13,* 548-555.

Catania, J., Gibson, D., Chitwood, D., & Coates, T. (1994). Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychological Bulletin, 108,* 339-362.

Dare, O. & Cleland, J. (1994). Reliability and validity of survey data on sexual behavior. *Health transition review, 4,* 93-110.

Elbadawi, S. (1992). KAP of sexual behavior and contraceptions among school boys in Lushoto district, Tanzania. In VIIth International Conference on AIDS in Africa, Younde (Abstract TP 203).

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fishbein, M. & Middlestadt, S. (1989). Using the theory of reasoned action as a framework for understanding and changing AIDS related behaviors. In V.M.Mays, G. W. Albee, & S. F. Schneider (Eds.), *Primary prevention of AIDS: Psychological approaches.* (pp. 93-110). Newbury Park, CA: Sage.

Gallois, C., Statham, D., & Smith, S. (1992). *Women and HIV/AIDS education in Australia*. Camberra: Commonwealth department of Health, Housing and community services.

Ijsselmuiden, C., Evian, C., Matjilla, J., Steinberg, M., & Schneider, H. (1993). AIDS in South Africa. *AIDS and Society, 4,* 10-11.

Kapinga, S., Hunter, D., & Nachtigal, G. (1992). Reproductive knowledge and contraceptives awareness among secondary school in Bagamoyo and Dar es Salaam, Tanzania. *Central African Journal of Medicine, 38,* 375-380.

Klepp, K. Ndeki, S., Leshabari, M., Hannan, P., & Lymo, B. (1997). AIDS education in Tanzania: Promoting Risk reduction among primary school children. *American Journal of Public Health, 87,* 1931-1936.

Konings, E., Blattner, W., Levin, A., Brubaker, G., Siso, Z., Shao, J. et al. (1994). Sexual behaviour survey in a rural area of Northwest Tanzania. *AIDS, 8,* 987-993.

Kraft, P. (1991). Age at first experience of intercourse among Norwegian adolescents. Lifestyle perspectives. *Social Science and medicine, 33,* 207-213.

Lugoe, W. (1996). *Prediction of Tanzanian Student's HIV risk and Preventive behaviours.* Department of Psychosocial Science and Research Center for Health Promotion, Faculty of Psychology, University of Bergen, Norway.

Lugoe, W. & Rise, J. (1996). *Tanzanian students beliefs about using condom: an expectancy-value approach.* Department of psychosocial science and centre for health promotion, Faculty of Psychology, University of Bergen, Norway.

Lugoe, W. & Biswalo, P. (1996). Self-restraining and condom use behaviors: The HIV/AIDS prevention challenges in Tanzanian schools. *International journal of adolescence and Youth, in press*.

Maro, C., Roberts, G., & Sorensen, M. (in press). Using Sport to promote AIDS education for at risk youths. An intervention using peer coaches in football. *Scandinavian Journal of Medicine and Science in Sports*.

Mgalla, Z., Schapink, D., & Boerma, J. (1998). Protecting school girls against sexual exploitation: A guardian program in Mwanza, Tanzania. *Reproductive Health Matters, 6,* 19-30.

Ministry of Education and culture (MoEC) (1994). *Basic Education Statistics in Tanzania (BEST)* Dar es Salaam: United Republic of Tanzania.

Ministry of Education and Culture (MoEC) & Ministry of Science Technology and Higher Education (MSTHE) (1993). *The Tanzania Education System for the 21st century. Report from the Task force.* Leeds, England: University of Leeds Media Service.

Ministry of Health (MoH) (2000). *HIV/AIDS/STI Surveillance Report* (Rep. No. 15). Tanzania.

Ministry of Health (MoH) (1995). *National policy on HIV/AIDS/STD.* Ministry of Health, National AIDS Control Programme, Dar es Salaam, United Republic of Tanzania.

National AIDS Control Programme (NACP) (1998). *Medium Term Plan,* Dar es Salaam, Tanzania: National AIDS Control Programme.

National AIDS Control Programme (NACP), Bureau of Statistics, & MEASURE project (2004). *AIDS in Africa During Nineties: Tanzania Youth Report.* NC: Chapel Hill.

Ndeki, S., Klepp, K., & Mliga, G. (1994). Knowledge, perceived risk of AIDS and sexual behavior among primary school children in two areas of Tanzania. *Health Education reasearch.Theory and practice, 9,* 183-191.

Nnko, S., Dautzenberg, M., Mwanga, J., Chiduo, B., Varkeviser, C., Bwatwa, Y. et al. (1992). A baseline study for AIDS intervention among primary school pupils. In VIIth International Conference on AIDS in Africa, Younde, Cameroun (Abstract TP 192).

Obasi, A., Balira, R., Todd, J., Ross, D., Changulacha, J., & Mosha, F. (2001). Prevalence of HIV and Chlamydia trachomatis infection in 15-19 year olds in rural Tanzania. *Tropical medicine and international health, 6,* 517-525.

Rigby, K., Dietz, B., & Sturgess, S. (1993). The Theory of Reasoned Action as applied to AIDS prevention for Australian Ethnic Groups. In D.Terry, C. Gallois, & M. McCamish (Eds.), *The Theory of Reasoned Action: Its application to AIDS-Preventive behavior* (1st ed., pp. 93-117). Oxford: Pergamon Press Ltd.

Sangiwa, G., van der Straten, A., & Grinstead, O.(2000). Clients' perspective of the role of voluntary counselling and testing in HIV/AIDS prevention and care in Dar es Salaam,

Tanzania: The voluntary counselling and testing efficacy study. *AIDS and Behavior, 4,* 35-48.

Sheeran, P., Abraham, S., Abrams, C., Spears, R., & Marks, D. (1990). The post -AIDS structure of student's attitudes to condoms: Age, sex, and experience of use. *Psychological Reports, 66,* 614.

Stover, J. (2004). Projecting the demographic consequences of adult HIV prevalence trends: the Spectrum Projection Package. *Sex Transm Infec, 80,* 14-18.

Tabachnick, B. & Fidell, L. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn and Bacon.

Talle, A., Biswalo, P., Schreiner, A., & Klepp, K. (1995). Introduction. In K.Klepp, P. Biswalo, & A. Talle (Eds.), *Young people at risk: Fighting AIDS in Northern Tanzania* (pp. xviii-xxviii). Oslo: Scandinavian University Press.

Taylor, S. E. (1991). *Health Psychology*. New York: McGraw-Hill.

Terry, D., Gallois, C., McCamish, M. (1993). *The theory of reasoned Action: Its application to AIDS preventive behavior*. Oxford, Pergamon Press Ltd.

UNAIDS (2006). *2006 Report on the global AIDS epidemic.* Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS (UNAIDS).

UNAIDS & WHO (2000). *Tanzania: Epidemiological fact sheets on HIV/AIDS and sexually transmitted infections.* Switzerland: Working group on Global HIV/AIDS and STI Surveillance.

UNICEF (2004). *Girls, HIV/AIDS and education.* New York: United Nation's Children Fund (UNICEF).

United Nations (2003). *Inter-Agency Task Force Report on Sport for Development and peace: Towards achieving the millennium Development Goals* United Nations: United nations.

Wilson, D., Zenda, A., McMaster, J., & Lavelle, S. (1992). Factors predicting Zimbabwean students' intention to use condoms. *Psychology and Health, 7,* 99-114.

World Health Organization (WHO) (1989). *Guide to planning health promotion for AIDS prevention and control.* (Rep. No. 5). Geneva: WHO AIDS series.

Table1. The socio-demographic characteristics of the participants.

| | In community (N=400) | In school (N=200) | Out of school (N=200) |
|---|---|---|---|
| Sport participation% | 97.3 | 71.5 | 73.5 |
| Sexually active % | 13.5 | 4.5 | 11.1 |
| Father not alive % | 16 | 13.5 | 63 |
| Mother not alive% | 15.3 | 11 | 66 |
| Not living with father% | 19 | 22 | 86 |
| Not living with mother% | 16 | 15.5 | 78 |
| Age (mean and SD) | 13.1 (1.1) | 13.6 (1.0) | 13.8(1.0) |
| Years of education | 5.5 (1.3) | 6.5 (.50) | 4.2(1.0) |
| Sex | | | |
| Male | 327 | 99 | 129 |
| Females | 73 | 101 | 71 |

Note. Total N=800

Table 2. Mean score and Standard deviation (SD) on the variables by children subgroups

| Variable | In community (N=400) | In school (N=200) | Out school (N=200) | Total (800) | F(2,797) |
|---|---|---|---|---|---|
| HIV-Knowledge | 9.51[b] | 8.44[a] | 8.25[a] | 8.92 | 19.53* |
| | ( 2.79) | (2.21) | (2.82) | (2.73) | |
| Direct experience | 2.70[a] | 2.28[b] | 2.66[a] | 2.59 | 15.44* |
| with condom use | (.82) | (1.02) | (.92) | (.92) | |
| Intention to use | 1.95[b] | 2.65[a] | 2.55[a] | 2.27 | 32.33* |
| condom | (1.24) | (1.05) | (1.02) | (1.19) | |
| Perceived behaviour | 3.30[a] | 2.79[b] | 3.22[a] | 3.20 | 33.10* |
| control in condom | (.78) | (.62) | (.73) | (.74) | |
| use | | | | | |
| Attitude to condom | 2.95[a] | 2.89[a] | 2.86[a] | 2.91 | N S |
| use | (.75) | (.74) | (.81) | (.76) | |
| Subjective norm | 3.73[b] | 3.58[a] | 3.46[a] | 3.62 | 108.54* |
| about condom use | (.59) | (.74) | (.68) | (.66) | |
| Subjective norm | 3.74[b] | 3.58[a] | 3.50[a] | 3.62 | 16.7* |
| abstinence | (.58) | (.74) | (.68) | (.66) | |
| Subjective norm | 3.72[a] | 3.62[a] | 3.37[b] | 3.60 | 19.48* |
| exclusive partner | (.56) | (.79) | (.66) | (.66) | |
| Attitude to exclusive | 3.38[a] | 3.44[a] | 3.18[b] | 3.35 | 7.98* |
| sexual partner | (.69) | (.69) | (.71) | (.70) | |

*Note*. Different superscripts (a, b) denote significant children group differences at P<0.05 level of significance, while same superscripts denote no significant children group differences.

*p<.05, N S.= Non significant

Table 3. Standardized mean score of the HIV related behaviour factors over gender.

| Variable | Community M (SD) | | In school M (SD) | | Out-school M(SD) | | F (1,794) |
|---|---|---|---|---|---|---|---|
| | Boys (N=327, | Girls N=73) | Boys (N=99 | Girls N=101) | Boys (N=129 | Girls N=71) | |
| HIV knowledge (mean correct out of 25) | 9.62 (2.71) | 9.01 (3.07) | 8.65 (2.36) | 8.21 (2.02) | 8.3 (2.78) | 7.92 (2.89) | 5.85 |
| Direct experience with Condom | 2.70 (.82) | 2.71 (.79) | 2.41 (1.1) | 2.16 (.95) | 2.76 (.97) | 2.47 (.81) | 6.05. |
| Intention to use condom | 1.86 (1.2) | 2.34 (1.33) | 2.46 (1.0) | 2.82 (1.0) | 2.47 (1.1) | 2.69 (.93) | 15.03 |
| Subjective norm condom use | 3.74 (.56) | 3.69 (.69) | 2.76 (1.31) | 2.89 (1.13) | 2.59- (1.09 | 3.06 (.88) | 6.52 |
| Subjective norm abstinence | 3.78 (.49) | 3.61 (.59) | 3.58 (.71) | 3.53 (.73) | 3.48 (.70) | 3.40 (.65) | 3.87 |
| Subjective norm exclusive sexual partner | 3.74 (.54) | 3.60 (.64) | 3.62 (.76) | 3.61 (.83) | 3.37 (.66) | 3.36 (.66) | NS (1.25) |
| Attitude exclusive sexual partner | 3.43 (.67) | 3.17 (.76) | 3.47 (.72) | 3.41 (.67) | 3.20 (.74) | 3.14 (.65) | 5.56 |
| Attitude to condom use | 2.96 (.74) | 2.86 (.78) | 3.08 (.93) | 2.71 (.62) | 2.94 (.74) | 2.73 (.73) | 13.36 |
| Perceived behaviour control in condom use | 3.34 (.81) | 3.13 (.65) | 2.95 (.66) | 2.64 (.60) | 3.30 (.79) | 3.07 (.59) | 18.54 |

$p<.05$,

NS =Non Significant

**Paper 2** Using Sport to Promote HIV/AIDS Education for at-risk Youths: An Intervention Using Peer Coaches in Football

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# Using sport to promote HIV/AIDS education for at-risk youths: an intervention using peer coaches in football

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**The purpose of this study was to investigate the effectiveness of an ongoing AIDS education intervention program (EMIMA) using peers in a sport context. A secondary purpose was to determine whether a mastery-based motivational strategy would enhance the effectiveness of the peer coaches. A quasi field experimental study was employed in which at-risk children in Dar es Salaam in Tanzania ($N = 764$) were recruited (average age = 13.6 years) and were randomly grouped into two treatment groups and two control groups. The treatment groups were peer coaches conducting the AIDS education to the children within sport, one with mastery coaching strategies and one without. The two control groups were in-school children, who received traditional AIDS education, and out-of-school children, who received no education at all. The intervention lasted for 8 weeks. The results indicated that the intervention using peers in sport was more effective in transmitting HIV prevention knowledge, cognitions and perceived behaviors than the control groups. The mastery-based motivational strategies were effective in influencing some of the variables. Contrary to expectation, the school-based HIV education was no more effective than the informal education obtained by the out-of-school children. The use of peer coaches within the EMIMA program was reliably the most effective means for HIV/AIDS education for these at-risk children.**

In 2005, the number of people living with human immunodeficiency virus (HIV) worldwide was estimated to be 38.6 million with 28.5 million living in Sub-Saharan Africa, and there were 3.2 million new infections in 2005 (UNAIDS, 2006). Adolescents in Sub-Saharan Africa increasingly face the risk of contracting HIV infections, with women being far more likely than men (Glynn et al., 2001; Stover, 2004; UNAIDS, 2004). Tanzania has a national HIV prevalence estimate of 9% among youths aged 15–25 years who comprise 36% of the population, but account for approximately 60% of all the new HIV infections each year [National AIDS Control Programme (NACP) et al., 2004]. Unfortunately, as people do not get tested on a regular basis, many young Tanzanians are unaware that they are HIV-infected (Sangiwa et al., 2000). Among young people in Tanzania, the predominant mode of transmission is unprotected heterosexual intercourse (UNAIDS, 2005). Studies show that young people are sexually active at a young age and these early sexual experiences have been associated with the inadequate use of condoms and having multiple sexual partners (Klepp et al., 1997; UNAIDS & WHO, 2000; NACP et al., 2004). The consequences are quite profound. Not only is there a high rate of HIV infections among adolescents, but unwanted teenage pregnancies are also high (UNAIDS, 2005).

There is neither a vaccine nor a cure for AIDS; therefore, efforts to reduce the incidence of HIV/AIDS have been focused on at-risk behaviors. As a response to the growing infections among youths, following recommendations from the World Bank, the Tanzania government developed HIV/AIDS educational packages for schools and the school-based HIV/AIDS education program has been implemented since the early 1990s (World Bank, 1992; Ministry of Health, 1995; Mgalla et al., 1998). The focus on knowledge about HIV/AIDS is given priority on the assumption that it is ignorance that leads to risky sexual behaviors and the spread of AIDS, and that increased knowledge will elicit the expected preventive actions. In other words, individuals will reduce the risk of infection by personal application of the information (Choi & Coates, 1994; Lindegger & Wood, 1995; Bujra & Baylies, 2000). Formal settings such as churches, hospitals, schools, homes and political arenas (rallies) are being used to deliver the educational messages for prevention. Typically, the information is given by adults such as nurses, doctors, teachers and parents (NACP et al., 2004). Many campaigns are conducted through TV

and the printed media outlets, including informational leaflets.

Although it is feasible to train local teachers and health workers to provide HIV/AIDS education to Tanzanian primary school children (Klepp et al., 1997; Mgalla et al., 1998), many adults in Sub-Saharan Africa believe AIDS education in schools is inappropriate and it is often not implemented (Ijsselmuiden et al., 1993). One study conducted among primary school pupils showed that schools were believed to be the least-rated source for AIDS information and school teachers were rated as significant others who pupils had talked to least about AIDS (Ndeki et al., 1994). Consistent with this, the National policy on AIDS refrained from emphasizing condom use for young people in primary school for moral reasons (MoH, 1995). In Tanzania, conventional adult institutions such as religious bodies, schools and families generally do not acknowledge that adolescents are sexually active and thus HIV/AIDS prevention strategies become controversial issues (e.g., recommending the use of condoms). For example, as late as 1998, it was admitted that a national AIDS curriculum for all primary schools in Tanzania had yet to be implemented (NACP, 1998).

Therefore, despite being in place for over a decade, the National policy on AIDS in Tanzania has not been successful in decreasing the rate of HIV infection in youths (Sangiwa et al., 2000; NACP et al., 2004; UNAIDS, 2005, 2006). Although awareness of the modes of HIV transmission is high in that over 90% of individuals aged 15–49 have heard of HIV/AIDS and know how HIV is transmitted (Tanzania Commission for AIDS [TACAIDS], 2005), HIV knowledge is still low (Schueller et al., 2003; NACP et al., 2004). Thus, HIV education and prevention strategies conducted through conventional adult-directed institutions such as schools, families and religious bodies have proven to be ineffective in reducing the rate of infection.

There is a further complicating factor. In Tanzania, the proportion of primary school-aged children attending school has steadily declined since 1991 (Family Health International [FHI], 2004; NACP et al., 2004). The reasons are varied, one is financial in that all pupils must pay fees, but a recent report indicated an increase in AIDS orphans, and that 50% of children (aged 10–14) who have lost both parents, and 30% who have lost one parent are not attending schools in Tanzania (UNICEF, 2004). As families break down, and many children become orphans (one in every seventh child in Tanzania is an orphan), and drop out of school, the efficacy of the AIDS education programe through conventional adult institutions decreases dramatically. Thus, new approaches are needed that are effective for young people (Schueller et al., 2003; NACP et al., 2004) and there is a need to target youths through avenues other than traditional institutions.

In many countries, the use of mass media might be one way to target at-risk youths. But in Tanzania this is not viable. Tanzanian people who are exposed to various media outlets are a small percentage of the population (newspapers: 11% women, 16% men: radio; 34% women, 44% men; TV: 14% women, 20% men). Exposure to the media has decreased among young people aged 15–24 years with the lowest levels of exposure among women (NACP et al., 2004). Coupled with the fact that children have an increased likelihood to be orphaned, and thus do not attend school, more and more children are at risk. Thus, there is an urgent need to re-think educational strategies aimed for at-risk youths (e.g., Klepp et al., 1997; Schueller et al., 2003; FHI, 2004; NACP et al., 2004; UNICEF, 2004). Recommendations for HIV/AIDS educational programs for Tanzania suggest that to be effective, any new approach must involve youths in the delivery of services, development of the learning materials and evaluation. In addition, programs should reach out to youths where they spend most of their time and use activities that youths are familiar with and value. Programs should recognize the role of peers and include employing peers as role models to serve as HIV/AIDS educators (e.g., Lugoe, 1996; Klepp et al., 1997; Downer et al., 2003; Schueller et al., 2003; NACP et al., 2004; UNICEF, 2004). In areas where young people have been so involved, the incidence of HIV cases has declined (UNICEF, 2004).

Therefore, the present study utilized the context of sport to conduct an experimental AIDS education project with at-risk youths. Sport is rapidly gaining recognition worldwide as an effective means of promoting education and health, which led the United Nations General Assembly to adopt resolution 58/5 and proclaimed 2005 the International Year of Sport and Physical Education (UNGAOR, 2003). In particular, the United Nations has named sport as an effective platform to increase HIV/AIDS knowledge and awareness (United Nations, 2003). Sport is meaningful for children, they experience the benefit of membership and affiliation and in general children enjoy playing sport and being on a sport team (Roberts, 1984; Siedentop, 1996).

Based on these contentions, the first author initiated an experimental community-based sport program called EMIMA[1] designed for disadvantaged youth in Dar es Salaam, Tanzania, in 2001. The

[1]EMIMA stands for Swahili words for Elimu, Michezo Na Mazoezi, which is a program that educates youths from poor communities through sport by using peers as coaches. This is a community-based organization long known for its services to youths in schools, out of schools and orphans. The AIDS education project was initiated to utilize peer coaching in education, building skills and attitudes necessary to address AIDS issues (see www.emima.org).

program utilizes peers as coaches for soccer skills and as a source of information, skills and attitudes related to HIV/AIDS education. Thus, the program used a popular youth activity to attract at-risk youths and used peer coaches as the instructors to deliver the educational information, knowledge and skills through the sport program (see www.emima.org). In 2004, we decided to conduct an evaluation of the effectiveness of the EMIMA program. Thus we initiated an experimental field study where we investigated the impact of the use of peer coaches to deliver HIV/AIDS education and the use of safe sex behaviors to at-risk youths.

The major purpose of this research was to investigate the relative effectiveness of the peer coach intervention through sport within the EMIMA program. We predicted that relative to a control group of at-risk youths who did not experience the EMIMA program, and who were not within the school system in Dar es Salaam, the participants in the EMIMA group would increase their HIV-related knowledge, risk perceptions and behavioral intentions while reducing HIV-risk-related behavioral practices. We added a second control group. In order to determine whether the EMIMA program was more effective than the normal practice of giving HIV/AIDS education in the school system, we recruited a group of youths who were educated about HIV/AIDS and safe sex practices within the normal school system. These youths were typical of the youths in Tanzania who are educated about HIV/AIDS through the normal educational practice in schools. We predicted that the participants in the EMIMA group would have greater HIV-related knowledge, risk perceptions, and behavioral intentions than the participants in the regular school environment.

We decided to add a second intervention group. In order to make the intervention more effective, we utilized some motivational enhancement strategies. As suggested by previous research (e.g., Carey & Lewis, 1999), motivational enhancement approaches improve behavioral skill-based interventions and have been successful in behavior change and risk reduction in several contexts (Miller, 1985, 1989; Miller & Rollnick, 1991; Miller et al., 2005; Lemyre et al., 2006). Therefore, we gave additional training in motivational strategies to some of the peer coaches to facilitate the HIV/AIDS intervention. Thus, a second purpose of the investigation was to determine whether the EMIMA program could be enhanced were we to introduce motivation strategies to the intervention.

The motivation strategies we decided to implement emanated from the social cognitive approach that has dominated research on motivation in sport over the past 30 years. The specific theory that informed our research in sport was achievement goal theory (e.g., Roberts, 2001; Roberts et al., 2007). In particular, we used the research that has investigated the impact of the motivational climate on cognition, affect and behavior (e.g., Ames, 1992). Thus, we had an additional EMIMA group of peer coaches who underwent additional training on how to implement mastery-oriented strategies in the peer coaching environment. With youth in HIV/AIDS crisis who often lack motivation to do many youth activities, and are pressed with many life events and stressors, introduction of motivational procedures in an AIDS intervention program in EMIMA may augment the regular skill-based interventions through sport (see Carey & Lewis, 1999; Beatty et al., 2004) and enhance risk reduction among youths (see Miller & Rollnick, 1991).

Therefore, the current study had two purposes: first, we wished to determine the efficacy of the EMIMA program with peer coach intervention through sport to deliver HIV/AIDS education and knowledge about the use of safe sex behaviors to at-risk youths. Second, we wished to determine whether a mastery-based motivational strategy would enhance the effectiveness of the peer coaches to deliver HIV/AIDS education and knowledge.

## Method

### Participants

A total of 950 participants aged 12–15 years were recruited for this study and responded to the questionnaires. The participants were recruited in three different ways. First, one hundred trained peer coaches (75 boys, 25 girls) from EMIMA were recruited for the study and randomly divided into two groups. The first group was termed "regular," and this was the normal EMIMA program as had been practiced since 2001, and the second group was termed "mastery," where we implemented the motivational enhancement strategies. With the 50 regular peer coaches, 252 children were recruited and these were formed into 18 teams, each with 14 participants. With the 50 mastery peer coaches, 228 children were recruited and 19 teams were formed, each with 12 participants. Each team had at least two peer coaches. For the participants who were in the "in school" group, we selected five primary schools and 250 children were recruited, 50 from each school. For the "out of school" group, 220 children who were not in the EMIMA program and who were not attending school were recruited from the community for the study. For convenience, at the end of the intervention and after the second assessment (i.e., time 2 assessment), we randomly selected 600 children who had completed both assessments so that we had 200 in the mastery, regular and in-school groups. However, the out-of-school groups were more difficult to follow up and only 164 completed both assessments. Therefore, we had 764 children in the sample. There were 555 boys and 209 girls. Participants' mean age was 13.7 years (SD = 1.07; range 12–15). The mean level of education was 5.5 years (SD = 1.37); (mastery 5.5; regular 5.4; in-school 6.5 years) and out-of-school youths had the lowest level (4.3 years)

### Research setting

Three communities of Buguruni, Vingunguti and Mtoni in Dar es Salaam, Tanzania, where the EMIMA program

operates were involved in the study. These are communities where EMIMA programs have been active since 2001. Compared with other communities in Dar es Salaam, these communities are among the poorest, by all criteria. Social and health problems such as HIV, STDs, etc., are very common. School drop out rate is also high in these communities. Many households are headed by a single parent, most often a woman but sometimes a child is the head of the household.

### Recruitment

Through the EMIMA centers, the school head teachers, and the heads of street children organizations/drop-in centers, participants were informed and recruited to take part in the research study. To be eligible, children who were to participate in the EMIMA program had to voluntarily join one of the teams under a peer coach who had already been recruited and trained. The normal procedure is to ask the trained peer coach to go into the community and recruit a group of children (boy peer coaches recruited boys, girls peer coaches recruited girls). These children then become a team, and participated in the soccer training program provided by EMIMA. In the schools, after obtaining consent from their parents/guardians, pupils had to voluntarily agree to participate by responding to the appropriate questionnaires within a class that included AIDS education. The questionnaire was given before and after the module on HIV/AIDS education. The out-of-school children were the most difficult to obtain and were recruited in the following way: we set up informal soccer games in and around the popular garbage collection points/places locally known as ''dampo.'' The street children and orphans usually gather in these places to collect dumped materials such as plastic bottles and other things to sell. Soccer is a popular game in Africa, and after the games we talked to the children and tried to recruit them into responding to the questionnaire. Children were excluded if they had participated in AIDS intervention through sport before in any EMIMA program, or through the school system, or if afflicted with reading and/or writing problems.

### Research design

Thus, the research project had four groups of children involved in the investigation in a quasi field experimental study. We had two treatment groups within the EMIMA program (received AIDS education using trained peer coaches in football), and two control groups (children who had school-based AIDS education; and out-of-school children who had received no AIDS education at a formal level)(see Fig. 1).

EMIMA Regular Group: within the EMIMA program, we had one group of children who were subjected to the regular EMIMA program as it has been conducted since 2001 (see www.emima.org).

EMIMA Mastery Group: we had a second group of EMIMA children where we added a procedure aimed at enhancing the mastery perceptions of the children receiving AIDS education. This was done through a procedure designed to increase the frequency and quality of children's mastery experiences in AIDS education sessions.

In-School group: as a control group, we included a group of children who received AIDS education only through the school system, the more traditional approach.

Out-of-school group: finally, we included a group of children who experienced neither the EMIMA program nor the traditional classroom educational program of AIDS prevention conducted through the school system.

### Training of peer coaches for the EMIMA program

To be able to conduct effective skill training sessions in their communities, peer coaches were trained before this investigation. The training of the peer coaches in soccer skills and strategies and in how to conduct HIV/AIDS prevention sessions is facilitated by trained soccer coaches and the staff of the EMIMA program. This facet is aided by a professional football club in Norway (see www.lynfootbal.no), which conducts training sessions for the EMIMA staff each year. In addition to the training in soccer skills and strategies, the mission of EMIMA is to use soccer training to facilitate education about HIV/AIDS prevention. For HIV/AIDS prevention, the training of peer coaches was conducted by

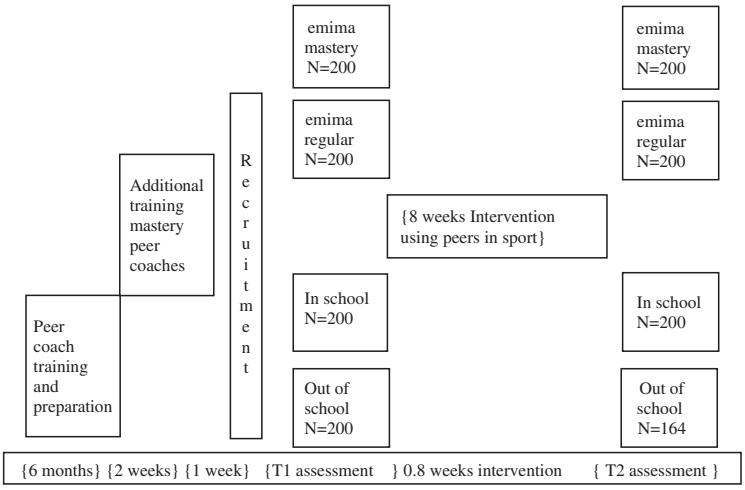


*Fig. 1.* Research design.

EMIMA-qualified staff according to the guidelines and manuals of the "Kicking AIDS Out" network (ref. www.kick ingaidsout.net). The training comprises seminars and activities and peer coaches qualify to become peer coach level 1. The peer coaches in this study were fully trained Kicking AIDS Out peer coaches at level 1. Therefore, we had a group of 100 peer coaches who were trained in using the sport context to foster life skills related to AIDS prevention. The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed on how to coach football skills practice sessions that contains life skills messages.

### Additional training of mastery peer coaches

The peer coaches in the mastery motivation intervention received 2 weeks additional training in mastery enhancement techniques (see Treasure & Roberts, 2001). We followed the guidelines based on the TARGET principles (Epstein, 1989) to guide motivational enhancement components of the intervention (Ames, 1992; Lloyd & Fox, 1992; Treasure & Roberts, 1995). These coaching climate structural features have been consistently identified as influencing a wide variety of motivational processes (Roberts et al., 2007). These peer coaches were introduced into activities, coaching and instructional strategies that increases mastery engagement in soccer and AIDS education activities.

### Assignment to groups

Children were enrolled into the teams with peer coaches. The peer coaches did most of the recruiting within the communities, and this is the normal EMIMA practice. The children could enroll with any peer coach. After a peer coach had reached 15 children, the roll was closed and children were requested to join the next peer coach. When each peer coach had enrolled his or her team, the teams and their peer coaches were randomly assigned to one of the two intervention conditions: the regular EMIMA intervention through sport (referred to as "regular"), and a motivationally enhanced intervention with mastery criteria specifically built in to the program (referred to as "mastery"). Likewise, after permission was granted by the head teacher, the children in the classes who were undergoing traditional classroom AIDS education in the appropriate age category were referred to as "in school". Orphan and street children institutions that responded to the letters were approached for a meeting about the study. Some children were recruited with the help of these institutions, and some were recruited from the streets and nearby garbage collection points. These children were referred to as "out of school".

### Procedures

The participants were informed about the objectives of the study and their freedom to choose to participate in the study.

#### *Pre-assessment*

Before any intervention activities with the children, all children in the treatment and control groups completed the questionnaires, termed as Time 1 assessment. Each participant was given a numeric code to maintain confidentiality. The code allowed participants to be linked to their data in each assessment.

#### *The intervention*

Peer coaches, under supervision of the first author, conducted the intervention activities (i.e., AIDS education through sport sessions) over an 8-week period. This is the regular procedure and inter-club matches are arranged and played during the practice sessions. It was possible to arrange short 7- or 5-a-side competitions after the soccer training and AIDS life skills learning to make it more fun and exciting. Children were encouraged to join and form the teams with friends in order to maximize the positive social influence and foster social support in using peer norms to promote risk reduction. In order to assist the peer coaches in the intervention activities, the first author visited the training sessions and talked to the peer coaches as they were working with the children. A program of seminars, meetings and regular communication was enacted to assist the peer coaches in their tasks during the project. In addition, special seminars and meetings were organized with the peer coaches who were assigned to the mastery groups to facilitate the mastery character of the training sessions. The first author also attempted to attend many of the training sessions to encourage the use of the motivational enhancement techniques.

The children in the schools continued to receive AIDS education in the traditional manner. Nothing new was introduced with these groups. The out-of-school children continued to forage in the dampos, no education was offered to these children.

#### *Post-assessment*

The first author visited the EMIMA centers, the schools and the orphan and street children institutions before the scheduled appointment to remind them of the second round of assessment. The second assessment (termed Time 2 assessment) took place after the eighth week of the EMIMA intervention sessions, and after the school had completed educational modules on HIV/AIDS education. Letters of appreciation were sent to the schools, centers and institutions, thanking them for participating in the research study. Participants were given 1 packet of biscuits, a pencil and a bottle of water and thanked for each assessment they completed. Following the study, children in the control groups (the school and street children) were invited to attend "Kicking AIDS Out sessions" that educate children about AIDS through sport at their nearby EMIMA centre. After the Time 2 assessment, for convenience, we randomly selected 200 children from each of the EMIMA and the in-school groups.

One note should be added to the assessment of the out-of-school children. While we were able to follow up with the intervention and in-school participants, many of the street children who were assessed at Time 1 were not available for assessment at Time 2. They simply did not attend the informal football games, nor was it possible to locate them through the orphan community institutions. Only 164 children were available for the follow-up assessment.

#### *Measures*

For the present paper, participants completed questionnaires that asked basic demographic information, HIV-related knowledge, beliefs, attitudes and risk behaviors. Such measures include attitude to an exclusive sexual partner, attitude to condom use, condom knowledge and experience, subjective norms about condom use, abstinence, having an exclusive sexual partner, perceived behavior control in using condom, and behavioral intention (intended condom use). These questions and scales were from a long set of questionnaires adapted from the Family Health International behavioral surveys and World Health Organization's (WHO) knowledge, attitudes, beliefs, and practices survey instruments for adolescents (WHO, 1989]. We used the above questions only, the other

questionnaires were not used in this study. In addition, we asked selected demographic characteristics including sport participation, age, education, orphanage and sexual debut.

The instruments originally written in English were translated and back-translated from English to Swahili (national language in Tanzania) by experts in both languages before being used in the field. The final translated version was submitted for peer review to EMIMA staff members and colleagues at the University of Dar es Salaam for content and face validity before being used for this study. The items have been previously used with students in East and Southern Africa (Wilson et al., 1992; Lugoe, 1996). All responses were anonymous and only the principal investigator knew the code in order to match pre- and post-treatment questionnaires where appropriate.

*HIV-knowledge questionnaire (HIV-K-Q).* This was a modified version of the HIV-knowledge questionnaire (Carey et al., 1997a, b) and was used to assess the knowledge related to HIV transmission and prevention. An example of an item is: "Can a person get HIV by sharing a glass of water with someone who has HIV?" The HIV-K-Q has good internal consistency ($\alpha = 0.91$) and is stable over 2-week ($r = 0.91$) and 12-week ($r = 0.90$) intervals (Carey et al., 1997a, b). As in previous studies (e.g., Carey et al., 1997a, b), factor analyses indicated that the scale contained a single factor and was internally reliable with a Cronbach $\alpha$ coefficient of 0.81 and 0.87 at Time 1 and 2, respectively.

*Intention to use condom.* The participants responded to one item assessing behavioral intention to engage in safe sexual behavior (Rigby et al., 1993; Lugoe et al., 1996). This question has previously been used with school pupils in Tanzania (Lugoe & Rise, 1996). The participants responded to a statement: "I intend to use a condom at the first/next sexual intercourse." A five-point Likert scale ranging from 1 (very uncertain) to 5 (very certain) was used.

*Attitude to exclusive sexual partner.* To measure attitude, participants were asked to rate their attitudes toward exclusive sexual relationships on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Four items based on previous studies (Ajzen & Fishbein, 1980; Rigby et al., 1993) were used for this measure: an example of an item is: "Sticking to one sexual partner for life is very difficult." Negative items were reverse scored. Attitude to exclusive sexual partner for this sample achieved an adequate level of internal reliability ($\alpha = 0.70$) (Tabachnick & Fidell, 2001).

*Attitude to condom use scale.* Based on previous studies (Sheeran et al., 1990; Rigby et al., 1993), five items scored on a five-point scale from strongly agree = 5 to strongly disagree = 1 were used to assess attitude to condom use. An example of an item is: "Condoms reduce people's pleasure in having sex." The negatively attitudinal items were reverse scored before all items were summed for an overall measure in which higher mean scores represented a more positive attitude to condom use. The exploratory factor analysis revealed that all items contributed to the final score and the scale had an acceptable internal consistency coefficient ($\alpha = 0.70$)

*Direct experience with condom.* A six-item scale was used to determine whether condoms were used during sexual intercourse (Fishbein & Ajzen, 1975). An example of an item is: "I used a condom during my last sexual intercourse." A five-point Likert scale ranging from 1 (never) to 5 (always) was used. Condom knowledge and experience was reliable at post-intervention ($\alpha = 0.81$).

*Subjective normative belief about condom use, abstinence and exclusive sexual partner.* Respondents were asked how likely they thought the named significant others were in favor of them using a condom during first/next sexual intercourse (Ajzen & Fishbein, 1980; Rigby et al., 1993). An example of an item is, "My fellow players would approve of my using a condom at the first/next sexual intercourse." Similar questions were asked for abstinence and for having an exclusive sexual partner, with the appropriate wording. The significant others were fellow players, peer coaches, my best friends and present partner (if any). Responses were scored on a five-point scale from very likely = 5, to very unlikely = 1. The internal reliability coefficients of the scales were satisfactory, $\alpha = 0.89$, 0.90 and 0.90, for condom use, abstinence and having an exclusive partner scales, respectively.

*Perceived behavior control for condom use.* Respondents were asked whether they perceived themselves as being in control of their condom use. An example of an item is: "How certain are you that you will use a condom at your next sexual intercourse?" The responses ranged from very uncertain = 1 to very certain = 5. Ten items indicating different situations were used. The questionnaire was based on the methodology described by Fishbein and Middlestadt (1989). The questionnaire has good reliability (Terry et al., 1993) and the items have been crosschecked with relevant studies in Eastern and Southern Africa (Wilson et al., 1992; Lugoe et al., 1996). The exploratory factor analysis within the present study revealed that all items contributed to the final score and the scale had an acceptable internal reliability coefficient ($\alpha = 0.85$).

### Statistical procedures

The descriptions of the scales are provided in Table 1, and includes the internal reliability coefficient $\alpha$s. Because many of these scales were adapted to the sport context, and were translated into Kiswahil, we conducted exploratory factor analyses on each scale to determine whether the items contributed to the factors they were intended to represent. The factor analyses showed that most items loaded on the construct they were supposed to represent. If an item cross-loaded on two factors, that item was eliminated. Further, an item discrimination procedure was used, and if any item improved the $\alpha$ coefficient of the scale when it was eliminated, then that item was not used in the main analyses. When we followed these procedures, all scales were included as they all had adequate internal reliabilities ($\alpha > 0.70$, Tabachnick & Fidell, 2001).

The demographic comparisons of the four groups at Time 1 are shown in Table 2 and shows how the groups differed at the start of the study. To determine whether differences occurred over the course of the intervention, we used a repeated measures multivariate analysis of variance (MANOVA) procedure over the variables used in the study (Table 3). The independent variables were the four groups, and Time 1 and Time 2 assessments were the repeated measures factor. The mean factor scores for the scales were the dependent variables. Thus, we had a $2 \times 4$ design. The findings showed we had two main effects. Examination of the simple main effects (Tukey post-hoc tests) revealed that the groups were reliably different at Time 1. We therefore decided to use the normalized residual scores at Time 2 that controlled for the differences at Time 1. We then conducted a MANOVA procedure using the normalized residual scores at Time 2. Following a reliable multivariate effect, we followed up with analysis of variance

Table 1. Description of scales and mean scores for the sample at time 1

| | Range of scores | No. of items | α | Means (SD) |
|---|---|---|---|---|
| HIV knowledge (mean correct out of 25) | 0–25 | 25 | 0.80 | 8.99 (2.7) |
| Direct condom experience | 1–5 | 6 | 0.81 | 2.59 (0.92) |
| Attitude to condom use | 1–5 | 5 | 0.70 | 2.92 (0.77) |
| Attitude to exclusive sexual partner | 1–5 | 4 | 0.70 | 3.35 (0.71) |
| Subjective norm – condom use | 1–5 | 5 | 0.89 | 3.29 (1.0) |
| Subjective norm – abstinence | 1–5 | 5 | 0.90 | 3.63 (0.62) |
| Subjective norm – exclusive sexual partner | 1–5 | 5 | 0.90 | 3.62 (0.71) |
| Intention to use condom | 1–5 | 1 | NA | 2.27 (1.2) |
| Perceived behavior – control in condom use | 1–5 | 10 | 0.85 | 2.57 (0.77) |

$P < .05$.

Table 2. Demographic comparison of the four study arms at time 1

| | Mastery ($N = 200$) | Regular ($N = 200$) | In-school ($N = 200$) | Out-of-school ($N = 164$) |
|---|---|---|---|---|
| Sport participation (%) | 97.5 | 97 | 71.5 | 74.4 |
| Sexually active (%) | 16 | 11 | 4.5 | 11 |
| Father not alive (%) | 18.5 | 13.5 | 13.5 | 60.4 |
| Mother not alive (%) | 12.5 | 18 | 11 | 60.4 |
| Not living with father (%) | 20.5 | 17.5 | 22 | 82.9 |
| Not living with mother (%) | 14 | 18 | 15.5 | 73.8 |
| Age (mean and SD) | 13.8 (1.1) | 13.5(1.1) | 13.6 (1.0) | 13.8 (0.98) |
| Years of education | 5.5 (1.4) | 5.4 (1.4) | 6.5 (50) | 4.3 (1.0) |
| Sex | | | | |
| Male | 164 | 163 | 99 | 129 |
| Females | 36 | 37 | 101 | 35 |

Total $N = 764$.

Table 3. Group means and standard deviations for the analyzed variables

| Variable | Mastery ($N = 200$) | | Regular ($N = 200$) | | In-school ($N = 200$) | | Out-of-school ($N = 200$) | |
|---|---|---|---|---|---|---|---|---|
| | *M* | SD | *M* | SD | *M* | SD | *M* | SD |
| HIV knowledge (mean correct out of 25) | | | | | | | | |
| Time 1 | 9.75 | 2.48 | 9.26 | 3.05 | 8.44 | 2.21 | 8.42 | 2.76 |
| Time 2 | 13.33 | 2.51 | 12.83 | 3.84 | 11.84 | 3.47 | 11.17 | 4.41 |
| Direct condom experience | | | | | | | | |
| Time 1 | 2.71 | 0.81 | 2.69 | 0.83 | 2.28 | 1.0 | 2.68 | 0.94 |
| Time 2 | 2.99 | 1.0 | 2.95 | 1.1 | 2.31 | 0.99 | 2.72 | 0.10 |
| Intention to use condom | | | | | | | | |
| Time 1 | 1.90 | 1.20 | 1.98 | 1.29 | 2.65 | 1.1 | 2.53 | 1.0 |
| Time 2 | 4.44 | 0.95 | 4.06 | 1.3 | 2.87 | 1.4 | 3.27 | 1.3 |
| Subjective norm – condom use | | | | | | | | |
| Time 1 | 3.68 | 0.61 | 3.78 | 0.56 | 2.82 | 1.2 | 2.73 | 1.1 |
| Time 2 | 4.33 | 0.81 | 4.02 | 1.1 | 3.58 | 0.74 | 3.47 | 0.68 |
| Subjective norm – abstinence | | | | | | | | |
| Time 1 | 3.75 | 0.49 | 3.73 | 0.54 | 3.56 | 0.72 | 3.46 | 0.69 |
| Time 2 | 4.58 | 0.73 | 4.28 | 0.99 | 3.65 | 1.3 | 3.79 | 1.1 |
| Subjective norm – exclusive sexual partner | | | | | | | | |
| Time 1 | 3.72 | 0.52 | 3.72 | 0.60 | 3.62 | 0.79 | 3.38 | 0.66 |
| Time 2 | 4.56 | 0.70 | 4.44 | 0.85 | 3.99 | 1.1 | 4.02 | 0.89 |
| Attitude to exclusive sexual partner | | | | | | | | |
| Time 1 | 3.35 | 0.69 | 3.41 | 0.69 | 3.44 | 0.70 | 3.19 | 0.73 |
| Time 2 | 4.04 | 1.1 | 3.69 | 1.1 | 3.45 | 0.97 | 3.34 | 0.90 |
| Attitude to condom use | | | | | | | | |
| Time 1 | 2.92 | 0.72 | 2.96 | 0.79 | 2.89 | 0.81 | 2.87 | 0.77 |
| Time 2 | 2.95 | 0.81 | 3.10 | 0.88 | 2.60 | 0.75 | 2.87 | 0.80 |
| Perceived behavior control to condom use | | | | | | | | |
| Time 1 | 3.38 | 0.85 | 3.23 | 0.70 | 2.79 | 0.65 | 3.26 | 0.74 |
| Time 2 | 3.43 | 0.85 | 3.27 | 0.69 | 2.79 | 0.65 | 3.23 | 0.79 |

Table 4. Standardized residual means and standard deviations for the groups

| Variable | Mastery $N = 200$ $M$ (SD) | Regular $N = 200$ $M$ (SD) | In-school $N = 200$ $M$ (SD) | Out-of-school $N = 200$ $M$ (SD) | $F(3, 760)$ |
|---|---|---|---|---|---|
| HIV knowledge | 0.19 (0.77) | 0.11 (0.97) | − 0.08 (1.0) | − 0.27 (1.2) | 7.58 |
| Direct condom experience | 0.19 (1.0) | 0.17 (0.85) | − 0.31 (0.99) | − 0.07 (0.99) | 11.26 |
| Attitude to condom use | 0.11 (0.63) | 0.32 (0.77) | − 0.46 (1.5) | 0.05 (0.41) | 22.93 |
| Attitude to exclusive sexual partner | 0.37 (1.0) | 0.05 (1.0) | − 0.19 (0.93) | − 0.28 (0.88) | 17.32 |
| Perceived behavior control in condom use | 0.18 (1.3) | 0.08 (0.77) | − 0.23 (0.35) | − 0.04 (1.3) | 6.41 |
| Intention to use condom | 0.46 (0.88) | 0.20 (0.66) | − 0.49 (1.1) | − 0.22 (0.99) | 40.95 |
| Subjective norm – abstinence | 0.43 (0.67) | 0.16 (0.91) | . − 0.39 (1.2) | − 0.25 (0.98) | 31.31 |
| Subjective norm – exclusive Sexual partner | 0.31 (0.75) | 0.17 (0.88) | − 0.30 (1.2) | − 0.22 (0.95) | 18.26 |
| Subjective norm – condom use | 0.46 (0.87) | 0.11 (1.2) | − 0.26 (0.82) | − 0.38 (0.77) | 30.33 |

(ANOVA) procedures on each dependent variable as part of the post-hoc tests (Table 4).

## Results

### Descriptive analyses

Mean values and standard deviations were calculated for each of the scales for the whole sample at Time 1 and are presented in Table 1. At Time 1, all of the scales were internally reliable. Table 2 illustrates the demographic differences between the groups. About 10% of the children reported to be sexually active, with the least active being the children in school. As can be seen, the EMIMA groups and the in-school group were relatively similar in reporting whether their parents were alive or dead, and whether they lived with one parent or the other. However, as one would expect, the out-of-school group was very different, with most of them reporting that at least one of their parents had died, and few were living with one of the other parent. In this sample, 7% of the children in EMIMA, 3% of the children in school and 51% of the children who were out-of-school were orphans. Clearly, the children we recruited for the out-of-school group were more likely to be an orphan, and by definition to be at risk in this community.

### Differences between the youth subgroups

#### *Main analyses*

A repeated-measures MANOVA was conducted over the Time 1 and Time 2 mean factor scores (Table 3) to determine whether the expected treatment effects were observed. The analysis produced two overall main effects: over Time 1 vs Time 2, and over the treatment groups. The post-hoc MANOVA at Time 1 showed that the groups differed at Time 1: $F(9, 752) = 15.04$, $P < 0.001$; Wilks' $\lambda = 0.61$; partial $\eta^2 = 0.15$. Therefore, we decided to use MANOVA procedures at Time 2 using normalized residual difference scores. For each of the variables, the residual at Time 2 controlling for the difference at Time 1 was entered into the analysis (Table 4). The MANOVA revealed a significant difference between the groups $F(9, 752) = 11.63$, $P < 0.001$; Wilks' $\lambda = 0.68$; partial $\eta^2 = 0.12$. As post-hoc tests, we used univariate ANOVA procedures on each dependent variable and the $F$ values are reported in Table 4.

#### *HIV/AIDS knowledge*

When we used Tukey honestly significantly difference (HSD) to determine where the significant differences were, we found that the two EMIMA intervention groups did not reliably differ from each other, but both were higher in HIV–K-Q knowledge scores than the in-school and out-of-school groups. Contrary to expectation, the in-school and out-of-school groups did not differ from each other (Table 4).

#### *Condom experience*

Using the Tukey HSD tests, we found that the two EMIMA intervention groups did not reliably differ from each other, but both reported more experience with condom use than the in-school and out-of-school groups who did not reliably differ from each other (Table 4).

#### *Attitude to having an exclusive sexual partner*

The Tukey HSD indicated that the in-school and out-of-school groups did not reliably differ from each other, and both were less likely to believe that having an exclusive sexual partner was a safe behavior against HIV infection than the EMIMA intervention groups. In addition, the mastery intervention group had a more positive attitude to the use of an exclusive sexual partner than the regular intervention group (Table 4).

#### *Intention to use condom*

The finding of the Tukey HSD test indicated that the in-school and out-of-school groups did not reliably differ from each other, but had less intention to use condom at the first/next sexual intercourse than the

EMIMA intervention groups. The mastery intervention group had higher intention to use condom in the future than the regular group (Table 4).

*Subjective normative beliefs about condom use, abstinence and having an exclusive sexual partner*

For subjective norms about condom use, and abstinence, the Tukey HSD showed that the in-school and out-of-school groups did not reliably differ from each other, but they had reliably lower subjective norms about condom use and abstinence than the two EMIMA intervention groups. The mastery group was significantly higher in normative beliefs about using condoms and abstaining than the other groups (Table 4).

Results of the Tukey HSD test on subjective norms about having an exclusive sexual partner indicated that the two EMIMA intervention groups did not reliably differ from each other, but both had higher subjective norms about having an exclusive sexual partner than the in-school and out-of-school groups, which did not reliably differ from each other (Table 4).

*Attitude to condom use*

Result of the Tukey HSD test on attitude to condom use scores indicated that the two EMIMA intervention groups did not reliably differ from each other, and had more positive attitude to condom use than the two other groups. Surprisingly, the out-of-school group had a reliably more positive attitude to condom use than the in-school group (Table 4).

*Perceived behavior control in condom use*

Using the Tukey test, we found that in-school and out-of-school groups did not reliably differ from each other, but perceived lower behavior control in condom use than the two EMIMA intervention groups. The Mastery EMIMA intervention group was reliably higher in perceived behavior control in condom use than all the other groups (Table 4).

## Discussion

In the present study, we report on the first experimental HIV/AIDS prevention program using peers in a sport context that targeted children in a developing country in Sub-Saharan Africa who are at-risk for infection. We investigated the efficacy of the EMIMA Kicking AIDS out program that has been in existence since 2001 in Dar es Salaam in Tanzania. The study focused on knowledge about HIV/AIDS, attitudes and implementation of safe sex knowledge and behaviors.

### Intervention using peer coaches in football/sport

The important findings of the present study show that the use of peer coaches within the soccer coaching environment of the EMIMA program was effective in transmitting knowledge about HIV/AIDS and safe sex practices. Indeed, the EMIMA intervention soccer program was reliably more effective than the traditional HIV/AIDS education through the normal school system for all knowledge, attitudinal and behavioral variables investigated in this study. Relative to the in-school children and the out-of-school children in the second control group, children in the EMIMA intervention groups reported significantly greater beliefs and perceived control in condom use, abstinence, and in using exclusive sexual relationships to prevent HIV infection. In addition, children in the EMIMA intervention sport programs were significantly more likely than children in school who received AIDS education through the traditional approach to report reliably higher levels of HIV and condom use knowledge, more positive normative beliefs and perceived control in prevention of HIV infection. Clearly, the results demonstrate that HIV/AIDS education using peer coaches in sport can effectively reduce the risk of at-risk children from infection with HIV.

The current findings suggest that EMIMA-type interventions using peers in sport may serve as an approach for AIDS risk reduction interventions in Africa for at-risk youths who are similar to the youths in the present study: youths who are currently sexually inactive, many of them orphans, many not in school, in areas with limited resources, cultural taboos and a high prevalence of AIDS and HIV infection. Given the widely recognized potential risk of sexually transmitted HIV among disadvantaged youth (NACP et al., 2004; UNICEF, 2004), the findings of the present study suggest an alternative avenue to transmit the important messages behind HIV/AIDS education programs. The EMIMA program takes advantage of the fact that playing soccer is the most popular sport for youths in general in Africa, and disadvantaged youths in particular. By incorporating the HIV/AIDS messages into the practice sessions, we have demonstrated that this is an effective way of transmitting information, positive attitudes and behavioral intentions to at-risk youths.

The EMIMA program focuses on changing the social, cultural and peer norms associated with sexual activity and facilitates cognitive and behavioral skill acquisition through the regular practice of life skills through games in a fun, enjoyable and non-scary environment. At-risk youths with limited opportunities within the African cultural context need these programs for sustained behavior change for HIV prevention. Participation in sporting activities that also provide competencies in HIV prevention and enforce peer norms to facilitate sustained beha-

vioural change, and provide motivation to continue participation is a promising avenue for HIV/AIDS prevention (see Rotheram-Borus et al., 1991; Jemmott et al., 1992; Downer et al., 2003).

Similar to the rest of Sub-Saharan Africa, to a greater or lesser extent, the number of orphans in Tanzania is rapidly increasing (NACP et al., 2004) and the number of children who cannot afford to go to school is increasing (Ministry of Education and culture & Ministry of Science Technology and Higher Education, 1993; UNICEF, 2004). The need for an effective approach that targets children outside the school system is urgently required. Using sport, or at least soccer, as part of that approach may be effective on two counts. First, as demonstrated by this study, using peers within the sport context to disseminate information about appropriate prevention behaviors, and involving children in learning the skills in a non-scary environment by anchoring education within sport may help to reduce the normative and cultural barriers about sexual behavior within these at-risk groups. Second, by using sport in a systematic manner within this at-risk population, some of the concomitant learning that may come with participation in sport may ensue. We know that being an orphan in Africa, in particular an AIDS orphan, has a major negative psychological effect on the child (Sengendo & Nambi, 1997). We also know that participating in team sports has a positive psychological benefit for most of the participants (Siedentop, 1996). Therefore, participation in EMIMA-type intervention programs may have psychosocial benefits that are important for at-risk children living in areas highly affected by AIDS. At-risk children are able to belong to a group, make friends, enjoy being on a team, have fun and also get an opportunity to practice soccer skills and benefit from the HIV/AIDS messages within the practice environment The sport context in itself may have been a major reason for the facilitation of individual change. The context and the training of the peer coaches facilitated the learning of life skills through providing an accepting context to discuss the risk behaviors, and importantly, had peers reinforcing each participant's efforts at risk reduction.

We were not surprised with the major finding that peer coaching in sport was the most effective strategy of HIV/AIDS education. However, we were surprised with some of the other findings. Based on the current approach of HIV education to youths being school based in Tanzania (MoH, 1995; Klepp et al., 1997; NACP et al., 2004), we expected the youths in schools to have higher knowledge, more positive attitudes and beliefs, and have lower at-risk behaviors than the youths we designated as being out-of-school children. This was not the case! We found that school-based HIV/AIDS education was not more effective than the informal education obtained by the out-of-school children. This was not expected given the fact that children in schools are exposed to systematic information about HIV/AIDS through the school curriculum. We can only speculate on this finding. It may well be that the HIV preventive education in schools is implemented by adults in teacher-pupil relationships typical for academic subjects. Thus, the HIV preventive education in schools tends to be didactic by nature and taught in science lessons without actively engaging the pupils. Also, the strong message given in school is sexual abstinence (just say no!). Even though the school-based children did show greater knowledge than the out-of-school children, the knowledge about safe sex practices, especially condom use, was greater for the out-of-school children. The out-of-school children also had a more positive attitude than the in-school group toward condom use. However, when asked, neither the out-of-school children nor the school children were likely to use a condom in the next/first sexual intercourse.

The AIDS policy in Tanzania from the early 1990s refrained from emphasizing the use of condoms in the school curriculum for religious and moral reasons (MoH, 1995). Although the policy has recently been reviewed, these findings are a clear indication of the consequences of such a policy. Some studies have argued that HIV/AIDS education in schools is a controversial issue as many adults in Sub-Saharan Africa do not acknowledge that youths engage in sexual activity (e.g., Ijsselmuiden et al., 1993). The findings that indicate that the differences between the out-of-school children and the in-school children are more toward the fact that the in-school children are more at risk for contracting HIV/AIDS is a clear call for more effective approaches for educating youths about safe sex practices. As this study illustrates, regardless of other programs that may be implemented, one effective approach that should be further investigated is an EMIMA- type program.

Another important component of the present study is that it integrated HIV/AIDS skills training with a motivational enhancement strategy to determine whether we could enhance the effectiveness of the HIV/AIDS intervention in sport (Carey et al., 1997a, b). Supplementing HIV/AIDS life skills with a motivational enhancement approach within the sport context has not occurred in prior applications. Thus, in the present study, we compared the group that had mastery enhancement strategies as part of the intervention with the normal EMIMA approach as practiced in the project. We wished to determine whether a mastery motivational strategy would enhance the effectiveness of the peer coaches to deliver HIV/AIDS education. The findings indicated that a mastery-based motivational strategy is effective in AIDS

education, most of the time. We found no differences in knowledge, but the motivational enhancement groups were more effective in communicating and influencing attitudes and norms about condom use and abstinence, the intention to use condoms and increased perceived behavioral control in engaging in safe sex practices. These attitudinal and behavioral intention variables are proximal determinants of youth sexual behaviors and may mediate other determinants such as social norms. However, the important point is that the motivational enhancement approach is effective in changing the intentions to use safe sex practices (DiClemente et al., 1990; Norris & Ford, 1991; Braithwaite & Thomas, 2001).

The mastery motivation strategies were introduced to emphasize task involvement (see Ames, 1992). We trained the peer coaches to focus on encouraging effort, to enhance self-efficacy and autonomy. We deliberately refrained from emphasizing normative competence and superiority (e.g., see Treasure & Roberts, 2001). The mastery strategies were given in a 2-week extra-educational module to the peer coaches who were randomly selected into the mastery groups. This rather basic motivational strategy was sufficient to change the behavioral intentions of the participants. Even though this will have to be the focus of future research, we may argue that the motivational strategy enhanced the perception of the participants that they could carry out the intentions to use safe sex practices. In other words, we increased the efficacy of the participants to utilize the safe sex strategies we investigated in this study.

Even though we managed to make some changes in a positive direction, the findings of this study indicate that HIV knowledge among young people in Tanzania is generally low. The majority of youth in Tanzania have a limited understanding of how the HIV virus is transmitted and how it can be prevented, as well as knowledge of the virus itself. This is frightening as the participants in this study all reported relatively low HIV knowledge and experience about condom use. Unfortunately, the children who were educated in schools have the most unfavorable attitudes toward condom use. Clearly, there is a need for community programs such as EMIMA to target both the in-school and out-of-school youths as they are both equally at risk for HIV infection.

An important limitation of conducting research with disadvantaged participants who are traumatized and stigmatized by the AIDS epidemic is the question of accessibility. The out-of-school children were the most difficult individuals to recruit. They were recruited from orphan institutions in the same communities, as well as being recruited from garbage collection areas. Orphans and street children do not stay in one area or institution for a long time. Soccer played an important role in motivating the street children to take part in the study that involved the EMIMA group. Furthermore, conducting field-based research on high-risk sexual behaviors of youths in an environment where many cultural taboos about sex poses a big challenge that must be recognized. We approached the vulnerable children through sport activities they are familiar with, and implemented a culturally sensitive peer-friendly recruitment approach. Using peer coaches provided fun and enjoyment throughout the sport team activities, and they conducted all intervention sessions in their local community facilities. The use of sport activities to attract adolescents was a useful intervention strategy to encourage involvement of the at-risk children in this study. This approach facilitated the smooth and easy atmosphere for the participants to disclose honestly sensitive information regarding their sex life.

The present study investigated behavior outcome measures including abstinence and condom use that are consistent with recommendations for effective interventions (Jemmott & Jemmott, 2000). Given that both in- and out-of-school children are equally at risk, effective HIV prevention interventions for young people should target the total population, not just the out-of-school children. Sexual activity among adolescents is very common in many Sub-Saharan African countries (Meekers, 1994). The present study indicated that 95%, 89% and 86.5% of youths from out-of-school, in-school and in EMIMA, respectively, were not sexually active during the study. The intervention aimed at sexually inexperienced youths is effective because they are good candidates for HIV prevention and previous research has shown that it is more difficult to achieve behavior change in teens who have already initiated sex (Kirby et al., 1991).

Furthermore, because there is evidence of the role attitudes and norms play in the adolescent's decision to engage in safe sex practices (Gallois & McCamish, 1989; Leviton et al., 1990; Kelly et al., 1991), the intervention program of the present study specifically targeted young peoples' beliefs about condom use and created a supportive environment by using peers as the method of delivery of the information. Clearly, using peer coaches is a procedure to be further investigated.

## Perspectives

The results demonstrate that youth-friendly and community-based programs that use sport can assist in the process of reducing the risk of HIV/AIDS infections for youths. The results further demonstrate that mastery motivational procedures (e.g., Treasure & Roberts, 2001) may assist in this process. However, the real message of this research study is

that HIV/AIDS education that is delivered by peers is attended to by the at-risk participants, more so than the formal educational practices of AIDS education in Tanzania. In addition, the findings of this study reveal that the EMIMA-type program is successful and should not be supported only in the poorer communities of Dar es Salaam, but should be implemented nationwide, even Sub-Saharan Africa wide. Simply put, using trained peer coaches through sport may effectively help to reduce the risk of infection with HIV among young people. Anecdotally, the records of EMIMA show that not one participant who has been through the EMIMA program (EMIMA, 2006, unpublished work) has been confirmed to contract HIV! Subsequent research should investigate the relative influence of the sport context and the use of peers on the variables under study, and to develop even more effective strategies to prevent the pandemic of AIDS.

**Key words:** peer coaching, mastery motivation, AIDS education through sport.

## References


Ajzen I, Fishbein M. Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall, 1980.

Ames C. Achievement goals, motivational climate and motivational processes. In: Roberts GC, ed. Motivation in sport and exercise. Champaign, IL: Human Kinetics, 1992: 161–176.

Beatty LA, Wheeler D, Gaiter J. HIV prevention research for African Americans: current and future directions. J Black Psychol 2004: 30: 40–58.

Braithwaite K, Thomas VG. HIV/AIDS knowledge, attitudes and risk behaviours among African – American and Caribbean college women. Int J Adv Counselling 2001: 23: 115–129.

Bujra J, Baylies C. Responses to AIDS epidemic in Tanzania and Zambia. In: Baylies C, Bujra J, eds. AIDS, Sexuality and Gender in Africa. Collective Strategies and Struggles in Tanzania and Zambia. London: Routledge, 2000: 25–59.

Carey M, Lewis B. Motivational strategies can enhance HIV risk reduction programs. AIDS Behav 1999: 3: 269–276.

Carey M, Maisto S, Kalichman S, Forsyth A, Wright E, Johnson B. Enhancing motivation to reduce the risk of HIV infection for economically disadvantaged urban women. J Consulting Clin Psychol 1997b: 65: 531–541.

Carey M, Morrison-Beedy D, Johnson B. The HIV-knowledge questionnaire: development and evaluation of a reliable,valid, and practical self-administered questionnaire. AIDS Behav 1997a: 1: 61–74.

Choi KH, Coates TJ. Prevention of HIV infection. AIDS 1994: 8: 1371–1389.

DiClemente R, Forrest KA, Mickler S. College students' knowledge and attitudes about AIDS and changes in HIV preventive behaviors. AIDS Educ Prevention 1990: 2: 201–212.

Downer A, Levine R, Weaver M. Critical reflections on human capacity development for HIV/AIDS prevention, care and support. Washington: Center for Health Education and Research (CHER), University of Washington, 2003.

Epstein J. Family structures and student motivation: a developmental perspective. In: Ames C, Ames R, eds. Research on motivation in education. New York: Academic Press, 1989: 259–295.

Family Health International (FHI) Reaching out-of-school youth with reproductive health and HIV/AIDS information and services. Arlington, VA: Family Health International, YouthNet Program, 2004.

Fishbein M, Ajzen I. Belief, attitude, intention, and behavior: an introduction to theory and research. Reading, MA: Addison-Wesley, 1975.

Fishbein M, Middlestadt SE. Using the theory of reasoned action as a framework for understanding and changing AIDS related behaviors. In: Mays VM, Albee GW, Schneider SF, eds. Primary prevention of AIDS: psychological approaches. Newbury Park, CA: Sage, 1989: 93–110.

Gallois C, McCamish M. Assessment of AFAO national peer education programme. Canberra: Australian Federation of AIDS Organizations, 1989.

Glynn JR, Carael M, Auvert B, Kahindo M, Chege J, Musonda R, Kaona F, Buve A. Why do young women have a much higher prevalence of HIV than young men? A study in Kisumu, Kenya and Ndola Zambia. AIDS 2001: 15: 51–60.

Ijsselmuiden C, Evian C, Matjilla J, Steinberg M, Schneider H. AIDS in South Africa. AIDS Society 1993: 4: 10–11.

Jemmott JB, Jemmott LS. HIV risk reduction behavioral interventions with heterosexual adolescents. AIDS 2000: 14: 40–52.

Jemmott JB, Jemmott LS, Fong GT. Reduction in HIV associated sexual behaviors among balck male adolescents: effects of an AIDS prevention intervention. Am J Public Health 1992: 82: 372–377.

Kelly JA, St Lawrence J, Brasfield T. Predictors of vulnerability to AIDS risk relapse. J Consulting Clin Psychol 1991: 59: 163–166.

Kirby D, Barth R, Leland N, Fetro J. Reducing the risk. Impact of a new curriculum on sexual risk taking. Family Plan Pers 1991: 23: 253–263.

Klepp KI, Ndeki SS, Leshabari MT, Hannan PJ, Lymo BA. AIDS education in Tanzania: promoting risk reduction among primary school children. Am J Public Health 1997: 87: 1931–1936.

Lemyre P-N, Treasure DC, Roberts GC. Influence of variability in motivation and affect on elite athlete burnout susceptibility. J Sport Exerc Psychol 2006: 28: 32–48.

Leviton I, Valdiserri RO, Lylte L, Callahan CM, Kingsley LA, Huggins J, Rinaldo CR. Preventing HIV infection in gay and bisexual men: experimental evaluation of attitude change from two risk reduction interventions. AIDS Educ Prevention 1990: 2: 95–108.

Lindegger G, Wood G. The AIDS crisis: review of psychological issues and implications with special reference to South African situation. S Afr J Psychol 1995: 25: 1–11.

Lloyd J, Fox KR. Achievement goals and motivation to exercise in adolescent girls: a preliminary intervention study. Br J Phys Educ 1992: 11: 12–16.

Lugoe W. Prediction of Tanzanian student's HIV risk and preventive behaviours. Norway: Department of psychosocial Science and Research Center for Health Promotion, Faculty of Psychology, University of Bergen, 1996.

Lugoe W, Klepp KI, Skutle A. Sexual debut and predictors of condom use among secondary school students in

Arusha, Tanzania. AIDS Care 1996: 8: 443–452.
Lugoe W, Rise J. Predicting HIV preventive behaviours among Tanzanian students using the theory of planned behaviour: the moderating effect of direct experience. Norway: Department of Psychosocial Science, Faculty of psychology, University of Bergen, 1996.
Meekers D. Sexual initiation and premarital childbearing in sub-Saharan Africa. Pop Studies 1994: 48: 47–64.
Mgalla Z, Schapink D, Boerma J. Protecting school girls against sexual exploitation: a guardian program in Mwanza, Tanzania. Reprod Health Mat 1998: 6: 19–30.
Miller W. Motivation for treatment. A review with special emphasis on alcoholism. Psychol Bull 1985: 98: 84–107.
Miller W. Increasing motivation for change. In: Hester RK, Miller WR, eds. Handbook of alcoholism treatment approaches: effective alternatives. New York: Pergamon, 1989: 67–80.
Miller BW, Roberts GC, Ommundsen Y. The relationship of perceived motivational climate to moral functioning, moral atmosphere perceptions, and the legitimacy of intentionally injurious acts among competitive youth football players. Psychol Sport Exerc 2005: 6: 461–477.
Miller W, Rollnick S. Motivational interviewing: preparing people to change addictive behaviors. New York: Guilford, 1991.
Ministry of Education and culture & Ministry of Science Technology and Higher Education. The Tanzania education system for the 21st century. Report from the Task force. Leeds, UK: University of Leeds Media Service, 1993.
Ministry of Health. National policy on HIV/AIDS/STD. Dar es salaam, Tanzania: Ministry of Health, National AIDS control programme, United Republic of Tanzania, 1995.
National AIDS Control Programme (NACP). Medium term plan. Dar es Salaam, Tanzania: National AIDS Control Programme, 1998.
National AIDS Control Programme (NACP), Bureau of Statistics, & MEASURE Project. AIDS in Africa during nineties: Tanzania youth report. University of North Carolina at Chapel Hill. Chapel Hill, NC, 2004.
Ndeki SS, Klepp KI, Seha AM, Leshabari MT Exposure to HIV/AIDS information, AIDS knowledge, perceived risk and attitudes toward people with AIDS among primary children in Northen Tanzania. AIDS Care 1994: 6: 183–191.
Norris AE, Ford K. AIDS risk behaviors of minority youth living in Detroit. Am J Prevent Med 1991: 7: 416–421.
Rigby K, Dietz B, Sturgess S. The theory of reasoned action as applied to AIDS prevention for Australian ethnic groups. In: Terry DJ, Gallois C, McCamish M, eds. The theory of reasoned action: its application to AIDS-preventive behavior, 1st edn. Oxford: Pergamon Press Ltd, 1993: 93–117.
Roberts GC. Achievement motivation in children's sport. In: Nicholls JG, ed. Advances in motivation and achievement. Development of achievement motivation, Vol. 3. Greenwich, CT: JAI Press, 1984: 251–281.
Roberts GC. Understanding the dynamics of motivation in physical activity. The influence of achievement goals on motivational processes. In: Roberts GC, ed. Advances in motivation in sport and exercise. Champaign, IL: Human Kinetics, 2001: 1–50.
Roberts GC, Treasure D, Conroy DE. Understanding the dynamics of motivationa in sport and physical activity: an achievement goal interpretation. In: Tenenbaum G, Eklund R, eds. Handbook of sport psychology. New Jersey: John Wiley & Sons Inc., 2007: 3–30.
Rotheram-Borus M, Koopman C, Haignere C, Davies M Reducing HIV sexual risk behaviors among runaway adolescents. J Am Med Assoc 1991: 266: 1237–1241.
Sangiwa GM, van der Straten A, Grinstead OA. Clients' perspective of the role of voluntary counselling and testing in HIV/AIDS prevention and care in dar es Salaam, Tanzania: the voluntary counselling and testing efficacy study. AIDS Behav 2000: 4: 35–48.
Schueller J, La Vake S, Lugoe W, Chuma M, Mango F, Humplick B. Summary review:YouthNet program assessment conducted for Tanzania. YouthNet, Partners in Reproductive health and HIV prevention, 2003.
Sengendo A, Nambi A. Psychological effect of orphanhood. A study of orphans in Rakai district. Health Trans Rev 1997: 7(suppl.): 105–124.
Sheeran P, Abraham SC, Abrams C, Spears R, Marks D. The post-AIDS structure of student's attitudes to condoms: age, sex, and experience of use. Psychol Rep 1990: 66: 614.
Siedentop D. Sport education. Teaching Secondary Physical Education 1996: 3: 8–9.
Stover J. Projecting the demographic consequences of adult HIV prevalence trends: the spectrum projection package. Sex Transm Infect 2004: 80: 14–18.
Tabachnick B, Fidell L. Using multivariate statistics, 4th edn. Boston: Allyn and Bacon, 2001.
Tanzania Commission for AIDS [TACAIDS] Tanzania HIV/AIDS indicator survey (2003–4). Dar es Sallaam, Tanzania: TACAIDS, 2005.
Terry DJ, Gallois C, McCamish M. The theory of reasoned action. Its application to AIDS preventive behavior. Oxford: Oxford, Pergamon Press Ltd., 1993.
Treasure DC, Roberts GC. Application of achievement goal theory to physical education: implication for enhancing motivation. Quest 1995: 47: 475–489.
Treasure DC, Roberts GC. Student's perception of motivational climate, achievement beliefs and satisfaction in physical education. Res Quart Exerc Sport 2001: 72: 165–175.
UNAIDS 2004. Report on the global AIDS epidemic. Geneva, Switzerland, Joint United Nations Programme on HIV/AIDS (UNAIDS). 2004.
UNAIDS. UNGASS indicators country report 2003–2005. United republic of Tanzania. Geneva: UNAIDS, 2005.
UNAIDS. 2006 report on the global AIDS epidemic. Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS (UNAIDS), 2006.
UNAIDS & WHO. Tanzania: Epidemiological fact sheets on HIV/AIDS and sexually transmitted infections. Switzerland: Working group on Global HIV/AIDS and STI Surveillance, 2000.
UNGAOR. Sport as a means to promote education, health, development and peace. General Assembly Resolution. 58/5, United Nations, Dic.A/58/l.2/add./, 2003.
UNICEF. Girls, HIV/AIDS and education. New York: United Nation's Children Fund (UNICEF), 2004.
United Nations. UN inter-agency task force report on sport for development and peace: towards achieving the millenium development goals. Geneva: United Nations, 2003.
Wilson D, Zenda A, McMaster J, Lavelle S. Factors predicting Zimbabwean students' intention to use condoms. Psychol Health 1992: 7: 99–114.
World Bank. Tanzania: AIDS assessment and planning study. Washington: World Bank, 1992.
World Health Organization (WHO). Guide to planning health promotion for AIDS prevention and control. (Rep. No. 5). Geneva: WHO AIDS series, 1989.

**Paper 3** **Combating HIV/AIDS in Sub-Saharan Africa: Effect of introducing a mastery motivational climate in a community based sport program.**

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# Combating HIV/AIDS in Sub-Saharan Africa: Effect of introducing a mastery motivational climate in a community based sport programme

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**Combating HIV/AIDS in Sub-Saharan Africa: Effect of Introducing a Mastery Motivational Climate in a Community based Sport Programme.**

Abstract

The study investigated whether mastery motivational strategies could enhance the effectiveness of life-skill interventions for HIV education through sport. A quasi field experimental study was conducted in Tanzania with at-risk children (N=564) randomly grouped into two intervention groups and one control group. The intervention groups received AIDS education using trained peer coaches in football, with one group using mastery strategies. Children in the intervention groups all reported significantly greater HIV knowledge, and positive attitudes and safe-sex behavioural intentions. The mastery motivational strategies reliably enhanced risk reduction for some of the variables. Canonical correlation analysis revealed meaningful relationships of mastery strategies with the variables. The life-skill intervention through sport for HIV risk reduction was effective, and mastery motivational strategies enhanced that effectiveness.

Key words: mastery motivational climate, HIV/AIDS education, community sport programs, Tanzania, sport psychology

**Combating HIV/AIDS in Sub-Saharan Africa: Effect of introducing a mastery motivational climate in a community based sport programme.**

In Tanzania, HIV/AIDS has caused serious social problems, and the prevalence of HIV/AIDS among sexually active youth aged 15-25 is exceptionally high (9%). Given the epidemiological, socio-economic, and cultural context of the AIDS epidemic in Tanzania, choosing appropriate and effective pedagogical strategies is a critical issue when encouraging young people to engage in safer sexual behaviour. Effective educational strategies which modify or eliminate risk behaviour continue to be the primary intervention strategy available to prevent the spread of HIV. Thus, the context of choice to deliver the educational programmes for young people in Tanzania has been the primary and secondary school system. However, because parents have to pay for secondary education, many parents cannot afford the school fees. In addition, one in every seven children is an orphan, many orphaned by AIDS (UNICEF, 2004). Thus, these and many other children are left out of the educational school system and therefore not subject to the educational programmes that deliver HIV/AIDS information (Klepp, Ndeki, Leshabari, Hannan, & Lymo, 1997; Ministry of Education and Culture (MoEC) & Ministry of Science Technology and Higher Education (MSTHE), 1993; Mnyika, Kvåle, & Kleep, 1995; National AIDS Control Programme (NACP), Bureau of Statistics, & MEASURE project, 2004; Obasi, Balira, Todd, Ross, Changulacha, & Mosha, 2001; Shao, Brubaker,Levin, Kibauri, Massesa, Siso, 1994; UNAIDS, 2006). Because of the current orphanage crisis and the fact that many children are outside of the school system in Tanzania, there is a great need for community based programmes that are supportive of young adolescents for successful HIV prevention. In addition, when family support is not available, peer support becomes very important. Studies show that peer relationships can contribute to safer sex behaviours (Gallois & McCamish, 1989; Kelly, St Lawrence, & Brasfield, 1991), and the importance of peer support has been documented by various studies dealing with

adolescent behaviors (Valdiserri, Lyter, Leviton, Callahan, Kingsley,& Rinaldo,1988; Walter, Cohall, Gladis, Ragin, Kasen, Vaughan, 1992). The absence of peer support has been linked with unsafe sexual behaviour (McKusick, Coates, Morin, Pollack, & Hoff, 1990). Thus, linking peer support to behaviour change suggests that peer-based interventions may be successful in HIV prevention among at-risk youths.

Sport programmes are part of community based programmes that involve peers that might be effective in HIV prevention among at-risk youths. The United Nations has suggested that community based sport programmes should play a major role in HIV prevention among young people (UNGAOR, 2003; United Nations, 2003). One recent study has demonstrated that using peers in a sport context was effective for AIDS education (Maro, Roberts, & Sorensen, in press). Thus, using the sport context may be one promising avenue to focus research effort for effective interventions for at-risk youths. But in Tanzania, this is not as easy as it appears. While in the developed countries millions of children participate in organized sport programs every year (Weinberg & Gould, 2003), community organized sport and physical activity programs in Tanzania are not widely available, and youths are less active than recommended (Mbalilaki, 1997). In general in Tanzania, there is a lack of organized community based programmes for young people (Maro, 2001; MoEC, 1995).

However, there is one ongoing community based sport programme (EMIMA) in Dar es Salaam developed for the specific purpose of delivering HIV/AIDS information and education about safe sex practices to at-risk youths (http://www.emima.org). The programme is based in the slum communities of Vingunguti, Mtoni, and Buguruni in Dar es Salaam in Tanzania. Children in these communities have the opportunity to participate in AIDS education through physical activity of moderate to high intensity five days a week through the EMIMA programme. One of the unique approaches used by the EMIMA program is the use of trained peer coaches as facilitators and educators for HIV prevention among young people. Thus, the programme builds a community

capacity to deliver HIV/AIDS education within sport activities by training peer coaches to be the delivery mechanism. The training of the peer coaches in football skills and strategies and in how to conduct HIV/AIDS prevention sessions is facilitated by trained football coaches and the staffs of the EMIMA programme. The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed in how to coach football skills practice sessions that contain life skills messages. For HIV/AIDS prevention, the training of peer coaches is conducted by EMIMA qualified staff according to the guidelines and manuals of the "Kicking AIDS Out" network (http://www.kickingaidsout.net).

In a recent study (Maro et al., in press), evidence was presented to demonstrate that the EMIMA peer coach programme was effective in delivering HIV/AIDS education and safe sex practices to the at-risk children in the study. Indeed, the study demonstrated that the EMIMA community based programme was more effective than the traditional HIV/AIDS educational programme delivered through the national school system. The purpose of the present study was to investigate whether we could enhance the effectiveness of the EMIMA programme through using specific motivational strategies. There is evidence that motivational enhancement approaches improve behavioural skills-based interventions and make individuals commit more to behaviour change (Carey & Lewis, 1999; Fisher & Fisher, 1992; Miller, 1989). We hypothesized that the motivational procedures would augment the regular skill-based interventions currently used by EMIMA through sport (Beatty, Wheeler, & Gaiter, 2004; Carey & Lewis 1999) and enhance risk reduction among youths (Miller & Rollnick, 1991).

The motivation strategies that were implemented emanated from Achievement Goal Theory (AGT) within the social cognitive approach that has dominated research on motivation in sport over the past 30 years (e.g., Duda, 2001; Roberts, 2001; Roberts, Treasure, & Conroy, 2007). In this perspective, the individual becomes motivated or demotivated through assessment of his or her competencies within the achievement context and the meaning of the context to the person. One

important avenue of research within achievement goal theory is that which has demonstrated that the structure of the environment (referred to as the motivational climate [Ames, 1992]) can make it more or less likely for achievement behaviours to be enhanced (Biddle, 2001; Duda, 2001; Treasure, 2001).

Based on the work of Ames (e.g., Ames, 1992), two motivational climates have been identified. A ***mastery*** motivational climate is perceived when the context is characterized by learning and mastery, trying hard to do one's best, focusing on self improvement and personal progress. This is perceived when the coach uses private evaluation, rewards effort rather than outcomes, choice is allowed, and mistakes are considered as a part of learning. On the other hand, a ***performance*** motivational climate is perceived when the context is characterized by being superior to others, and winning. This is perceived when the coach encourages inter-individual comparison, emphasizes "winning" and achieving outcomes, publicly recognizes the demonstration of ability, and punishes mistakes. By being a mastery or performance oriented coach, the coach plays a major role in influencing motivation in sport. There is now considerable evidence that when a coach is performance oriented, this is more likely to lead to maladaptive achievement behaviour, especially when participants perceive competence to be low, are concerned with failure, or invested in protecting self-worth. More importantly, motivation ebbs, task investment is low, persistence is low, performance suffers, satisfaction and enjoyment are lower, and participants feel more negatively about themselves and the achievement context. In contrast, when coaches are mastery oriented, this is more likely to lead to adaptive achievement behaviours, and motivation is optimized. Participants are invested in the task, persist longer, performance is higher, satisfaction and enjoyment are higher, and participants feel more positively about themselves and the task (e.g., Goudas, Biddle, Fox, & Underwood, 1995; Lloyd & Fox, 1992; Ntoumanis & Biddle, 1999; Ommundsen, Roberts, Lemyre & Miller, 2005; Roberts et al., 2007; Treasure & Roberts, 1995; 2001).

In order to ensure that mastery criteria are perceived in the context, Epstein (1989) developed the TARGET taxonomy summarizing the structures that have been found to influence individual motivation. The acronym TARGET represents features of the motivational climate related to Tasks, Authority, Recognition, Grouping, Evaluation and Time. These situational structures are assumed to be interdependent, and thus modifying one facet of the environment (e.g., how players are evaluated) has implications for the other aspects of the motivational climate (e.g., how outcomes are recognized). Thus, the TARGET features can be used to formulate coaching strategies to foster a mastery climate in the sport context (Ames, 1992). By using the strategies, we foster a mastery climate in training and practice sessions. The perception of the motivational climate affects the achievement patterns of the individuals through their views of what goals are reinforced in that setting (Treasure, 1997). It is reasonable to expect different cultures to define achievement differently (Ames, 1984; Maehr & Nicholls, 1980). Thus, within the present study, we wished to determine whether the fostering of a mastery motivational climate would enhance the HIV/AIDS education programme delivered through the EMIMA programme.

In this study, we were dealing with behaviours associated with safe sex and attitudes, beliefs and knowledges about sexual behaviour. There is evidence that a mastery motivational climate can positively affect moral functioning. For example, studies have demonstrated that a mastery motivational climate has reduced cheating in sport (e.g., Kavussanu, Roberts, & Ntoumanis, 2002) and fostered sportspersonship (e.g. Miller, Roberts, & Ommundsen (2003). We hypothesized that a community sports program for HIV/AIDS intervention such as EMIMA may be enhanced by introducing mastery motivational climate strategies into the sport skills and the life-skills education.

Therefore, the purpose of this research was to determine the effectiveness of mastery motivational strategies introduced into an ongoing HIV risk reduction intervention program through the EMIMA organization in Dar es Salaam. We included three groups to investigate our hypotheses. We had a regular EMIMA group of children, and a control group of children who did

not experience the EMIMA program. We then included a specially trained group of peer coaches into a third group, and this is the EMIMA group of coaches that received the instructional strategies to enhance mastery motivation. We predicted that the two EMIMA program groups would score more positively on the scales we used when compared to the control group, and we further hypothesised that the EMIMA group that had had the mastery motivation instructional strategies would score more positively on the scales than the regular EMIMA group.

## Method

### Participants

Three poor communities of Buguruni**,** Vingunguti, and Mtoni in Dar es Salaam, Tanzania were involved in the study. These are the communities where EMIMA programs are active. Compared with other communities in Dar es Salaam, these communities by all standards are the poorest. Social and health problems such as HIV and STDs are very common and the number of orphans is very high (NACP, 1997). Many of the children in these communities are less likely to attend school (UNICEF, 2004). Some households are headed by a single parent, most often women, and sometimes even a child.

The EMIMA participants were children in these communities and were recruited into the EMIMA programmes by trained peer coaches (for details on the training of the peer coaches, see below). For this study, one hundred peer coaches (75 boys, 25 girls) from the EMIMA program were recruited and randomly divided into two groups. The first group of 50 peer coaches was termed “regular.” The second group of 50 peer coaches was termed “mastery”. Both groups recruited participants within the community to participate in a football programme. This is how young adolescents have been recruited into the normal EMIMA programme since 2001, the year the programme was initiated. The 50 regular peer coaches recruited 252 children and these were formed into 18 teams. The 50 mastery peer coaches recruited 228 children and formed 19 teams.

However, the mastery peer coaches implemented the additional motivational enhancement strategies (see below). Each team had at least two peer coaches.

For the control group, 220 out-of school street children who were not in the EMIMA programme were recruited from the same communities by the researchers for the study. The mean age of all of the participants was 13.7 years (SD=1.07; range 12-15). The mean level of education was 5.1 years (SD=1.38); (mastery 5.5; regular 5.4; and out of school children had the lowest level, 4.3 years).

Recruitment and Procedures

Through the EMIMA centres and the heads of street children organizations/drop-in centres, participants were informed and recruited to take part in the research study. To be eligible, children who were to participate in the EMIMA programme had to voluntarily join one of the teams under a peer coach who had already been recruited and trained (boy peer coaches recruited boys, girls peer coaches recruited girls). After the peer coach(s) had reached 15 children, the roll was closed, and children were requested to join the next peer coach. These children then became a team and participated in the football training programme provided by EMIMA. When each peer coach(s) had enrolled the team, we had two intervention conditions: the regular EMIMA intervention through sport ("regular"), and a motivationally enhanced intervention with mastery criteria specifically built in to the program ("mastery").

The children of the control group were the most difficult to obtain and were recruited in the following way: We set up informal soccer games in and around the popular garbage collection points/places locally known as "dampo." The street children and orphans usually gather in these places to collect dumped materials such as plastic bottles and other things to sell. Football is a popular game in Africa, and after the games we talked to the children and recruited them to participate in the study. Therefore, some children were recruited from the streets and nearby

garbage collection points, and some children were recruited with the help of orphan and street children institutions.

The normal ethical procedures for the two universities associated with this research were adhered to, and in addition, we obtained permission from the Tanzania Commission for Science and Technology. EMIMA and the orphan and street children institutions were sent a letter requesting permission to recruit children for the study. After permission was granted, where possible, we obtained permission from their parents/guardians. However, consent for most of the out-of-school group was obtained from the leaders of the orphan institutions. The participants were informed about the objectives of the study and their freedom to choose to participate or to not participate in the study. Children were excluded if they had participated in AIDS intervention through sport before in any EMIMA programme, had received the school based HIV/AIDS education, or if afflicted with reading and/or writing problems. Children had to agree voluntarily to participate, and responded to the appropriate questionnaires in group settings. The questionnaire was given before and after the eight-week intervention.

## Research Design

This study had three groups of children involved in a quasi field experimental study. We had two treatment groups within the EMIMA programme (received AIDS education using trained peer coaches in football) and a control group (children who were not in school who had received no AIDS education at a formal level).

### *Training of Peer coaches for the EMIMA programme.*

Peer coaches are children who typically have been previous participants within the EMIMA programme. Peer coaches are usually somewhat older than the participants (mean age 16.5 years) and are given some prestige by the EMIMA programme, which supplies them with attractive bright red football shirts (donated by the Lyn Football club in Norway).

To be able to conduct effective skill training sessions in their communities, peer coaches were trained before this investigation. Since 2003, a professional football club in Norway (see http://www.lynfootbal.no) has contributed to the soccer skill training for the peer coaches. Every year, Lyn Football Club sends over coaches who give training sessions in football skills to the EMIMA staff and the peer coaches. For HIV/AIDS prevention, the training of peer coaches was conducted by EMIMA qualified staff according to the guidelines and manuals of the "Kicking AIDS Out" network (http://www.kickingaidsout.net). The training is comprised of seminars and activities, and peer coaches qualify to become peer coach level one. The peer coaches in this study were fully trained Kicking AIDS Out peer coaches at level one. Therefore, we had 100 peer coaches who were trained in using the sport context to foster life skills related to AIDS prevention. The life skills are incorporated into the practice activities of the participants, and the peer coaches are instructed in how to coach football skills practice sessions that contain life skills messages.

*Additional training of Mastery peer coaches.*

The peer coaches in the mastery motivation intervention received two weeks additional training in mastery enhancement techniques (Treasure & Roberts, 2001) to be applied to both the football training and the life-skill messages. We followed the guidelines based on the TARGET principles (Epstein, 1988; 1989) to guide motivational enhancement components of the intervention (Ames, 1992; Goudas et al., 1995; Lloyd & Fox, 1992; Treasure & Roberts, 1995). These strategies are considered important, because they provide a comprehensive framework for peer coaches to prescribe a wide range of motivational principles and instructional techniques that are consistent with a mastery climate. During the AIDS education intervention sessions in EMIMA, and based on previous interventions both in academic (e.g., Ames & Maehr, 1989) and sport settings (e.g., Treasure, 1997), strategies consistent with promoting a mastery motivational climate were implemented. The two weeks additional training for the peer coaches in the mastery

group involved operationalizing the TARGET strategies and teaching implementation of the strategies in practice sessions. Thus, these peer coaches were introduced to coaching and instructional strategies that increase mastery engagement in football and AIDS education activities.

The Intervention

Peer coaches conducted the intervention activities (i.e., AIDS education through sport sessions) over an eight-week period. This is the regular procedure. Inter-club matches are arranged and played during the practice sessions. It was possible to arrange short competitions, with seven or five per side after the soccer training and AIDS life skills learning, making it more fun and exciting. Children were encouraged to join and form the teams with friends in order to maximize the positive social influence and foster social support in using peer norms to promote risk reduction. In order to assist the peer coaches in the intervention activities, it was usual for members of the EMIMA staff to visit some training sessions, and after the training session the peer coaches were given the opportunity to talk with the staff about the intervention activities. A program of seminars, meetings, and regular communication were enacted to assist the peer coaches in their tasks. In addition, seminars and meetings were organized by the first author to meet with the peer coaches who were assigned to the mastery groups to facilitate the mastery strategies of the training sessions.

Assessment

*Pre-assessment*. Before any intervention, all children in the treatment and control groups completed the questionnaires (termed Time 1 assessment). Each participant was given a numeric code to maintain confidentiality. The code allowed participants to be linked to their data in each assessment.

*Post-assessment*. The first author visited the EMIMA centres and orphan and street children institutions before the scheduled data collection appointment to remind them of the

second round of assessment. The second assessment (Time 2 assessment) took place after the eighth week of the EMIMA intervention sessions. All responses were anonymous and only the principal investigator knew the code in order to match pre-and post-treatment questionnaires. Letters of appreciation were sent to the centres and institutions thanking them for participating in the research study. Participants were given one packet of biscuits, a pencil, and a bottle of water and thanked for the assessment they completed. Following the study, children in the control group (the children in the orphan institutions) were invited to attend "Kicking AIDS Out" sessions that educate children about AIDS through sport at their nearby EMIMA centre. After the intervention, for convenience, children who had completed both assessments were randomly selected from their groups so that we had 200 in the mastery and regular groups. However, the out-of-school street children group was difficult to follow up and we were only able to find 164 who completed both assessments. Therefore, we had 564 children in the sample. There were 456 boys and 108 girls.

Measures

For the present paper, participants completed questionnaires that investigated the motivational climate, and outcome variables that included knowledge about HIV, and condom experience, behavioural intentions, perceived behavioural control, attitudes to condom use, and having an exclusive sexual partner, subjective normative beliefs about condom use, abstinence, and having an exclusive sexual partner. In addition, we asked selected demographic characteristics including age, gender, and education level.

*Reliability and validity.* The instruments originally written in English were translated and back translated from English to Kiswahili (national language in Tanzania) by experts in both languages before being used in the field. The final translated version was submitted for peer review to EMIMA staff members and colleagues at the University of Dar es Salaam for content and face validity before being used for this study. The items included in the present study also had been used

or tested in other settings both in East and Southern Africa in relation to HIV/AIDS research in schools (e.g., Lugoe, 1996; Wilson, Zenda, McMaster, & Lavelle, 1992). Because many of the scales were adapted to the sport context and were translated into Kiswahili, we conducted exploratory factor analyses on each scale to determine whether the items contributed to the factors they were intended to represent. The factor analyses showed that most items loaded on the construct they were supposed to represent. If an item cross-loaded on two factors, that item was eliminated. Further, an item discrimination procedure was used, and if any item improved the alpha coefficient of the scale when it was eliminated, then that item was not used in the main analyses. When we followed these procedures, all scales were included as they all had adequate internal reliabilities ($\alpha >$ 0.70, Tabachnick & Fidell, 2001).

*Perceived motivational climate*. The motivational climate was measured by the modified version of the Motivational Climate in Sport Questionnaire PMCSQ (Seifriz, Duda, & Chi, 1992). There were two assessments, one in the fourth and one in the eighth week (at the end of the intervention). The version of the PMCSQ we used consisted of two scales referring to a mastery and a performance-oriented motivational climate. The mastery-oriented motivational climate scale consisted of 10 items that placed emphasis on children's task involvement (e.g., "trying hard is rewarded"). The performance-oriented scale consisted of 11 items emphasizing social comparison (e.g., "only the best players receive compliments and praise"). The stem for each item was: "On my team." All the responses were indicated on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Only the two intervention groups were given this questionnaire. The principal components analysis revealed the presence of five components with eigenvalues exceeding 1. An inspection of the screeplot revealed a clear break after the second component. We decided to retain two components for further investigation using Catell's (Catell, 1966) scree test. A varimax rotation was performed and yielded two component solutions explaining a total of 30.20% of the variance. The interpretation of the two components was consistent with previous research on

the PMCSQ scale (e.g., Miller, Roberts, & Ommundsen, 2003; Roberts & Ommundsen, 1996; Seifriz et al., 1992), with mastery items loading strongly on the first component and performance items loading strongly on the second component. No items were excluded. Cronbach's alpha coefficients were 0.79 and 0.73 for mastery and performance climates respectively.

*HIV-Knowledge questionnaire*. (HIV-K-Q).This was a modified version of the HIV knowledge questionnaire (Carey, Morrison-Beedy, & Johnson, 1997) and was used to assess the knowledge related to HIV transmission and prevention. An example of an item is: "Can a healthy looking person have HIV?" As in previous studies (e.g., Carey et al., 1997), factor analysis indicated that the scale contained a single factor and was internally reliable with a Cronbach alpha coefficient of .87.

*Intention to use condoms.* The participants responded to one item assessing behavioural intention to engage in safe sexual behaviour (Rigby, Dietz, & Sturgess, 1993). The participants responded to a statement: "I intend to use a condom at the first/next sexual intercourse." A five point Likert- scale, ranging from 1 (very uncertain) to 5 (very certain), was used.

*Attitude toward an exclusive sexual partner*. To measure attitude, participants were asked to rate their attitudes towards having an exclusive sexual relationships on a 5-point Likert scale ranging from 1 strongly disagree to 5 strongly agree. Four items based on previous studies (e.g., Ajzen & Fishbein, 1980; Rigby et al., 1993) were used for this measure. An example of an item is: "Sticking to one sexual partner for life is very difficult." Negative items were reverse scored. Attitude toward an exclusive sexual partner for this sample achieved an adequate level of internal reliability ($\alpha$ =.70).

*Attitude toward condom use*. Based on previous studies (Bernard, Hebert, de Man, & Farrar, 1989; Rigby et al., 1993; Sheeran, Abraham, Abrams, Spears, & Marks, 1990), five items scored on a five-point scale from strongly agree =5 to strongly disagree =1 were used to assess attitude toward condom use. An example of an item is: "condoms are inconvenient to use." The negatively

attitudinal items were reversed scored before all items were summed for an overall measure where higher mean scores represented a more positive attitude toward condom use. The exploratory factor analysis revealed that all items contributed to the final score, and the scale had an acceptable internal consistency coefficient (α=.70).

*Direct experience with condoms.* A six-item scale was used to determine whether the participant had direct experiences with condom use (Fishbein & Ajzen, 1975). An example of an item is: "I used a condom during the last sexual intercourse." A five-point Likert scale ranging from 1 (never) to 5 (always) was used. Direct experience with condom use scale was reliable (α =.81).

*Subjective normative belief about condom use, abstinence, and exclusive sexual partner***.** Respondents were asked how likely they thought the named significant others were in favour of them using a condom during their first/next sexual intercourse (e.g., Ajzen & Fishbein, 1980; Rigby et al., 1993). An example of an item is: "My fellow players would approve of my using a condom at the first/next sexual intercourse." Similar questions were asked for abstinence and for having an exclusive sexual partner with the appropriate wording. The significant others were fellow players, peer coaches, my best friends, and present partner (if any). Responses were scored on a five-point scale from very likely =5 to very unlikely =1. The internal reliability coefficients of the scales were satisfactory, α=.89, .90, and .90, for condom use, abstinence, and having an exclusive partner scales respectively.

*Perceived behaviour control for condom use*. We used a questionnaire based on the methodology described by Fishbein and Middlestadt (1989). Ten items indicating different situations were used. An example of an item is: "How certain are you that you will use a condom at the next sexual intercourse?" The responses ranged from very uncertain =1 to very certain =5. The questionnaire has demonstrated good reliability (Terry, Gallois, & McCamish, 1993). The exploratory factor analysis revealed that all items contributed to the final score, and the scale had an acceptable internal reliability coefficient (α=.85).

*Statistical Procedures*

Initially, we used a repeated measures multivariate analysis of variance (MANOVA) procedure to determine whether differences occurred over the course of the intervention. The three groups were the independent variables factor, and Time 1 and Time 2 assessments were the repeated measures factor. The mean factor scores for the scales were the dependent variables. Thus, we had 2x3 design. However, the findings showed that we had two main effects. The examination of the simple main effects (Tukey post-hoc tests) revealed that the groups were reliably different at Time 1. Therefore, we decided to use the normalized residual gain scores which control for the differences at Time 1 (e.g., Silverman, 1990). We then conducted a MANOVA procedure using the normalized residual gain scores, followed up with analysis of variance (ANOVA) procedures on each dependent variable as part of the post hoc evaluation (Table 1).

## Results

First, we wished to determine whether the additional mastery motivational procedures were effective in enhancing mastery criteria for the mastery group. Therefore, we used the PMCSQ (Seifriz et al, 1992) with the participants to determine whether the participants were aware of the mastery strategies. An independent samples t-test was conducted to compare motivational climate (mastery and performance) scores for the two EMIMA groups. Results of the t-test indicate that there was a significant difference in the mastery and performance climate scores [$t(398)=16.33$, $p<.001$] and [$t(398)=-9.45$, $p<.001$] for the mastery and regular groups respectively. The participants in the mastery group perceived a reliably higher mastery climate ($M=4.2$, $SD=.41$) than the regular EMIMA group ($M=3.5$, $SD=.45$). This supported the mastery manipulation in the present study. Interestingly, the participants in the regular groups had a reliably higher perception of a performance climate ($M= 4.0$, $SD= .50$) than the mastery group ($M=3.5$ $SD=.59$). This suggests that the normal procedures for the EMIMA programme have the effect of enhancing the competitive

aspect of the football training. However, for our purposes, the motivational strategies that were implemented with the peer coaches were successful in creating a mastery climate in the mastery group. The magnitude of the differences in the means of the mastery and performance climates were ($\eta^2$ = .40) and ($\eta^2$ =.18) respectively which are relatively large effect sizes.

*Differences among the groups*

To determine the effect of the mastery and regular intervention within the EMIMA programme, we conducted a repeated measures MANOVA over Time 1 and Time 2 mean factor scores. The analysis produced two overall main effects: Time1 versus Time 2; and the treatment groups. The post hoc analyses (Tukey) at Time 1 showed that the groups differed at Time 1: F(9,553),=14.34, P<0.001; Wilks' $\lambda$ =.66; partial $\eta^2$ =0.19. Therefore, we decided to use normalized residual gain scores. For each variable, the residual gain scores controlling for the differences at Time 1 was entered into the analysis (Table 1). The MANOVA revealed significant differences between the groups F(9,553)=8.96, P<0.001; Wilks' $\lambda$ =0.76; partial $\eta^2$ =0.13. As post hoc tests, we conducted one way analysis of variance (ANOVA) procedures on each dependent variable and the F values are presented in Table 1.

*HIV/AIDS Knowledge.* The ANOVA over HIV/AIDS knowledge was significant (see Table 1). When we used Tukey HSD to determine the differences, we found that the mastery and regular EMIMA intervention groups did not reliably differ from each other, but both were higher in HIV/AIDS knowledge scores than the control group.

*Direct experience with condoms.* The ANOVA over experience with condoms was significant (see Table 1). However, the Tukey HSD test revealed that the mastery and regular EMIMA intervention groups did not reliably differ from each other, but both had higher direct experiences with condoms than the out-of-school control group.

*Attitude toward an exclusive sexual partner.* The ANOVA over the attitude toward having an exclusive sexual partner was significant (see Table 1). The Tukey HSD post hoc tests indicated

that the three groups reliably differed from each other. The control group was the least likely to believe that having an exclusive sexual partner was a safe behaviour against HIV infection compared to the EMIMA intervention groups. In addition, the mastery intervention group had a more positive attitude toward having an exclusive sexual partner than the regular intervention group.

*Intention to use condoms.* When asked whether one intended to use a condom at the next/first experience with sexual intercourse, the ANOVA revealed a significant difference between the groups. The Tukey HSD tests indicated that the three groups reliably differed from each other. The control group participants had the lowest intention to use a condom and were reliably lower than the two intervention groups. In addition, the participants in the mastery intervention group had the greater intention to use a condom at the next/first sexual encounter than the other two groups.

*Subjective normative beliefs about condom use, abstinence, and exclusive sexual partner.* The ANOVAs for subjective norms about condom use, abstinence, and having an exclusive sexual partner were all significant. The Tukey HSD post hoc tests for normative beliefs about condom use and abstinence showed that the three groups were reliably different from each other. The control group was reliably lower in subjective norms about condom use and abstinence than the two intervention groups, and the mastery group was reliably higher in subjective norms about condom use and abstinence than the other two groups.

For the findings with the Tukey HSD test on subjective norms about an exclusive sexual partner, the analysis found that the two EMIMA intervention groups did not reliably differ from each other, but both were higher in subjective norms about an exclusive sexual partner than the control group.

*Attitude toward condom use.* The ANOVA over the attitude to condom use was significant, and the Tukey HSD test found that the two EMIMA intervention groups did not reliably differ from each other, but both had a more positive attitude to condom use than the control group.

As Table 1 reveals, all the residual gain means, with one exception, of the variables of interest were higher for the mastery group than the regular EMIMA group, and both EMIMA groups were higher than the control group on all variables. However, the ANOVAs revealed that the mastery group was not reliably superior on all the variables to the regular group. Investigation of the mastery manipulation analysis reveals that while the mastery group is reliably higher than the regular EMIMA group on mastery criteria, the mean difference is not great. And the mean for mastery criteria in the regular group is relatively high (M= 3.5). This probably means that many of the peer coaches in the regular EMIMA programme used mastery enhancing strategies in their coaching too. Therefore, to have a look at the relationship of mastery coaching with the variables used in the study, we decided to use a Canonical Correlational analysis.

Canonical Correlation Analysis

To investigate the relationship between perceived motivational climate and the outcome variables, we included all the children in the EMIMA program into one canonical analysis. Performance and mastery climate were the predictor variables while the outcome variables at Time 2 served as the criterion variables. Canonical loadings greater or equal to .30 are considered to be meaningful and significant (Tabachnick & Fidell, 2001). Canonical loadings for functions 1 and 2 are presented in Table 2. A multivariate relationship emerged, Wilk's $\lambda$=.91, F (18,778)=2.03, p<. 01. Subsequent canonical correlations analysis indicated that two significant solutions most effectively described and explained the relationships between the two variable sets. Function 1 (a performance climate) had a canonical correlation of .24, ($R^2$=.06) with a redundancy index of 10.5%, and function 2 (a mastery climate) had a canonical correlation of .18, ($R^2$ =.03) with a redundancy index of 18.8%. The strength of the association between the two variable sets was meaningful and significant as indicated by the redundancy index of 29 % (a redundancy index of 10% or higher is considered meaningful and significant, Tabachnick & Fidell, 2001).

Function 1 revealed a high performance climate, and this was meaningfully and negatively associated with HIV knowledge, subjective norm abstinence, attitude toward an exclusive sexual partner, and perceived behavioural control in condom use. Interestingly, most of the variables were in the negative direction, even though most were not meaningful (Table 2).

Function 2 revealed a high mastery climate, and this was meaningfully and positively associated with attitudes toward and subjective norms about having an exclusive sexual partner, subjective norms toward abstinence, and with the intention to use condoms (Table 2).

Clearly, being in a mastery climate was more positively associated to safe sex behaviours and to enhancing attitudes and norms toward safe sex practices.

## Discussion

The results of the present study indicate that the intervention was effective in creating a mastery climate in the EMIMA mastery intervention group. The perception of mastery criteria of success was higher in the mastery group, thus the goal of the intervention to create a mastery climate in the mastery group was achieved. The participants in the mastery group were aware of the mastery strategies, were more task involved in their cognition, were focused on learning and mastery, and tried hard to do their best to a greater extent than the participants in the regular or typical EMIMA group. We may safely conclude that the two weeks mastery training we gave the peer coaches in the mastery motivation group was successful. We then come to our second question, did the participants in the mastery group demonstrate greater knowledges, attitudes, and perceived behaviours relevant to HIV/AIDS and safe sex?

To determine the effectiveness of the EMIMA intervention programme, we included a control group that was primarily orphan children who were not at school and who simply roamed the streets and garbage dumps of the poorer areas of Dar es Salaam. The important findings of the present study show that the three groups were significantly different in their understanding of HIV/AIDS and the need to be proactive in preventing HIV infection.

Relative to the children in the control group, children in the EMIMA intervention groups all reported significantly greater HIV knowledge, condom experience, more positive normative beliefs in condom use, abstinence, and the use of exclusive sexual relationships to prevent HIV infection. The findings indicate that children who have been through the EMIMA program are more likely than children not in the program to demonstrate those knowledges and behaviours that reduce the risk of HIV infection. It may be argued that the program is successful for HIV prevention among at-risk youths. The use of trained peer coaches as educators within the sport environment for young adolescents is clearly an effective means to impart these knowledges and behaviours.

However, the major focus of the present investigation was to determine whether the specific motivation enhancement strategies increased the effectiveness of the EMIMA's HIV/AIDS intervention program. In the present study, we included a group that was subjected to mastery motivation strategies and a group typical of the EMIMA program as practiced "normally" since 2001. The MANOVA analysis revealed that the mastery group was superior to both the regular EMIMA programme and the control group. However, when we conducted the ANOVA post hoc tests, we found that participants in the mastery motivation group had more positive attitude and norms toward exclusive sexual relationship and toward abstinence, as well as more positive norms and behavioural intention for condom use, but we found no differences in HIV knowledge, condom attitudes, experiences, and subjective norms about the use of an exclusive sexual partner. Thus, the "bad news" is that we augmented only half of the variables we investigated in this study. However, the "good news" is that the mastery strategies enhanced attitudes and norms about abstinence, about having an exclusive sexual relationship, the intention to use condoms, and norms about the use of condoms. These attitudinal, normative, and behavioural intention variables are among the proximal determinants of youth sexual behaviours and may mediate other determinants such as social norms (e.g., Braithwaite & Thomas, 2001; DiClemente, Forrest, & Mickler, 1990; Fishbein & Ajzen,

1975; Norris & Ford, 1991). In addition, theories of behaviour change propose a close relationship between intention to change behaviour and actual behaviour change (Fisher & Fisher, 1992). Given that these young people are sexually immature, and most have yet to have their first sexual encounter, positive attitudes and norms toward abstinence and/or having exclusive sexual relationships at an early age is an effective prophylactic for HIV. Thus, the mastery motivation strategies have augmented the EMIMA regular skill based intervention programme to enhance risk reduction through the attitudinal, normative, and behavioural intention variables.

Another issue needs to be addressed too: Investigation of the mastery manipulation analysis reveals that while the mastery group is reliably higher than the regular EMIMA group on mastery criteria, the mean difference is not great. And the mean for mastery criteria in the regular group is relatively high (M= 3.5). This probably means that many of the peer coaches in the regular EMIMA programme used mastery enhancing strategies in their coaching without knowing specifically what they were. While the findings did show that the peer coaches, if they were not instructed differently, used more performance criteria of success in their coaching, they also were using mastery criteria too, albeit to a lesser extent. This may be due also to the cultural context. The cultural dynamics of Sub-Saharan Africa, with its perspective toward a more collectivist world view, may be reflected in the use of mastery criteria. But this is speculation, and we would need to investigate this more thoroughly before we could assert such.

We know from previous research that performance criteria of success are not as effective in developmental settings such as the EMIMA programme attempts to set (e.g., Biddle, 2001; Treasure, 2001). Therefore, we may conclude that the performance criteria of success emphasised by the regular group of peer coaches had the effect of reducing the impact of the mission of the EMIMA programme to develop life skills for HIV protection. Previous research has demonstrated that an emphasis on competitive activities has been related to perceptions of incompetence, lowered motivation, and negative affect (e.g., see Roberts et al., 2007) by participants in physical activity

and has received many critiques from researchers (e.g., Brown & Grineski, 1992; Coakley, 1990; 2007). Moreover, the emphasis on social comparison that competitive activities foster do not ensure equal opportunities for all children (Graham, 1992) and may hinder the learning of the life skills for AIDS prevention that is the central mission of EMIMA. However, before we become hypercritical, let us not lose sight of the fact that the EMIMA programme is highly successful in what it sets out to do (Maro et al., in press). Simply put, the programme could be even more effective if we deliberately enhanced the use of mastery criteria of success in the programme.

As stated above, the regular coaches used performance criteria of success and mastery criteria of success. This would have the consequence of masking the effect of the mastery strategies we had specifically taught the mastery coaches, at least to some extent. Therefore, to have a look at the relationship of mastery coaching with the variables used in the study, we decided to use a Canonical Correlational analysis. This means we collapsed the two EMIMA groups together, and ran the analyses. The analyses look for those relationships that account for the most variance between the predictor set of variables, in this case the motivational climate, and the criterion variables, the dependent variables we used in the present study. The findings showed that the two functions that emerged and best described the data reflected the fact that when the peer coaches used mastery strategies, the association with the HIV/AIDS variables was in a positive direction. The two functions were a clear mastery function and a clear performance function.

The canonical correlation analysis showed that children who perceived a performance climate related negatively with HIV knowledge, perceived behaviour control with condom use and with subjective norm abstinence, while reporting negative attitudes to exclusive sexual partners. Thus, participants perceiving the motivational climate as being characterised by an emphasis on winning and being superior to others had a negative association with safe sex beliefs and behaviours. In contrast, children who perceived a high mastery climate reported a positive attitude to an exclusive sexual partner, intended to use a condom, and believed in abstinence. Thus, being in

a mastery climate was more positively associated with the variables important for HIV risk reduction.

The findings of this study reveal that the regular teaching of the peer coaches in the EMIMA programme does emphasize performance criteria to some extent, but the peer coaches also use mastery strategies to some extent (evidenced by the high mean for mastery criteria). However, the real message in this investigation is that the young adolescents in the teams coached by the mastery trained peer coaches had more positive beliefs and behaviours pertinent to the prevention of HIV/AIDS. Clearly, in the future, it will prove beneficial for EMIMA staff to deliberately incorporate more mastery criteria of success into the training of peer coaches.

In general, research concerning the relationship of the perceived motivational climate to important outcome variables that determine safer sex behaviour for young people is currently at a preliminary stage. Further investigations that extend the present research and examine the relationships between the motivational climate and resulting sexual behaviours (such as actual condom use, abstinence, and having exclusive sexual partnerships) would make an important contribution to the determinants of youth behaviour. Our research has underscored the influential role that trained peer coaches may have in community based activities designed to influence youth behaviours. Further research investigating a peer coach created mastery motivation climate is required in order to acquire more understanding of the climate perspectives most beneficial for influencing youth outcome behaviours such as safer sexual behaviours.

*Limitations*

The study was conducted in the poorer semi urban communities of Dar es Salaam city. Although the findings in this study are limited to the participants of this study, we are confident that the results may be generalized to at-risk children in similar contexts in Sub-Saharan Africa. They were disadvantaged children that were living in the poorer communities of a large metropolitan city in Sub-Saharan Africa. These participants were more likely to be

orphans, or have one parent at least who is deceased, and were least likely to be attending school. These children are the ones most at risk of becoming infected with HIV/AIDS. However, we are less certain whether the findings related to children from these disadvantaged communities may be generalised to children of the same age cohort from other communities in Dar es Salaam. Factors such as access to information and other resources, educational levels of parents, and orphan status, may contribute to any differences that may occur between the participants of this study and children from other communities. Further, the condom attitudes, beliefs, and intentions observed in the present study may be unique to this sample of at-risk children and should not be generalized to other children groups who engage in at-risk behaviours.

The data for the present study were collected via self-report instruments. The sensitivity of the information sought and social cultural barriers might have led participants to under-report (or over-report) their sexual knowledge and behaviours (see Catania, Gibson, Chitwood, & Coates, 1994; Dare & Cleland, 1994). This is a recognized difficulty in studies of this type. We attempted to minimize this source of erroneous reporting by encouraging the participants to answer honestly, assuring their confidentiality by not providing names and not involving teachers or project coordinators in the data collection.

Last, because of the limitations of the design of this study, we were unable to examine the direction of causality between attitudes, norms, and beliefs towards HIV prevention (condom use, abstinence, and exclusive sexual relationship) and actual behaviour in relation to condom use, abstinence, and having an exclusive sexual relationship.

References

Ajzen, I. & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior* . Englewood Cliffs, NJ: Prentice-Hall.

Ames, C. (1984). Competitive, cooperative and individualistic goal structures: A cognitive - motivational analysis. In R.Ames & C. Ames (Eds.), *Research on motivation in education:* (pp. 177-208). New York: Academic Press.

Ames, C. & Maehr, M. (1989). [Home and school cooperation in social and motivational development]. Unpublished raw data. Project funded by U.S. office of education, office of Special Education and Rehabilitative Services, Contract No. DE-HO23T80023

Ames, C. (1992). Achievement goals, motivational climate and motivational processes. In G.C.Roberts (Ed.), *Motivation in sport and exercise* (pp. 161-176). Champaign, IL: Human Kinetics.

Beatty, L. A., Wheeler, D., & Gaiter, J. (2004). HIV prevention research for African Americans: Current and future directions. *Journal of Black Psychology, 30,* 40-58.

Bernard, J., Hebert, Y., de Man, A., & Farrar, D. (1989). Attitudes of French-Canadian students towards the use of condoms: A structural analysis. *Psychological Reports, 65,* 851-854.

Biddle, S. J. H. (2001). Enhancing Motivation in Physical Education. In G.C.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 101-127). Champaign IL: Human Kinetics.

Braithwaite, K. & Thomas, V. G. (2001). HIV/AIDS knowledge, attitudes and risk behaviours among African -American and Caribbean college women. *International journal for the advancement of counselling, 23,* 115-129.

Brown, L. & Grineski, S. (1992). Competition in physical education: An educational contradiction. *Journal of Physical Education Recreation and Dance, 63,* 17-19.

Carey, M. & Lewis, B. (1999). Motivational strategies can enhance HIV risk reduction programs. *AIDS and Behavior, 3,* 269-276.

Carey, M., Morrison-Beedy, D., & Johnson, B. (1997). The HIV-Knowledge Questionnaire: Development and evaluation of a reliable, valid, and practical self-administered Questionnaire. *AIDS and Behavior, 1,* 61-74.

Catania, J. A., Gibson, D., Chitwood, D., & Coates, T. J. (1994). Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychological Bulletin, 108,* 339-362.

Catell, R. B. (1966). The scree test for number of factors. *Multivariate Behavioral Research, 1,* 245-276.

Coakley, J. (2007). *Sport in Society: Issues and controversies*. (9th ed.) New York: McGraw Hill.

Coakley, J. (1990). *Sport in Society: Issues and controversies*. (4th. ed.) St Louis, MS: Tomes Mirror/Mosby Publishing.

Dare, O. & Cleland, J. (1994). Reliability and validity of survey data on sexual behavior. *Health transition review, 4,* 93-110

DiClemente, R., Forrest, K. A., & Mickler, S. (1990). College students' knowledge and attitudes about AIDS and changes in HIV preventive behaviors. *AIDS Education and Prevention, 2,* 201-212.

Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 129-182). Champaign IL: Human Kinetics.

Epstein, J. (1988). Effective schools or effective students? Dealing with diversity. In R.Haskins & B. MacRae (Eds.), *Policies for America's public schools* (pp.89-126). Norwood, NJ: Ablex.

Epstein, J. (1989). Family structures and student motivation: A developmental perspective. In C.Ames & R. Ames (Eds.), *Research on motivation in education.* (pp. 259-295). New York: Academic Press.

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fishbein, M. & Middlestadt, S. (1989). Using the theory of reasoned action as a framework for understanding and changing AIDS related behaviors. In V.M.Mays, G. W. Albee, & S. F. Schneider (Eds.), *Primary prevention of AIDS: Psychological approaches.* (pp. 93-110). Newbury Park, CA: Sage.

Fisher, J. & Fisher, W. (1992). Changing AIDS -risk behavior. *Psychological Bulletin, 3,* 455-474.

Gallois, C. & McCamish, M. (1989). *Assessment of AFAO national peer education programme. Australian Federation of AIDS Organizations.* Canberra.

Goudas, M., Biddle, S. J. H., Fox, K. R., & Underwood, M. (1995). It ain't what you do, it's the way that you do it! Teaching Styles affects children motivation in track and field lessons. *The Sport psychologist, 9,* 254-264.

Graham, G. (1992). *Teaching children physical education: becoming a master teacher.* Champaign, IL: Human Kinetics.

Kavussanu, M., Roberts, G., & Ntoumanis, N. (2002). Contextual influences on moral functioning of college basketball players. *The Sport Psychologist, 16,* 347-367.

Kelly, J. A., St Lawrence, J., & Brasfield, T. (1991). Predictors of vulnerability to AIDS risk relapse. *Journal of Consulting and Clinical Psychology, 59,* 163-166.

Klepp, K. I., Ndeki, S. S., Leshabari, M. T., Hannan, P. J., & Lymo, B. A. (1997). AIDS education in Tanzania: Promoting risk reduction among primary school children. *American Journal of Public Health, 87,* 1931-1936.

Lloyd, J. & Fox, K. R. (1992). Achievement goals and motivation to exercise in adolescent girls: a preliminary intervention study. *British Journal of Physical Education, 11,* 12-16.

Lugoe, W. (1996). *Prediction of Tanzanian Student's HIV risk and Preventive behaviours.* Unpublished Doctoral Thesis, Department of Psychosocial Science and Research Center for Health Promotion, Faculty of Psychology, University of Bergen, Norway.

Maehr, M. L. & Nicholls, J. G. (1980). Culture and achievement motivation : A second look. In N.Warren (Ed.), *Studies in cross cultural psychology* (pp. 221-267). New York: Academic Press.

Maro, C. N. (2001). *Gender differences on cognitive, motivational and behavioral responses in PE within Tanzanian context. An achievement goal approach.* Unpublished Masters Thesis, Norwegian University of Sport Sciences, Oslo.

Maro, C. N., Roberts, G., & Sorensen, M. (in press). Using sport to promote AIDS education for at-risk youths: An intervention using peer coaches in football. *Scandinavian Journal of Medicine and Science in Sports*.

Mbalilaki, J. (1997). *Coronary heart disease risk factors and level of physical activity in Rural and urban populations in Tanzania.* Unpublished master thesis, Norwegian University of Sport Sciences, Oslo ..

McKusick, L., Coates, T. J., Morin, S., Pollack, L., & Hoff, C. (1990). Longitudinal predictors of reduction in unprotected anal intercourse among gay men in San Fransisco: The AIDS behaviour research project. *American Journal of Public Health, 80,* 978-983.

Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2003). Effect of motivational climate on sportspersonship among competitive youth male and female football players. *Scandinavian Journal of Medicine and Science in Sports, 13,* 1-14.

Miller, W. (1989). Increasing motivation for change. In R.K.Hester & W. R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives.* (pp. 67-80). New York: Pergamon.

Miller, W. & Rollnick, S. (1991). *Motivational interviewing : Preparing people to change addictive behaviors*. New York: Guilford.

Ministry of Education and culture (MoEC) & Ministry of Science Technology and Higher Education (MSTHE) (1993). *The Tanzania Education System for the 21st century. Report from the Task force.* Leeds, England: University of Leeds Media Service.

Mnyika, K., Kvåle, G., & Kleep, K. (1995). Perceived function and barriers to condom use in Arusha and Kilimanjaro regions of Tanzania. *AIDS Care, 7,* 295-305.

Ministry of Education and Culture (MoEC). (1995). National Sport Policy, Ministry of Education and Culture, Dar es salaam, Tanzania, Tanzania Publishing house.

National AIDS Control Programme (NACP) (1997). *HIV/AIDS/STD Surveillance* (Rep. No. 11). Dar es Salaam, Tanzania.

National AIDS Control Programme (NACP), Bureau of Statistics, & MEASURE project (2004). *AIDS in Africa During Nineties: Tanzania Youth Report.* NC: Chapel Hill.

Norris, A. E. & Ford, K. (1991). AIDS risk behaviors of minority youth living in Detroit. *American Journal of Preventive Medicine, 7,* 416-421.

Ntoumanis, N. & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine and Science in Sports, 9,* 315-332.

Obasi, A. I., Balira, R., Todd, J., Ross, D. A., Changulacha, J., & Mosha, F. (2001). Prevalence of HIV and Chlamydia trachomatis infection in 15-19 year olds in rural Tanzania. *Tropical medicine and international health, 6,* 517-525.

Ommundsen, Y., Roberts, G., Lemyre, P. N., & Miller, B. W. (2005). Peer relationships in adolescents competitive soccer: Association to perceived motivational climate, achievement goals and perfectionism. *Journal of Sport Sciences, 23,* 977-989.

Rigby, K., Dietz, B., & Sturgess, S. (1993). The Theory of Reasoned Action as applied to AIDS prevention for Australian Ethnic Groups. In D.J.Terry, C. Gallois, & M. McCamish (Eds.), *The Theory of Reasoned Action: Its application to AIDS-Preventive behavior* (1st ed., pp. 93-117). Oxford: Pergamon Press Ltd.

Roberts, G. C. & Ommundsen, Y. (1996). Goal orientations and cognitive and affective correlates among team athletes. *Scandinavian Journal of Medicine and Science in Sports, 6,* 46-56.

Roberts, G. C., Treasure, D., & Conroy, D. E. (2007). Understanding the Dynamics of Motivation in Sport and Physical Activity: An achievement Goal Interpretation. In G.Tenenbaum & R. Eklund (Eds.), *Handbook of Sport Psychology* (pp. 3-30). New Jersey: John Wiley & Sons, Inc.

Roberts, G. C. (2001). Understanding the dynamics of motivation in physical activity. The influence of achievement goals on motivational processes. In G.C.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp. 1-50). Champaign IL: Human Kinetics.

Seifriz, J., Duda, J., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise Psychology, 14,* 375-391.

Silverman, S. (1990). Linear and curvilinear relationships between student practice and achievement in physical education**.** *Teaching & Teacher Education, 6,* 305-314.

Shao, J., Brubaker, G., Levin, A., Kibauri, A., Massesa, E., Siso, Z. et al. (1994). Population-based study of HIV-1 infection in 4,086 subjects in Northwest Tanzania. *Journal of Acquired Immune Deficiency Syndromes, 7,* 397-402.

Sheeran, P., Abraham, S. C., Abrams, C., Spears, R., & Marks, D. (1990). The post -AIDS structure of student's attitudes to condoms: Age, sex, and experience of use. *Psychological Reports, 66,* 614-628.

Tabachnick, B. & Fidell, L. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn and Bacon.

Terry, D. J., Gallois, C., & McCamish, M. (1993). *The theory of Reasoned Action. Its application to AIDS preventive Behavior.* Oxford, Pergamon Press Ltd.

Treasure, D. C. (1997). Perception of motivational climate and elementary school children's cognitive and affective responses. *Journal of Sport and Exercise Psychology, 19,* 278-290.

Treasure, D. C. (2001). Enhancing young people's motivation in youth sport: An achievement goal approach. In G.C.Roberts (Ed.), *Advances in Motivation in Sport and Exercise* (pp.79-100). Champaign IL: Human Kinetics.

Treasure, D. C. & Roberts, G. C. (1995). Application of achievement goal theory to physical education: Implication for enhancing motivation. *Quest, 47,* 475-489.

Treasure, D. C. & Roberts, G. C. (2001). Student's perception of motivational climate, achievement beliefs and satisfaction in physical education. *Research Quarterly for Exercise and Sport,* 165-175.

UNAIDS (2006). *2006 Report on the global AIDS epidemic.* Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS (UNAIDS).

UNGAOR (2003). *Sport as a means to promote education, health ,development and peace.* General Assembly Resolution. 58/5 , United Nations, Dic.A/58/l.2/add./.

UNICEF (2004). *Girls, HIV/AIDS and education.* New York: United Nation's Children Fund (UNICEF).

United Nations (2003). *Inter-Agency Task Force Report on Sport for Development and Peace: Towards achieving the millennium Development Goals* United Nations.

Valdiserri, R. O., Lyter, D., Leviton, l. C., Callahan, C. M., Kingsley, L. A., & Rinaldo, C. R. (1988). Variables influencing condom use in a cohort of gay and bisexual men. *American Journal of Public Health, 78,* 801-805.

Walter, H., Vaughan, R. D., Gladis, M., Ragin, D., Kasen, S., & Cohall, A. T. (1992). Factors associated with AIDS risk behaviours among high school students in an AIDS epicentre. *American Journal of Public Health, 82,* 528-532.

Weinberg, R. S. & Gould, D. (2003). *Foundations of Sport and Exercise Psychology*. (3rd ed.) Champaign, IL: Human Kinetics.

Wilson, D., Zenda, A., McMaster, J., & Lavelle, S. (1992). Factors predicting Zimbabwean students' intention to use condoms. *Psychology and Health, 7,* 99-114.

TABLE 1.

Standardized Residual Gain Means and Standard Deviations for the Groups

| Variable | Mastery N = 200 M (SD) | Regular N = 200 M (SD) | Out-school N = 164 M (SD) | F (2,561) |
|---|---|---|---|---|
| HIV-Knowledge | .19 (.77) | .11 (.97) | -.27 (1.2) | 10.77** |
| Direct Condom experience | .19 (1.0) | .17 (.85) | -.07 (.99) | 3.70* |
| Attitude toward exclusive sexual partner | .37 (1.0) | .05 (1.0) | -.28 (.88) | 20.36** |
| Perceived behaviour control in condom use | .18 (1.3) | .08 (.77) | -.04 (1.3) | ns |
| Intention to use condom | .46 (.88) | .20 (.66) | -.22 (.99) | 29.27** |
| Subjective .norm abstinenc | .43 (.67) | .16 (.91) | -.25 (.98) | 28.87** |
| Subjective norm exclusive. sexual partner | .31 (.75) | .17 (.88) | -.22 (.95) | 17.63** |
| Subjective norm condom use | .46 (.87) | .11 (1.2) | -.38 (.77) | 32.29** |
| Attitude toward condom us | .11 (.63) | .32 (.77) | .05 (.41) | 8.70** |

P<.001**; P*<.05

TABLE 2.

Canonical Loadings for Perceived Motivational Climate and HIV-related Outcome Variables

| **Variables** | **F1** | **F2** |
|---|---|---|
| Perceived motivational Climate | | |
| Mastery | -.287 | .958 |
| Performance | .995 | -.023 |
| HIV related outcome variables | | |
| HIV knowledge | -.302 | .214 |
| Direct experience condom use | -.247 | -.128 |
| Subjective norm condom use | -.246 | .282 |
| Attitude toward condom use | .259 | -.170 |
| Attitude toward exclusive sexual partner | -.377 | .546 |
| Intention to use condom | -.234 | .677 |
| Subjective norm exclusive sexual partner | .193 | .711 |
| Subjective norm abstinence. | -.481 | .513 |
| Perceived behaviour control in condom use | -.460 | .001 |

* Correlations equal to or above .30 are considered meaningful (Tabachnick & Fidell, 2001)

**Paper 4** **Gender differences in HIV related, cognitive and behavioural intention variables following an intervention using peer coaches in sport with at-risk children in Tanzania.**

*Maro, C .N., Roberts, G.C. & Sørensen, M*

*European Journal of Sport science (in review).*

# Appendices

# 2.1 DRAFT PROGRAM FOR TRAINING OF **Kicking AIDS Out** PEER LEADERS

This is an example with a suggested order of the session for a Workshop over 2,5 – 3 days. According to the target group and the set up of the training, you must fill in the time frames and resources suited for each specific workshop. Remember to fit breaks and social activities into your program! If the training is done over several weeks, give the participants home work to do between each meeting.

| Day 1: | What: | Resources |
|---|---|---|
| | Introduction and Expectations | |
| | Why Sport and HIV? | |
| | Health and Well-being<br>• Human Physical systems<br>• Human Non-Physical Systems<br>Physical Environment | |
| | Lunch | |
| | Myths and Attitudes | |
| | What is HIV and what does it do?<br>• Statistics and Trends | |
| | Home work: Role-Play Testing for HIV | |
| | Recap & Evaluation of Day 1 | |
| | Dinner and Social Activities | |

| Day 2: | What: | Resources |
|---|---|---|
| | HIV and AIDS basic facts:<br>• The difference between HIV and AIDS<br>• How does HIV spread?<br>• HIV and the immune system<br>• How can we prevent HIV from spreading? | |
| | LUNCH | |
| | HIV and AIDS continued<br>• "Friends" of HIV – STIs and TB | |
| | Testing for HIV | |
| | Living with HIV | |
| | Creating and using **Kicking AIDS Out** games | |
| | Dinner and Social Activities | |

| Day 3: | What: | Resources |
|---|---|---|
| | **Kicking AIDS Out** Peer Leaders – who are we? | |
| | Facilitating Discussions | |
| | Life Skills and Youth | |
| | Action Planning | |
| | Staying in Touch – Evaluation and Closure | |

Appendix B

# UNIVERSITY OF DAR ES SALAAM

OFFICE OF THE VICE-CHANCELLOR
P.O. BOX 35091 • DAR ES SALAAM • TANZANIA

Ref. No: AB3/3(B)
Date: 9th February, 2005
To: The Headteacher,
Mtoni kwa Mama Mary Primary School,
**Dar es Salaam.**

## UNIVERSITY STAFF AND STUDENTS RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Mr. Cyprian Maro** who is a bonafide member of staff of the University of Dar es Salaam and who is at the moment conducting research. Our staff members and students undertake research activities every year especially during the long vacation.

In accordance with a government circular letter Ref. No.MPEC/R/10/1 dated 4th July, 1980 the Vice-Chancellor was empowered to issue research clearances to the staff and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology, a successor organization to UTAFITI.

I therefore request you to grant the above-mentioned member of our University community any help that may facilitate him to achieve research objectives. What is required is your permission for him to see and talk to the leaders and members of your institutions in connection with his research.

The title of the research in question is **"Using sport to promote AIDS education: An intervention using peer coaches in football".**

The period for which this permission has been granted is from **15th February, 2005** to**15th March, 2005** and will cover the following areas/offices: **Mtoni kwa Mama Mary Primary School.**

Should some of these areas/offices be restricted, you are requested to kindly advise him as to which alternative areas/offices could be visited. In case you may require further information, please contact the Directorate of Research and Publications, Tel. 2410500-8 Ext. 2087 or 2410743.

VICE CHANCELLOR
UNIVERSITY OF DAR-ES-SALAAM
P.O. BOX 35091
DAR-ES-SALAAM

**Prof. M.L. Luhanga**
**VICE-CHANCELLOR**

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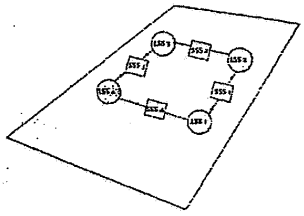
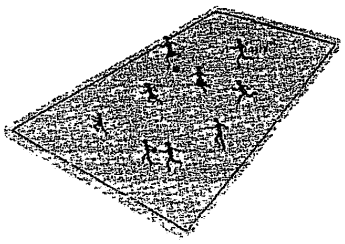
# 6 Games and Activities

| Game: " MAGIC SHOE" | Game: "RISKY" |
|---|---|
| **Time: 15 minutes / Age group: 10 14 years old**<br>**Equipment: A shoe**<br><br>**Description of activity:**<br><br>It's a dangerous zone full of lava between points **A** and **B**. Participants may not make any contact with the lava. Participants start at point **A** and must make it to point **B** without touching the lava. The only equipment available for the team is a "magic shoe". This shoe can be worn by only one of the team members, and cannot be thrown from **B to A**. If anyone falls into the lava, the whole group returns to point **A (starting point).**<br><br>**Sports skill:**<br>Co-ordination<br>Balance<br>Strength<br><br>**Life Skill:**<br>Teamwork<br>Communication<br>Trust<br>Support systems<br>Leadership skills<br>Problem solving<br><br>**Explanation:**<br>The lava represents social problems that youth face in their development (growing up). Youth have to work together to overcome the problems ahead of them. Youth must take time to make a vision for themselves rather than risk falling into the lava (falling pregnant, contracting HIV, drug abuse).<br><br>**Evaluation:**<br>Ask about the participants feelings of the game.<br>What did they learn?<br>Debriefing question: Did you enjoy the game?<br>Was it easy to understand?<br>What did the lava mean to you?<br>How did you work together to get across? If you did not get across –Why? | **Time: 10 – 30 minutes / Age group: 13 – 18 yrs old**<br>**Equipment: A ball**<br><br>**Description of activity:**<br><br>A designated area with set boundaries is organised. Participants are scattered in this area. At least one ball is used. The ball is thrown. If hit with the ball beneath the neck, then you have to sit down. If you catch a ball then the person who has thrown the ball must sit down. It is important to know who got you out (or made you sit down), because if or when they get caught you are allowed to get up and get back in the game. When you have possession of the ball you are only allowed to take 3 (three) steps or allowed to have the ball for 3 (three) seconds. Each participant can come back into the game 3 (three) times. The next time you are hit you are out of the game.<br><br>**Sports skill:**<br>Throwing – Catching<br>Dodging<br>Reaction<br>Anticipation strategy<br><br>**Life skill:**<br>Strategise – abstain – condomize<br>Plan<br>Risk management<br><br>**Evaluation:**<br>Relate to sex life<br>What does it mean when you are hit?<br>What does it mean when you get up again?<br>What does the strategy in the game imply?<br>Risk?<br>Thumbs up = means that you learned something in the game<br>Thumbs down = means that you did not learn anything in the game.<br>How can this game be related to another? |

| Game: " THE POPPERS" | Game: "Blindfolded" |
|---|---|
| **Time: 10 minutes / Age group: 15 – 18 years old**<br>**Equipment: A ball (or 2 – 3 balls)**<br><br>Can also use a condom (with or without water), socks, plastic bags, t-shirts (instead of a ball)<br><br>**Description of activity / Explanation:**<br>• 1. Stand in a circle<br>• 2. Play with one ball<br>• 3. Throw the ball to anyone in the circle<br>• 4. When you throw the ball your feet should be touching the ground. You should not catch the ball while your feet are on the ground.<br>• 5. When you throw the ball you have to say the word "condom", and when you catch the ball you have to say "condom".<br>• 6. When someone makes a mistake say "pop". The person is out of the game. Every time you get a "pop" – the person first gets an A, then I, then D, then S and in the end AIDS. Out of the game. The others continue.<br><br>**Sports skill:**<br>Jumping<br>Ball control<br>Catching – throwing<br>Body awareness<br>Timing<br><br>**Life skill:**<br>Prevention; Proper condom use<br><br>**Evaluation:**<br>Visual assessment<br>Questions:<br>Why does a condom "pop"?<br>How do you properly use condom? Correct use of a condom?<br>What do you risk if your condom "pops" (breaks)? | **Time: 15 minutes / Age group: 10 – 15 years old**<br>**Equipment:**<br>One ball and blindfolds for one person in each group.<br><br>**Description of activity:**<br>Divide the participants into four groups. Mark a field (square) / explain/show the field. One group in each corner. One person in each group is blindfolded and the rest of the group have to guide the person from outside the square. The objective for the blindfolded person is to pick up the ball from the ground (the ball lies in the middle of the field. The instructor can also move the ball, so the game will last longer. Once one person gets the ball the team he/she was in wins. Change to a new blindfolded person within the small team.<br><br>**Sports skill:**<br>Balance<br><br>**Life skill:**<br>Trust, communication, guidance, teamwork<br><br>**Evaluation:**<br>Send the correct information. Facts about HIV/AIDS related issues are crucial. If you are not sure of the correct answers (information) – then ask in the hospital or clinic. |

FOR COPYING PURPOSES SEE SECTION E

| **Game: "SKILLS CIRCUIT"** | |
|---|---|
| **Life Skill:** To help participants learn about HIV prevention methods<br><br>**Sport Skill:** To help participants develop ball control<br><br>**Number of participants:** 8 or more, 16 years upwards<br><br>**Equipment/materials:** One ball for each participant, cones and cards with statements about HIV/ AIDS for the specific age group, boxes marked "true" and "false".<br><br>**Description:** This game is similar to common circuit training, where the participants perform different activities at different stations. The object of this exercise is to carry out the different tasks assigned in each life and sports skill stations within a given time period. There are a total of 8 stations: 4 sports skills stations and 4 life skill stations. When the peer leader signals, the participants start working at the tasks. There are equal numbers of participants at all the stations. The peer leader decides how long the participants will be at one station and how many times they will visit each station. It is important that the participants are given sufficient time to finish the tasks. The following are the tasks for the sport skills:<br>*SSS 1:* Players will do body wraps (e.g. single and double circles, figure 8)<br>*SSS 2:* Players will do volley passes.<br>*SSS 3:* Two and two players serve to each other (under and over arm).<br>*SSS 4:* Two and two players practice spikes and dig passes.<br>The participants should practice several variations of the task at each sports skills station. For the life skills station, they will discuss and write down their points on a piece of paper. If they fail to finish the life skill task on time, they should leave it and go on to the next station. It is usual for the participants to have two rounds in this circuit.<br><br>The assignments for the life skills stations can be as follows:<br>*LSS 1:* Why should we use condoms?<br>*LSS 2:* What actions should we take to ensure that we use condoms?<br>*LSS 3:* What should we do to ensure that the condoms are used effectively? | *LSS 4:* What other practices for safer sex are available and how can we use them?<br><br>Varying the degree of challenge in the sports skills stations, the players must start with the easy tasks, and proceed with the difficult ones. For example, they can juggle once and hold the ball in SSS 1 before they do continuous juggling.<br><br>  <br><br>**Variation**<br>In the sports skills stations, the participants should start with the easy tasks, and proceed with the difficult ones.<br><br>**Follow-up activity**<br>The peer leader leads a discussion about the answers given by the participants in LSS 2 and 3.<br>The participants should discuss with a HIV/AIDS contact person or counsellor about the action they want to take to prevent HIV infection. |

| **Game: "COMMON TAG GAME"** | |
|---|---|
| **Life Skill: To help participants learn different ways of protection from HIV infection**<br><br>**Sport Skill: To help participants develop running skills and to deliver and receive the ball**<br><br>**Number of participants: 7 or more, Age group depending on the theme**<br><br>**Equipment/materials: Balls, preferably home-made.**<br><br>**Description**<br>The object of this game is for the participants to be the last to get tagged. One participant is picked to be the «HIV». He/she must try to physically tag the other participants by touching them on any part of the body. A participant can only be tagged if at that moment, he/she is not in possession of the ball. As there are a limited number of balls, the players must pass the ball to the participant who is chased by the "HIV". The ball acts as the protection against «HIV». When a participant is tagged, he/she leaves the game to the counselling corner to learn what can protect them from HIV infection in different situations, depending on their age. When everyone is tagged, a new game is started and all rejoins.<br><br>  <br><br>Source for illustrations:<br>"Changing Kids' Games", G.S. Don Morris and Jim Stiehl, 1989 | Variation 1<br>- The participants use actual condoms instead of the ball as «protection».<br>- The «HIV» is allowed to tag only those outside a defined area within the playing field.<br><br>Follow-up activity<br>Choose a theme according to the age group: blood transmission or sexual transmission. The peer leader explains that the ball in the game cannot protect against HIV infection.<br>In real life a condom, if properly used, can protect against HIV. Initiate a discussion about the importance of using condoms and which actions one can take to start using them.<br><br>Variation 2 – Living with HIV and AIDS<br>Life Skill: To help participants to learn about care and support for HIV and AIDS infected and affected persons.<br>Sport Skill: To help participants develop cooperation and throwing skills<br><br>Description<br>One participant is picked to be the «HIV», and one to have "AIDS". They have two different types/ colours of balls, and should try to tag the participant with the ball. A participant can only be tagged by "HIV" at the moment he/she is not holding hands two and two, and tagged by AIDS at the moment he/she is not holding hands three and three. Cooperation acts as the protection against «HIV» and "AIDS". When a participant is tagged, he/she has to leave the game to the counselling corner to learn about care and support for HIV and AIDS infected persons. Having answered a question he/she rejoins the game.<br><br>Follow-up activity<br>The peer leader initiates a discussion about how to care and support people infected and affected by HIV/ AIDS. |

## Appendix D

Summary of the description of the eight weeks' intervention sessions modules

| Life skill games | Summary of the Sessions |
|---|---|
| Knocking down barriers, Chair game, bingo game, | **Introductions and expectations:** The program and the peer coaches are introduced. Participants get to know each other's expectations and engage in several team building activities designed to enhance communication. Brief history about Kicking AIDS out. Group norms or rules are established. **What is HIV and what does it do?** Participant share ideas about what they know about HIV, how many people are infected and what does HIV really do to our society. |
| | **What is the difference between HIV and AIDS?** Participants break down the acronyms and what they mean in simple teams. Participants leans the differences between the two words |
| Ball control game, Common tag game | **How does HIV spread?** Participants lean who can be infected and the ways that HIV spread from one person to another focusing on main infection routes: Blood, sexual transmission and mother to child transmission. Participants correct myths and misconceptions about routes of transmission. |
| Untie the knot game/knotty problem game | **WHY sport and HIV:** Participants learns the value of sport and discuss why sport and physical activity is a good tool to address social issues such as HIV. |
| Immune system role play; survival game, Safe passage game | **HIV and Immune system.** Participants learn how the HIV develops to AIDS and the effects to the immune system. |
| | **Health and well being.** Participants learn different aspects of our body and relate them to HIV and sport |
| Common tag; ;Skills circuit; risky game, the poppers game ;blindfolded; circle ball; Tag games, copy cat tag, HIV tag, defend the open space game, " Four squares: soccer game"; snake and ladder game, | **How can we prevent HIV from spreading?** Participants learn about the virus is spreading and how to prevent becoming infected or infecting others. Discuss different ways of prevention; abstinence, condom use and exclusive sexual relationships |
| STI game, | **Friends of HIV-STIs and TB.** Participants learn about the common opportunistic infections in people with HIV such as Tuberculosis and sexually transmitted infections (STIs).Learn the role STIs play is spread of HIV. |
| Number on fore head game, Stigma game, Outside the circle game | **Testing for HIV.** Participants learn common fears for HIV testing e.g., discrimination; stigma, and the advantages of knowing your HIV status. Participants learn about myths and attitudes that spread HIV. |
| Life skill bag game, Don't trust your eyes, Circle ball; common relay game; | **Living with HIV and AIDS**. The participants learn about importance of friends and family members to the person infected/affected with HIV/AIDS, and importance of creating safe environment free of discrimination and stigma. Learn about "living positively" and importance of exercising and eating healthily to knowing about your right and finding medication. |

Note: For full description of the games and how to practice the games see appendix C

# Appendix E

**Coaching and instructional procedures for mastery peer coaches (English translation)**

GIVE PLAYERS VARIOUS GAMES TO PRACTICE

GIVE PLAYERS SKILLS THAT ARE INDIVIDUALLY CHALLENGING

CONGRATULATE PLAYERS ON GOOD EFFORT

WHEN TEAM LOSE CONCENTRATE ON WHAT PLAYERS DID WELL

FOCUS ON WHAT IMPROVEMENT THE PLAYERS MADE

ENCOURAGE PLAYERS TO SAY “I CAN DO IT”

HELP PLAYERS TO SET GOALS ... MY GOAL IS…

GET PLAYERS WORK FOR MASTERY

ALLOW MISTAKES, WE LEAR FROM MISTAKES

GIVE SPECIFIC FEEDBACK, ON SPECIFIC BEHAVIOR

LET PLAYERS ALSO LEAD PART OF TRAINING SESSIONS

LET PLAYERS TALK, DECIDE AND SHARE DECISIONS ABOUT TASKS, COACHING STYLE, RULES,

ENCOURAGE PLAYERS TO ASK QUESTIONS

ENCOURAGE PLAYERS TO ACCOMPLISH TASKS

RECOGNIZE PERSONAL PROGRESS AND IMPROVEMENT

REWARD INDIVIDUAL PROGRESS

FOCUS ON SPECIFIC BEHAVIOR FOR REWARD

REINFORCE GOOD EFFORT, REWARD EFFORT

TALK TO PLAYERS PRIVATELY and AVOID PUBLIC EVALUATION

ENCOURAGE COOPERATION, WORKING IN GROUPS, REWARD GROUP LEARNING AND ACCOMPLISHMENT

Congratulations for coaching for success 22 jan.2005

**Appendix E (Kiswahili Version)**

# MAELEKEZO KWA PIA KOCHI WA EMIMA

**WAPE WACHEZAJI MICHEZO MBALI MBALI YA ELIMU YA MAISHA WACHEZE**

**WAPE WACHEZAJI MAZOEZI NA MBINU ZA KUCHEZA ZINAZOHITAJI JITIHADA BINAFSI**

**WAPONGEZE WACHEZAJI WANAPOONYESHA JUHUDI NZURI**

**HATA ITAKAPOFUNGWA TIMU, ZINGATIA YALE MAZURI YALIYOFANYWA NA WACHEZAJI**

**ZINGATIA ONGEZEKO LA MAARIFA, UJUZI NA UCHEZAJI KWA MCHEZAJI**

**WAHIMIZE WACHEZAJI KUSEMA "NAWEZA"**

**WASAIDIE WACHEZAJI KUWEKA MALENGO…LENGO LANGU NI…**

**WAWEZESHE WACHEZAJI KUJIFUNZA KWA UELEWA**

**TUJIFUNZE KUTOKANA NA MAKOSA**

**TOA TAARIFA MAHSUSI NA ONGEA NA MCHEZAJI BINAFSI, KWEPA TAARIFA ZA JUMLA**

**MPE MCHEZAJI TAARIFA MAHSUSI KUHUSU TABIA YAKE**

**WAPE WACHEZAJI NAFASI YA KUONGOZA MAZOEZI**

**WAPE WACHEZAJI NAFASI YA KUSEMA, KUAMUA AND KUCHANGIA KATIKA MAAMUZI YAHUSUYO SHUGHULI ZA KUFANYA, SHERIA, UFUNDISHAJI N.K.**

**WAHIMIZE WACHEZAJI KUSHIRIKIANA NA KUFANYA KAZI KWA PAMOJA ,KATIKA MAKUNDI, KUMALIZA KAZI WANAZOPEWA**

HONGERA KWA KUKOCHI KWA MAFANIKIO **22. JANUARY 2005**

## Appendix F

HIV/AIDS SURVEY

We are requesting a little of your time in relation to a survey to help us understand what you have learned and how you feel about HIV and AIDS. Please answer each question carefully and honestly by filling in the box. Please note that, in this survey, having sex means making love, doing it, or having sexual intercourse. Remember NOT to write your name on the questionnaire sheet, so your answers are secret.

**Participant-Information**

| | | | Yes | No |
|---|---|---|---|---|
| a. | Do you participate in sport regularly? | | ☐ | ☐ |
| b. | Do you live with your parents? | Father | ☐ | ☐ |
| | | Mother | ☐ | ☐ |
| c. | Are your parents alive? | Father | ☐ | ☐ |
| | | Mother | ☐ | ☐ |

d. How old are you? Years ☐☐

e. How many years of schooling have you completed? ☐☐

Gender: Boy ☐ Girl ☐

**A:** HIV-Knowledge questionnaire-HIV-K-Q)

Fill that box which most represents your knowledge, skills, and attitude about AIDS

| | | YES | NO | DON'T KNOW |
|---|---|---|---|---|
| 1. | Can a person get HIV by playing in a team with player who has AIDS? | ☐ | ☐ | ☐ |
| 2. | Can a person get HIV by shaking hands with someone who has HIV? | ☐ | ☐ | ☐ |
| 3. | Can a person get HIV by swimming with someone who has HIV? | ☐ | ☐ | ☐ |
| 4. | Can a person get HIV by sharing a glass of water with someone who has HIV? | ☐ | ☐ | ☐ |
| 5. | Can a person get HIV by sharing needles to pierce ears with someone who has HIV? | ☐ | ☐ | ☐ |
| 6. | Can a person who shares needles when using steroids get HIV from the needles? | ☐ | ☐ | ☐ |

| | | | | |
|---|---|---|---|---|
| 7. | Is it possible to get HIV when a person gets a tattoo? | ☐ | ☐ | ☐ |
| 8. | Can a person get HIV by being bitten by mosquitoes or other insects? | ☐ | ☐ | ☐ |
| 9. | Can a person get HIV by infected blood transfusion/contact with HIV infected blood? | ☐ | ☐ | ☐ |
| 10. | Can a person get HIV by kissing, or hugging someone who has AIDS? | ☐ | ☐ | ☐ |
| 11. | Can a person get HIV through contact with saliva, tears, sweat, or urine? | ☐ | ☐ | ☐ |
| 12. | Do contraceptives pills offer protection against HIV? | ☐ | ☐ | ☐ |
| 13. | Taking vitamins keeps a person from getting HIV | ☐ | ☐ | ☐ |
| 14. | Can HIV infected pregnant woman give HIV to her unborn baby? | ☐ | ☐ | ☐ |
| 15. | Can a person get HIV if he or she has sex with another person only once? | ☐ | ☐ | ☐ |
| 16. | Can a mother with HIV pass it on to her baby by breast feeding? | ☐ | ☐ | ☐ |
| 17. | Is there blood test to tell if a person has HIV? | ☐ | ☐ | ☐ |
| 18. | Can a healthy looking person have HIV? | ☐ | ☐ | ☐ |
| 19. | Is there a cure for AIDS? | ☐ | ☐ | ☐ |
| 20. | Is HIV and AIDS the same thing? | ☐ | ☐ | ☐ |
| 21. | Is AIDS the cause for HIV? | ☐ | ☐ | ☐ |
| 22. | Is there vaccine that can stop adult people from getting HIV? | ☐ | ☐ | ☐ |
| 23. | You can know someone well enough after meetings several times to be sure he or she do not have HIV. | ☐ | ☐ | ☐ |
| 24. | Coughing and sneezing do not spread HIV. | ☐ | ☐ | ☐ |
| 25. | Do you think you can get AIDS? | ☐ | ☐ | ☐ |

B: Likelihood of obtaining, buying or carrying condom

**Now I am going to ask you some personal questions about your sex life. Please answer accurately.**

| | | YES | NO | Don't Know |
|---|---|---|---|---|
| 26. | I have had sex in the last 6 months | ☐ | ☐ | ☐ |
| 27. | I do know what a condom is? | ☐ | ☐ | ☐ |
| 28. | I have had sexual intercourse where condom was used? | ☐ | ☐ | ☐ |
| 29. | I know where I can buy or obtain condoms? | ☐ | ☐ | ☐ |
| 30. | I can buy or obtain condoms in any place even if it is a person of the opposite sex selling or distributing | ☐ | ☐ | ☐ |
| 31. | I am not shy if condoms falls out of my pocket in front of my friends | ☐ | ☐ | ☐ |
| 32. | I am sometime worried to suggest using a condom because I believe it will suggest to my boy/girl friend that I don't trust him/her | ☐ | ☐ | ☐ |

**C: Subjective norms about condom use, abstinence and exclusive sexual relationships**

My ... (the referent) would approve or be in favour of me using condom at the first/next sexual intercourse in order to reduce the chances of me getting AIDS. This is very...

5=Very Likely, 4=Likely (L), 3=Not sure/Neutral (N), 2=Unlikely (U), 1=Very Unlikely

| | | Very Likely 5 | L 4 | N 3 | U 2 | Very Unlikely 1 |
|---|---|---|---|---|---|---|
| 33. | My fellow players would approve of my using condom at the first/ next intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 34. | My peer coaches would approve of my using condom at the first/ next intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 35. | My coaches would approve of my using condom at the first/next intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 36. | My boy/girl friend would approve of my using condom at the first/next intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 37. | My best friends would approve of my using condom at the first/next intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |

My ... (the referent) would approve or be in favour of me abstaining from sexual intercourse in order to reduce the chances of me getting AIDS. This is very...

| | | Very Likely 5 | L 4 | N 3 | U 2 | Very Unlikely 1 |
|---|---|---|---|---|---|---|
| 38. | My fellow players are in favour of me abstaining from sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 39. | My peer coaches would approve of me abstaining from sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 40. | My coaches is in favour of me abstaining from sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 41. | My boy/girl friend are in favour of me abstaining from sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 42. | My best friends are in favour of me abstaining from sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |

My the referent) would approve or be in favour of me being faithful or sticking to one boy/girl friend (sexual partner) in order to reduce the chances of me getting AIDS. This is very...

5 =Very likely, 4=likely, 3=Not sure/neutral, 2=Unlikely, 1=very unlikely

| | | Very Likely 5 | L 4 | N 3 | U 2 | Very Unlikely 1 |
|---|---|---|---|---|---|---|
| 43. | My fellow players are in favour of me being faithful to one boy/girl friend. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 44. | My peer coach would approve of me being faithful to one boy/girl friend. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 45. | My coach is in favour of me being faithful to one boy/girl friend. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 46. | My team and EMIMA leaders are in favour being faithful to one boy/girl friend. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 47. | My friends are in favour of me being faithful to one boy/girl friend. | ☐ | ☐ | ☐ | ☐ | ☐ |

Fill that box that most resemble your knowledge, attitude, behaviour and skills

## D: Direct experience with condom

| 5=Strongly Agree (SA), 4=Agree (A), 3= Neutral (N), 2=Disagree (D), 1=Strongly Disagree (SD) | | SA 5 | A 4 | N 3 | D 2 | SD 1 |
|---|---|---|---|---|---|---|
| 48. | I know how to use a condom effectively | ☐ | ☐ | ☐ | ☐ | ☐ |
| 49. | I have used condoms effectively | ☐ | ☐ | ☐ | ☐ | ☐ |
| 50. | I frequently use condoms during sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 51. | I used a condom during the last sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |
| 52. | I have always used a condom whenever I have sex | ☐ | ☐ | ☐ | ☐ | ☐ |
| 53. | I used a condom during my first sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |

## E: Attitude toward condom use

5=Strongly Agree (SA), 4=Agree (A), 3= Neutral (N), 2=Disagree (D), 1=Strongly Disagree (SD)

| | | SA 5 | A 4 | N 3 | D 2 | SD 1 |
|---|---|---|---|---|---|---|
| 54. | Condoms are embarrassing to use | ☐ | ☐ | ☐ | ☐ | ☐ |
| 55. | Condoms encourages sexual immoral behavior | ☐ | ☐ | ☐ | ☐ | ☐ |
| 56. | Condom give good protection against AIDS | ☐ | ☐ | ☐ | ☐ | ☐ |
| 57. | Condoms reduce people's pleasure in having sex; | ☐ | ☐ | ☐ | ☐ | ☐ |
| 58. | Condoms are inconvenient to use | ☐ | ☐ | ☐ | ☐ | ☐ |

F: Attitude toward exclusive sexual relationships

| | | | | | | |
|---|---|---|---|---|---|---|
| 59. | Sticking to one boy/girl friend for life is very difficulty | ☐ | ☐ | ☐ | ☐ | ☐ |
| 60. | People are happier if they are faithful to their boy/girl friend | ☐ | ☐ | ☐ | ☐ | ☐ |
| 61. | The risk of getting AIDS by changing boy/girl friends is worth taking | ☐ | ☐ | ☐ | ☐ | ☐ |
| 62. | It is wrong to have sex with anyone except your boy/girl friend | ☐ | ☐ | ☐ | ☐ | ☐ |

## G: Perceived behaviour control in condom use:

**How certain are you that you will use condom at the first/next intercourse…**

Fill that box which most resemble your behavior

5=Very certain (VC), 4=Certain (C), 3= Not sure (neutral), 2=Uncertain (U), 1= Very Uncertain (VC)

| | | Very Certain 5 | C 4 | N 3 | U 2 | Very Uncertain 1 |
|---|---|---|---|---|---|---|
| 63. | If you are drunk or if you have being smoking "bangi" | ☐ | ☐ | ☐ | ☐ | ☐ |
| 64. | If you feel shy to discuss using condoms with your boy/girl friend? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 65. | If you feel embarrassed to buy condoms? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 66. | If the price of condoms is very high in the shop? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 67. | If your boy/girl friend refuses using one? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 68. | If you or your boy/girl friend is not prepared for the occasion? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 69. | If you cannot ask your boy/girlfriend if she or he has a condom at that time? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 70. | If you feel embarrassed to carry condom with you? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 71. | If you have sexual intercourse with only girl/boy friend? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 72. | If you have sexual intercourse with someone you have been very much thinking of and love him/her? | ☐ | ☐ | ☐ | ☐ | ☐ |

## H: Intention to use condom

| | | | | | | |
|---|---|---|---|---|---|---|
| 73. | I intend to use a condom at the first/next sexual intercourse | ☐ | ☐ | ☐ | ☐ | ☐ |

**I: Perceived Motivational Climate in sport questions**
On my team…

5=Strongly Agree 4=Agree 3=Neutral 2=Disagree 1=Strongly Disagree

| | | SA 5 | A 4 | N 3 | D 2 | SD 1 |
|---|---|---|---|---|---|---|
| 74. | Players feel good when they do better than their team mates | ☐ | ☐ | ☐ | ☐ | ☐ |
| 75. | Players are punished for mistakes | ☐ | ☐ | ☐ | ☐ | ☐ |
| 76. | Players are taken out for mistakes | ☐ | ☐ | ☐ | ☐ | ☐ |
| 77. | Outplaying team mates is important | ☐ | ☐ | ☐ | ☐ | ☐ |
| 78. | Peer coach pays most attention to the "stars" | ☐ | ☐ | ☐ | ☐ | ☐ |
| 79. | Doing better than others is important | ☐ | ☐ | ☐ | ☐ | ☐ |
| 80. | The peer coach favours some players | ☐ | ☐ | ☐ | ☐ | ☐ |
| 81. | The players are encouraged to outplay team mates | ☐ | ☐ | ☐ | ☐ | ☐ |
| 82. | Everyone want to be the high scorer | ☐ | ☐ | ☐ | ☐ | ☐ |
| 83. | Only the top players "get noticed" | ☐ | ☐ | ☐ | ☐ | ☐ |
| 84. | Players are afraid to make mistakes | ☐ | ☐ | ☐ | ☐ | ☐ |
| 85. | Trying hard is rewarded | ☐ | ☐ | ☐ | ☐ | ☐ |
| 86. | The Peer coach focuses on skill improvement | ☐ | ☐ | ☐ | ☐ | ☐ |
| 87. | Each player's improvement is important | ☐ | ☐ | ☐ | ☐ | ☐ |

5=Strongly Agree (SA), 4=Agree (A), 3= Neutral (N), 2=Disagree (D), 1=Strongly Disagree (SD)

| | | SA 5 | A 4 | N 3 | D 2 | SD 1 |
|---|---|---|---|---|---|---|
| 88. | Players try to learn new skills | ☐ | ☐ | ☐ | ☐ | ☐ |
| 89. | Players are encouraged to work on the weaknesses | ☐ | ☐ | ☐ | ☐ | ☐ |
| 90. | The peer coach wants us to try new skills | ☐ | ☐ | ☐ | ☐ | ☐ |
| 91. | Players like playing good teams | ☐ | ☐ | ☐ | ☐ | ☐ |
| 92. | All players have an important role | ☐ | ☐ | ☐ | ☐ | ☐ |
| 93. | Most players get to play in the games | ☐ | ☐ | ☐ | ☐ | ☐ |
| 94 | Only a few players can be “stars” | ☐ | ☐ | ☐ | ☐ | ☐ |