



**UNIVERSITY of the  
WESTERN CAPE**

**The Association of Socio-economic Status and Gross Motor Skills  
of Grade-4 Learners in the Western Cape, South Africa.**

A mini thesis submitted in partial fulfilment of the requirements  
for the degree

Master of Philosophy in Sport for Development

in the Department of Sport, Recreation and Exercise Science

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## KEY WORDS

Socio-economic status

Gross motor skills

Physical development

Physical activity

Fine motor skills

Fundamental movement skills

Locomotor skills

Object control skills



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## DECLARATION

I declare that the thesis titled “The Association of Socio-economic Status and Gross Motor Skills of Grade-4 Learners in the Western Cape, South Africa.” is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

**Full Name:** Emilia Adonis

November 2023

*Emilia Adonis*



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## DEDICATION

To my mother, friends, and colleagues, who have provided not only academic assistance but also emotional support and encouragement when I needed it most.





## ACKNOWLEDGEMENTS

Firstly, to God. Thank You for blessing me with the opportunity and Your constant presence and peace throughout this process.

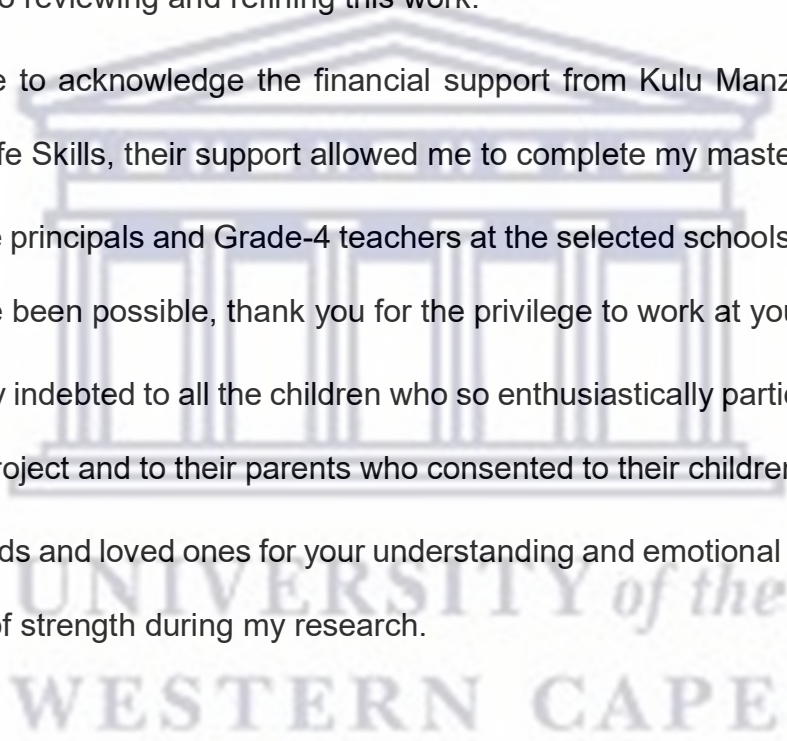
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## ABSTRACT

Early childhood is a critical period for the advancement and mastery of gross motor skills. Gross motor skills consist of locomotor and object control skills. The development of these two groups of skills for primary school children is important as they form the basis for the development of skills that will allow children to participate in games and sport later in life. There are various factors which impede the development of gross motor skills. Numerous researchers highlighted the negative impact of low socio-economic status and poverty on growth and motor skill development of young school going. Existing research results reported in the literature, show inconsistent and sometimes conflicting outcomes regarding the relationship between socio-economic status and gross motor skills with some reporting strong positive relationships while others found no significant associations between these variables. The purpose of this study was therefore to assess the relationship between gross motor skills and socio-economic status among 10-year-old primary school children. Sixty, 10-year-old children (boys= 30 and girls= 30) were randomly selected from two randomly selected primary schools in the Eerste River region of the Western Cape. Socio-economic status was determined by means of a questionnaire, while their gross motor skills were assessed by means of the Test of Gross Motor Development second edition (TGMD-2). Association between socio-economic status and gross motor skills was assessed by mean of Pearsons product moment correlation of co-efficient using SPSS V27. Ethics clearance was obtained from the Biomedical Research Ethics Committee of the University of

the Western Cape prior to any data collection. Participants were informed verbally and in writing of the purpose of the study, the reason why they have been asked to volunteer to participate, the importance of their participation, the valuable input they will make and the procedure to be followed to conduct the interviews. No differences were found in the gross motor development and socio-economic status between boys and girls ( $p > 0.05$ ). Results of this study show acceptable levels of gross motor skill development for both boys and girls across all socio-economic levels. Although all the relationships between socio-economic status and gross motor development were positive, they were low, and none were significant. By implication, it was concluded that the development of gross motor skills is independent of the socio-economic environment in which the participants of the current study was reared.



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## List of Abbreviations

TGMD-2	Test of Gross Motor Development- 2 <sup>nd</sup> Edition.
SES	Socio-Economic Status
WCED	Western Cape Education Department
GMS	Gross Motor Skills
FMS	Fundamental Motor Skills
OC	Object Control
LS	Locomotor Skills
GMQ	Gross Motor Quotient
PA	Physical Activity



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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Early childhood is considered to be a critical period for the advancement and mastery of gross motor skills (GMS). The development of GMS which include locomotor skills such as running, galloping, skipping, hopping, sliding, and leaping, and object control skills which consist of manipulating and projecting objects, and include skills such as throwing, catching, bouncing, kicking, striking, and rolling are important for primary school children as they form the basis for the development of skills that will allow children to participate in games and sport later in life (De Waal & Pienaar, 2020). These skills are consequently considered critical in the formation of a foundation on which future movement and physical activity are built (Clark & Metcalfe, 2002).

Decades of research have highlighted a multitude of factors that can influence a child's physical activity prospects and the development of related fundamental movement skills (Pienaar & Kemp, 2014; Morley et al., 2015; Corwyn, 2002). The barriers include safety, transportation, adverse

environmental factors such as poverty and parental perceptions of the need to participate in physical activities (Krombholz, 2012; Morley et al., 2015, Lawson & Farah, 2017; MacDonald et al., 2018; National Safe Routes Task Force, 2008).

According to the Canadian Fitness and Lifestyle Research Institute (2015), children coming from low-income families face additional prohibiting factors such as the costs of recreational activities and the lack and cost of transport to and from recreational and sport facilities. Safety, in crime ridden poor communities in South Africa, is one of the major additional factors preventing children in engaging in outdoor physical activities. These preventative factors often lead to diminished confidence and negative attitudes towards recreational and physical activities (Canadian Fitness and Lifestyle Research Institute, 2015).

An understanding of the concept of socio-economic status (SES) and social class in relation to differential health, disease, physical and motor growth, and development is essential. The American Association of Psychology defines SES as the social standing or class of an individual or group and it is often measured as a combination of education, income, and occupation. There is an inverse relationship between health as reflected in the growth and development of children and the complexity of socio-economic deprivation (MacDonald et

al., 2018). Children's health and development are closely associated with their social status: the higher up the socio-economic spectrum, the better the health and development of the child (Moore et al., 2015).

According to Bradley and Corwyn (2002), indicators of SES are of great interest in the study of child development. The literature indicates that families with a low SES will have children that will perform below the norm for developing children (Pienaar & Kemp, 2014; Morley et al., 2015; Corwyn, 2002). These observations apply to, for example, the relationship between motor development and parental social class/education and family income.

In addition, the literature suggests that girls and boys are differently affected by SES (Gottschling-Lang et al., 2013). Piek et al., (2008), highlighted the need for an understanding of developmental risks to develop and implement individual and group intervention strategies. Delayed or undetected developmental risks could lead to chronic delays in childhood development, which in turn, could lead to delays in adult development (Piek et al., 2008). These intervention programmes should ideally be implemented at the preschool level (Piek et al., 2008).

Numerous researchers highlight the negative impact of low SES and poverty on growth and motor skill development of young school going children (Pienaar & Kemp 2014; Morley et al., 2015). Existing research results reported in the literature, show inconsistent and sometimes conflicting outcomes regarding the



relationship between SES and GMS with some reporting strong positive relationships (Barnett et al., 2016; Venetsanou et al., 2010) and others no significant relationships (Tomaz, 2010). This is of great concern as approximately 63% of South African children live in poverty. The purpose of this study therefore was to assess the gross motor development of children growing up in low SES environments, to investigate possible differences between boys and girls and to establish to what extent that development is related to their SES.

## **1.2 Statement of the Problem**

Children from low socio-economic households have a high prevalence of growth restriction due to suboptimal conditions, which may also result in delayed motor development and inadequate levels of fine and gross motor skills Hardy et al. (2010). It is important that these developmental delays be identified at an early age to implement suitably structure intervention programmes.

## **1.3. Aims and Objectives**

This study aims to assess the possible relationship between the socio-economic status and the gross motor skills of grade 4 learners in Eerste River, Western Cape, South Africa.

### 1.3.1 Objectives

Objectives of the research were:

- To assess the socio-economic status of grade-4 learners in two selected schools in Eerste River, Western Cape, South Africa.
- To assess the gross motor skill levels of participants in terms of object control (strike, dribble, catch, kick, throw and roll) and locomotion (run, gallop, hop, leap, jump and slide).
- To assess possible correlations between socio-economic status and gross motor skill levels of the children
- To assess if boys and girls will display different gross motor skill levels.
- To assess possible correlations between socio-economic status and GMS skill levels of the children.

### 1.3.2 Research Hypothesis

It was hypothesized that:

- Learners coming from low socio-economic communities, will have poorly developed gross motor skills, and
- There will be a positive correlation between socio-economic status and gross motor development of the participants.
- Boys and girls will display different gross motor skill levels.



#### **1.4. Significance of the Study**

Early childhood has been identified as a critical period for the development and mastery of motor skills, Hardy et al. (2010). There are various factors, which impinge children's ability to develop motor skills. Most of these factors relate to children's access to physical activity and recreational facilities. There are various factors which prevent children in poor communities from accessing sport and recreation facilities. In addition to financial constraints, crime has become one of the major factors keeping children away from outdoor facilities and equipment, Gallahue et al., (2007). With children's gross motor development decreasing due to economic pressures, this research will provide a more detailed approach as to why we should implement developmental programmes into primary schools especially in economically challenged communities, Gallahue et al., (2007).

#### **1.5 Delimitations**

The participants used for this study was limited to 10-year-old children only, meaning that the results of the research cannot be used for other ages.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The development of motor skills in young children holds significant long-term consequences for the developing child. There are a multitude of factors which impact on the development of a child's GMS of which SES is considered a key role player. It is therefore imperative that we have a full understanding of the factors affecting on GMS development to develop and implement meaningful intervention programs.

A motor skill refers to the ability to perform a particular physical task with proficiency, involving purposeful movements that rely on the coordination between our senses and muscles (Fleishman, 1964; Pienaar, 2012). These movements can range from basic actions like reaching for and holding an object, to more complex tasks such as playing an instrument or executing a gymnastics routine. Fleishman (1964) and Pienaar (2012) have classified motor skills into two main types: fine motor skills and gross motor skills. Both types are crucial for the physical and psychological development of children.

### **2.1.1 Fine Motor Skills**

Fine motor skills include precise, coordinated movements of the small muscles, typically in the hands and feet (Escolano-Perez et al., 2020). They are essential for tasks that require dexterity, precision, and control (Fetters, L 2004). Examples of fine motor skills include handwriting, buttoning a shirt, threading a needle, and playing a musical instrument. Furthermore, fine motor skills have consequences for children's ability to accomplish visual motor integration activities, and are important for classroom activities, and general play (Strooband, de Rosnay, Okely, & Veldman, 2020).

### **2.1.2 Gross Motor Skills**

GMS includes all general body movements and the coordination of large body parts including upper and lower extremities and muscles regulating movements around the trunk and shoulders (Bruininks & Bruininks, 2005; Petetti., et al 2017).

### **2.1.3 Fundamental Movement Skills**

GMS are also referred to as fundamental motor skills (FMS). FMS are basic, foundational physical skills that form the building blocks for more complex and specialized movements used in sports, physical activities, and daily life (Pienaar & Kemp, 2014; Morley et al., 2015; Corwyn, 2002). FMS which includes similar

activities as GMS are required to perform well in school, and to support the development of well attuned, healthy, and confident children (Lucas et al., 2016). A wide range of fine and gross motor skills is essential for individuals of all ages to move and interact with their environment effectively (Woollacott & Shumway-Cook, 2012).

FMS are typically categorized into three main groups: and consists of locomotor, object control and stability and balance skills.

## **2.2 Locomotor**

Haywood and Getchell (2021), defined locomotion as the act of moving, or the ability to move from one location to the next. It is something we do each day without paying much attention to it. However, this hides the fact that these simple activities are complex movements that requires many interacting systems and encounter many constraints. Across the life span of a person, an individual uses various methods of locomotion. During childhood height, weight, and lengths of body parts change dramatically. During much of the life span, there is other kinds of restrictions such as motivation or even gender association of a certain skill (e.g., “skipping is for girls” or “kicking is for boys”), that may encourage or discourage certain actions of an individual. As one gets older physical constraints may return as an important rate controller, as locomotion can be discouraged.

### 2.2.1 Locomotor Skills

According to Haywood and Getchell (2005), locomotor skills demand all correct movements of muscles to perform a specific action and it includes the following activities:

*Walking:* A basic locomotor skill that involves the coordinated movement of the legs to propel the body forward. It is usually one of the first skills developed in early childhood and is a fundamental skill for daily activities.

*Running:* Running involves a faster and more dynamic gait than walking, with both feet leaving the ground during each stride. Running is an essential skill for various sports and physical activities.

*Jumping:* Jumping involves propelling the body off the ground using the legs and landing with control. Jumping skills are fundamental for activities such as basketball, volleyball, and gymnastics.

*Hopping:* Hopping is a one-legged jump from one foot to the other. It helps develop balance, coordination, and strength in the legs.

*Skipping:* Skipping is a combination of a step and a hop, involving a skip on one foot followed by a hop on the other. It's a more complex locomotor skill that enhances coordination and rhythm.

*Galloping:* Galloping involves a step forward and a slide of the trailing foot, creating a rhythmic, rocking motion. This skill is commonly seen in activities like dance and horseback riding.

*Sliding:* Sliding is a lateral movement where one foot is used to push the body to

the side. It is often used in sports like baseball and softball.

*Leaping:* Leaping is a dynamic locomotor skill that involves taking a long step and jumping off one foot while the other leg is in the air. It's used in sports like long jump and dance.

### **2.3 Object Control**

Based on research by Gallahue and Ozmun (2015), object control refers to the ability to manipulate and interact with objects effectively, particularly in sports, physical education, and activities that involve handling equipment or tools. This skill is essential for various sports like basketball, soccer, baseball, and activities such as juggling, using tools, or even performing everyday tasks like catching a ball or writing with a pen. Furthermore, with reference to its importance in physical education, object control is a fundamental motor skill that encompasses the ability to accurately handle and manipulate various objects, such as balls, racquets, bats, or tools, in a controlled and coordinated manner. It involves activities like throwing, catching, kicking, striking, dribbling, and rolling objects. Object control skills play a pivotal role in sports and physical education, enabling individuals to participate in and enjoy a wide range of physical activities, develop hand-eye coordination, and enhance their overall motor proficiency.



### 2.3.1 Object Control Skills

Object control skills demand all correct movements of muscles to perform a specific action and it includes the following activities (Gallahue & Ozmun, 2015).

*Throwing:* Throwing a ball in sports like baseball, softball, or javelin requires precise control to achieve accuracy and distance.

*Catching:* Catching a baseball, football, or frisbee involves hand-eye coordination to intercept a moving object.

*Kicking:* In sports like soccer or rugby, kicking a ball accurately and with force is a key object control skill.

*Striking:* Hitting a baseball with a bat, a tennis ball with a racquet, or a shuttlecock in badminton requires skillful object control.

*Dribbling:* In basketball or soccer, dribbling the ball involves maintaining control while moving it with the feet or hands.

*Juggling:* Juggling involves controlling multiple objects (such as balls, clubs, or rings) in the air using hands, feet, or a combination of both.

*Rolling:* Rolling a bowling ball, a curling stone, or a wheelchair involves controlling the direction and speed of an object.

*Passing:* Accurately passing a ball to a teammate in team sports like basketball, football, or volleyball is an object control skill.

*Putting:* In golf, putting involves precise control of the putter to roll the golf ball into the hole.

*Shooting:* In sports like archery or shooting (e.g., with a rifle or pistol), object control is critical for accuracy and precision.

*Playing a Musical Instrument:* Playing instruments like the piano, guitar, or violin requires object control of keys, strings, or frets.

*Using Tools:* Activities like woodworking, sewing, or cooking require control and manipulation of various tools and utensils.

## **2.4 Stability and Balance Skills**

The final group of FMS is known as Stability and Balance Skills. Magill and Anderson (2017), defines this as the child's ability to control and maintain equilibrium and control over their body while being stationary or in motion. These skills involve proper posture, coordination, and adjustments in response to changes in the body's position or external forces. Stability and balance skills are fundamental for activities that require staying upright, such as walking, running, standing on one leg, or performing various athletic movements.

*Standing on One Leg:* This simple task requires individuals to maintain their balance and stability while balancing on one leg. It's often used as a basic assessment of balance.

*Walking:* The act of walking involves maintaining balance with each step, shifting weight from one foot to the other, and adjusting to changes in the walking surface.



*Running:* Running requires even greater dynamic stability and balance as individuals must control their movements while in motion.

*Cycling:* Balancing on a bicycle while in motion is an example of dynamic balance, as riders must make continuous adjustments to stay upright.

*Gymnastics:* Gymnasts perform various balance routines on beams and other apparatus, which require exceptional balance skills.

Balance Boards and Stability Balls: Using tools like balance boards and stability balls as part of fitness and rehabilitation programs can enhance balance skills.

These examples demonstrate the importance of stability and balance skills in various activities, from everyday movements to sports and specialized exercises. Developing these skills is essential for overall physical well-being and the performance of many physical tasks (Magill et al., (2017).

## **2.5 Environmental Factors Influencing Child Development**

Child development is influenced by specific growth and maturity characteristics and their interaction with the environment in which they grow up (Malina, 2004). Gerber et al. (2010) further stated that the influence of genetic factors, the child's state of well-being; influences from the family members and caregivers; SES of the family and the cultural background of the family, have developmental consequences for the child. Although Hardy et al. (2010) acknowledged the effect of biological, psycho-social, motivational, and cognitive on motor skills

development, they emphasized the effect of free-play and structured activity programmes on the optimal development of motor skills in children. According to Silva and Ross, (1980); Krombholz (1997) and Rose et al., (1998) children who experience delayed GMS development, must address the psychological uneasiness of competing with well-coordinated children. The unfit child may experience similar discomfort compared to their physically fit peers. Children develop movement skills because of moving, balancing, stabilizing, and controlling their bodies from birth (Catenassi et al., 2007). Children who have acquired well-developed and established motor skills, are more inclined to engage in physical activity in comparison to their peers who had poorly developed with poorer motor skills (Wrotniak et al., 2006). It is therefore imperative for children to participate in proper and regular fundamental movement skills and activities as this is seen as the foundation for lifelong participation in physical activity (Centers for Disease Control and Prevention, 2003; Kerr et al., 2006; National Safe Routes Task Force, 2008). Decades of research have highlighted a multitude of factors that can influence children's engagement in physical activities and related GMS. As stated by the Centers for Disease Control and Prevention, the barriers include safety, transportation, and parental perceptions of the need to participate in physical activities (Centers for Disease Control and Prevention, 2003; Kerr et al., 2006; National Safe Routes Task Force, 2008).

## **2.6 Socio-economic Status and Motor Development**

Research suggests that children from higher socio-economic backgrounds often have greater access to resources and opportunities for physical activities and sports. These opportunities can positively influence the development of gross motor skills. For example, children from higher SES families may have access to well-maintained parks, sports clubs, and organized sports activities (Hinkley, Crawford, & Salmon, 2008). Gallahue and Cleland-Donnelly (2007) further stated that there are three factors that play a crucial role in children's opportunities to practice developing their movement skills- facilities, equipment, and time. Children who live in congested cities with high-rise buildings, cramped housing complexes, backyard dwelling or very busy suburbs with dangerous circumstances, usually lack sufficient facilities to meet their physical need to move. Even though the facilities are available the children must share the facilities with adolescents and adults and therefore the children need to fend for themselves when the older children engage in vigorous movements of "play". Gallahue et al., (2007), further states that opportunities is frequently limited by the lack of proper equipment, therefore the cost of equipment is high, and the parents and community centers cannot afford to pay for the equipment or maintenance of the facilities if there are no funding available. The last factor is time, the most important factor, children don't have the time to develop their movement skills. Their day is already planned with school, television, social media, games, and homework that they have very little time left for active movement, furthermore it is stated in the article that children from lower SES has more free play and less structured play. According to the

Canadian Fitness and Lifestyle Research Institute (2015), children coming from low-income families face additional prohibiting factors such as the costs of recreational activities and the lack and cost of transport to and from recreational and sport facilities. Safety, in crime ridden poor communities in South Africa, is one of the major factors preventing children in engaging in outdoor physical activities, reference. These preventative factors often lead to diminished confidence and negative attitudes towards recreational and physical activities (Canadian Fitness and Lifestyle Research Institute, 2015).

### **2.6.1 The Effect of Socio-Economic Status and Social Class on Gross Motor Skills**

An understanding of the concept of socio-economic status and social class in relation to differential health, disease, physical and motor growth, and development is essential. The American Association of Psychology defines SES as the social standing or class of an individual or group and it is often measured as a combination of education, income, and occupation. There is an inverse relationship between health as reflected in the growth and development of children and the complexity of socio-economic deprivation. Children's health and development outcomes follow a social gradient: the further up the socioeconomic spectrum, the better the outcomes (Moore, McDonald, Carlon & O'Rourke, 2015).

Research findings indicate that poor SES has a negative effect on gross and fine motor development of children (Uys & Pienaar, 2010). Uys and Pienaar (2010) reported that children from a higher SES, performed better in certain motor skills compared to those of lower SES, however they also found that children from higher SES also required certain levels of intervention as far as the development of their motor skills are concerned. They further reported that children from low socio-economic environments had poorer locomotor development, visual motor standard scores, grading and percentiles, however when compared in terms of their balance and object control, they performed better than their peers from the high SES group (Uys & Pienaar, 2010). According to Sauve and Bartlett (2010) this relationship may be influenced by the children's living environment and socialization processes, since outdoor play is much more common among children from low SES communities, as they are less likely to spend time indoors and have limited access to electronic devices (Walter, 2011).

According to Bradley and Corwyn (2002), indicators of SES are of great interest in the study of child development. The literature indicates that families with a low SES will have children that will perform below the norm for developing children (Bradley and Corwyn (2002). These observations apply to, for example, the relationship between motor development and parental social class/education and family income. Parental education is often included as a component of SES. It is stated that in certain cases children whose parents has higher levels of education may be more aware of the importance of physical activity for their children and may



encourage and facilitate it. They may also have a better understanding of child development and how gross motor skills develop (Foulkes, Knowles, & Fairclough, 2015).

An understanding of the concept of socio-economic status and social class in relation to differential health, disease, physical and motor growth, and development is essential. The American Association of Psychology (n.d) defines socio-economic status as the social standing or class of an individual or group and it is often measured as a combination of education, income, and occupation. There is an inverse relationship between health as reflected in the growth and development of children and the complexity of socio-economic deprivation. Children's health and development outcomes follow a social gradient: the further up the socioeconomic spectrum, the better the outcomes (Moore, McDonald, Carlon & O'Rourke, 2015). In addition, the literature suggests that girls and boys are influenced by socio-economic status in a different way (Gottschling-Lang, Franze & Hofmann, 2013). Piek et al., (2008), states that there is a need to investigate the need for developmental risks and to develop and implement individual and group intervention strategies because delayed or undetected developmental risks could lead to chronic delays in childhood development, which could lead to delays in adult development. It seems probable that undetected developmental risks will become chronic delays.

Piek et al., (2008) also suggest that individualized intervention should be implemented at the preschool level to prevent developmental delays. The purpose of this study therefore is to assess the gross motor development of children growing up in low socio-economic environments, to investigate possible differences between boys and girls and to establish to what extent that development is related to their socio-economic status.

According to Lejarraga et al., (2002), a child's environment plays a big role in their motor development and that it does affect their attitudes towards physical and recreational activities. Research conducted by Zoghi et al., (2016) found that where a child is continuously stimulated and with the appropriate contextual support during his/her early years, will have a constructive impact on the holistic development of the child. Studies suggest that psychosocial factors associated with SES, such as stress and limited social support, can negatively impact child development, including motor skills (Hackman, Betancourt, & Brodsky, 2017). Furthermore, the article states that learning and development is the foundation for lifelong behaviors starts within the home environment Burnett & Hollander (2008). While genetics is a key role player in determining the main neural bodily circuits, regular engagement in physical activity is also crucial for optimal development of motor development in the child Burnett & Hollander (2008). In general, it is argued that enriched environments have positive effects on brain and motor development. There is an exact stage of development that allows children to realize their ideal developmental growth Sacconi, et al., (2013).

These openings are existing in all stages of the development of the child. The birth-home is the first environment that most toddlers are exposed to. Since children spend most of their time at home, it is considered a crucial factor in their development. The availability of stimulating objects such as books and play materials at home strongly affect the development of children (Gallahue et al., 2012). According to Saccani, et al., (2013), the key family characteristics that influenced gross motor delay included parental income and employment status. This is consistent with other literature sources which also found an association between low socio-economic background and delayed GMS development (Saccani et al., 2013). Poverty limits the acquisition of resources such as toys which is seen as a factor which deprives a child's opportunities to develop motor skills (Saccani et al., 2013) Furthermore, family stress can negatively impact a child's development and the amount of meaningful and functional learning experiences in parent-child interactions (Saccani et al., 2013). The results of Veldman et al., (2020) found that boys, underweight and overweight children, children from low-income families, and especially those whose parents are unemployed, are at higher risk for GMS developmental delays. This suggests that it has the potential to guide policy. They further recommend the introduction of early detection programmes for gross motor disorders in socially disadvantaged and low-income communities as it opens opportunities for effective intervention that can prevent children from falling behind their peers.



## CHAPTER 3

### METHODS AND MATERIALS

#### 3.1 Research design

This study made use of a descriptive and correlation design.

#### 3.2 Experimental Approach

This research aimed to assess possible associations between the SES and GMS development of grade 4 pupils in the Eerste River area of the Western Cape. The GMS of participants were evaluated by means of the Test of Gross Motor Development Second Edition (TGMD-2), and the SES was assessed by means of a SES questionnaire.

#### 3.3 Participants

The population of the study comprised of all the 10-year-old boys and girls from two public primary schools in the Eerste River region of the Western Cape. The researcher received a complete list of all 10-year old boys and girls from the selected primary schools. The participants were uninjured and

were not suffering from any illnesses during the testing phase of the research.

The sample size was determined by means of the Yamane formula:  $n =$

$$\frac{N}{1+b^2}$$

Where,  $n$  = the sample size;  $N$  = the size of population (60 participants) and  $e$  = the error of 5 percentage points (Yamane, 1967).

Based on this formula, 60 learners were selected for inclusion in the study.

Fifteen boys and 15 girls were randomly selected from each of the two primary schools in the designated area.

The inclusion criteria included:

- Had to be 10 years old or younger.
- Had to attend any of the two schools in the Eerste River region of the Western Cape.
- Had to be uninjured and not suffering from any illnesses during the testing phase of the research.
- Be willing to participate in the testing phase of the research.
- Parental consent had to be given

The exclusion criteria included:

- If participants were older than 11 years old.
- Any physical disability

### **3.4 Data Collection Procedures**

Approval to conduct the current research at the selected schools was requested from the Western Cape Education Department and then the relevant school principals (Appendix I) was approached. The application letter was accompanied by an information sheet, which delineated the purposes, procedures, and potential outcomes of the research. The parents/legal guardians of the selected children were given consent and assent forms, which were signed once they had read the information letter, and all questions related to the research have been answered to their satisfaction (Appendix C, D & E). The form was available in both English and Afrikaans, which are the dominant prevailing languages of the community in which the schools are located. The researcher obtained police clearance to work with school children.

#### **3.4.1 Gross Motor Skills**

The Test of Gross Motor Development - Second Edition (TGMD-2) was used to assess the GMS of the participants. The TGMD-2 is a standardized norm- and criterion-referenced test, used to measure the gross motor abilities in children from 3–10 years of age (Ulrich, 2000). This test procedure consists of two subtests i.e., the object-control (strike, dribble, catch, kick, throw, and roll) and locomotor tests (run, gallop, hop, leap, jump, and slide) (Ayers et al., 2016).

This test can be used to assist with the identification of boys and girls who might lag their peers in gross motor skill development and who may need special programs in physical education and activity (Liu, 2014). It can also serve to assess the achievements of the gross motor programmes and as a measurement instrument in research involving GMD (Ulrich, 2000).

### **3.4.1.1 Testing Procedure**

#### *Time Requirements*

Approximately 15 minutes was used per child for the collection of the data. The availability of sufficient equipment such as extra balls accessible for the striking, kicking, catching, and throwing items, maximized the use of the available time.

#### *Testing Conditions*

The tester ensured that equipment was set out in advance to minimize any distractions and to help minimize administration time.

The equipment used for testing is listed below:

- Masking tape
- Chalk

- Traffic cones which served as marking devices.
- 10cm light-weight ball
- Plastic bat
- 25cm playground ball
- 15cm sponge ball
- 15cm plastic or a slightly deflated playground ball
- Tennis ball

#### **3.4.1.2 Description of the Subtests**

The TGMD-2 consists of two subtests i.e. locomotor and object control tests. The different skills are divided and allocated to the relevant subtest.

Locomotor and object control measure specific facet of gross motor development.

##### *Locomotor*

The tasks listed below measure the participants' changeability and coordination of their body as they move from one place to another (Ulrich 2000).

1. Run - involves the steady advancing of the child by means of springing steps which included a period where both feet are off the ground.
2. Gallop – is the capability to complete a fast, natural 3-beat walk; the

participants stepped forward with the leading foot, which is then followed, a step with the other foot to a position next to or just behind the lead foot.

3. Hop- hopping is done on both the left and right foot. The child took off and landed 3 times with the preferred foot, which is followed by the non-preferred foot.

4. Leap - it is a measure of the child's ability to perform a leap over an object; take-off and landing happens of alternative feet.

5. Horizontal jump – is two-footed horizontal jump from a standing position.

6. Slide - slide in a straight line from one point to another; body is turned sideways, a step with the leading foot followed by a step with the trailing foot.

### *Object Control*

The activities which are used to assess a child's ability to throw, strike and catch various sized balls are listed below (Ulrich 2000).

1. Stationary Dribbling: the child's ability to dribble the basketball four times with their dominant hand before catching the ball with both hands.
2. Hitting a stationary ball: the ability to hit a stationary ball at waist level with a plastic bat.
3. Catch: the ability to catch a plastic ball thrown towards you.
4. Kicking: the ability to kick a stationary ball with your dominant foot, with momentum.
5. Overhand throwing: the ability to throw the ball against a wall with your dominant hand.



6. Underhand roll: the ability to roll the ball between two cones with your dominant hand.

### **3.4.2 Management and Scoring of the TGMD-2**

#### **3.4.2.1 Management**

Each gross motor skill included three of four behavioral components that are presented as performance criteria. In general, these behaviors represent a mature pattern of skills. The specific steps in scoring all items are listed below. The focus of the assessor is on the performance criteria.

#### **3.4.2.2 Scoring**

Where the student performed a behavioral component in two out of three trials correctly, a “1” was allocated in the appropriate box of the correct assessment column. Where the student did not perform a behavioral component in two out of three trials correctly, a “0” mark was allocated. Two separate columns were provided for each of the assessment occasions (Ulrich, 2000).

It should be emphasized that although detailed administrative instructions and scoring criteria are provided in the examiner portfolio form, these are only guidelines, and the researcher was fully prepared and familiar with the items

check. Children performed each task twice and the researcher scored each trial and component as above. The researcher added up the total score for each task (both trials) and this became the raw skill score for the task. Skill scores were then summed to obtain a total raw score for each subtest (motor control or object control). Raw scores were converted to standard scores using the tables provided in the manual. Standard scores for the motor and object control subtests were combined and yield a gross motor quotient (GMQ) (Ulrich, 2000).

### **3.4.3 Interpreting the TGMD-2 Results.**

The TGMD-2 offers four types of scores, namely: raw scores, percentiles, standard scores, and age equivalents.

#### **Raw Scores**

The raw scores corresponding to the performance criteria for each task, are summed. The raw scores have no stand-alone value because each task varies in difficulty. Raw scores were used to obtain higher scores using the normative data provided (Ulrich, 2000).

#### **Percentile**

Percentiles were used to signify the percentage of scores at or below that specific score (Ulrich, 2000).

### Subtest Standard Score

Raw scores were converted to standard scores by means of the tables provided in the examiner's manual (Ulrich, 2000). It is imperative that raw score be converted to standard scores prior to making any comparisons. Standard scores, also allows for comparisons between tests for the same participant (Ulrich, 2000).

### *Gross Motor Quotient (GMQ)*

The GMQ was calculated by summing the subtest standard scores and then converting the total into a quotient by means of tables contained in the examiner's manual (Ulrich, 2000). This GMQ is considered to be the most reliable score for the TGMD-2 as it a representation of the child's overall motor ability across both subtests (Ulrich, 2000). The norms for TGMD-2 subtest standard scores are given with a mean of 10 and a standard deviation of 3, with the standard score of the composite of the 2 tests with a mean of 100 and a standard deviation of 15 (Ulrich, 2000).

### **3.4.4 Descriptive ratings**

Table 1(Ulrich, 2000) comprises the descriptive rating categories that are used to define an individual's score.

**Table 1:** Descriptive ratings table (TGMD-2)

<b>Subset Standard Score</b>	<b>Gross Motor Quotient</b>	<b>Descriptive Ratings</b>
17-20	>130	Very Superior
15-16	121-130	Superior
13-14	111-120	Above Average
8-12	90-110	Average
6-7	80-89	Below Average
4-5	70-79	Poor
1-3	<70	Very Poor

### **3.4.5 Age Equivalents**

Raw scores were converted to age equivalents by means of tables provided in the examiner's manual (Ulrich, 2000). Age-equivalent allowed for the understanding of a child's performance relative to his or her age.

### **3.4.6 Reliability of the TGMD-2**

The reliability of the TGMD-2 is given in Table 2. According to Ulrich (2000) they are based on three error sources: content samples (internal consistency); time sampling; and differences between markers.

**Table 2:** Overall reliability of the TGMD-2 (Ulrich, 2000)

TGMD-2 SCORES	Source of Test Error		
	Content Sampling	Time Sampling	Inter-Scorer
Locomotor Subtest	0.85	0.88	0.98
Object Control Subtest	0.88	0.93	0.98
Gross Motor Quotient	0.91	0.96	0.98

### 3.4.7 Validity of the TGMD-2

To establish whether the test has predictive validity, it was compared with another test examining the same area (Ulrich, 2000). The TGMD-2 was assessed on the basic motor generalization test of the Comprehensive Student Ability Scale (CSSA). Both tests were administered to a sample of 41 children and had correlations of 0.63 for motor ability and 0.41 for object control (Ulrich, 2000). This suggests a moderate to strong correlation, leading to validity of the TGMD-2 in terms of predicting the criterion. The TGMD-2 was also compared with the Movement Assessment Battery for Children (MABC-2) and a significant correlation was found for overall performance of the TGMD-2 and MABC-2, as well as specifically for with control and targeting captures the subtests of both tests (Logan et al., 2011).

Descriptive validity indicates whether the selection of items that make up the test measures a specific range of behaviors (Ulrich, 2000). Ulrich (2000) discussed the test items with experts familiar with the gross motor development of young children and all agreed that the test items measured children's gross motor skills at a young age primary school age. Test content is typically analyzed using Pearson total score correlation and it is found that all items on the TGMD-2 are identified as “good” items (Ulrich, 2000).

The tool was also tested for construct-identification validity and found to have validity across all five constructs (Ulrich, 2000).

#### **3.4.8 Socio-Economic Status**

To characterize the socioeconomic profile of the participants a questionnaire was designed which is aimed at obtaining the following information (Appendix G):

- Education level of the mother
- Education level of the father
- Number of children
- Marital status
- Type of accommodation
- Parental income



- Number of occupants in house
- Parental occupation

SES questionnaires were sent to parents in a sealable envelope which, when completed, was returned to the researcher in a sealed status. The envelopes were marked as confidential. The questionnaires were later verified in a private interview with the parents. The variables and their sub-sections were coded for inclusion in the major data set.

The SES of each participant was calculated using the following four variables: parental education (highest level of either the father or mother was considered); income; accommodation and occupation. Scores were awarded for each of the subsections per variable. The higher the score the higher the SES. Table 3 illustrates the weighting of categories per variable. The SES scores varied between a minimum of 0 and a maximum of 14. These scores allowed for correlational analysis of SES with GMS. Factors analysis allowed the researcher to examine concepts that are not easily measured directly by collapsing many variables into a few interpretable underlying factors. This process was conducted at the outset.

**Table 3:** Socioeconomic variables included in calculation of SES (weighting of different levels given in brackets).

Variable	Category (Weighting)			
Parental Education	Grade 6 and Below (1)	Grade 7-9 (2)	Grade 10-12 (3)	Post Matric (4)
Income	Under R2000 p/m (1)	Between R2000 and R5000 (2)	More than R5000 (3)	
Accommodation	Back Yard Room (1)	Informal Dwelling (2)	House (3)	
Occupation	Unemployed (1)	Unskilled Laborers (2)	Skilled laborers (3)	Professional (4)

**Table 4:** Factor analysis of the SES variables.

Accommodation	0.554
Income	0.742
Occupation	0.711
Parental Education	0.587

### **3.4.9 Statistical Analysis**

The Statistical Package for the Social Sciences (SPSS) - V27 was used to conduct all statistical analyses in this research. Descriptive statistics were used to describe and summarize the levels of motor development for the whole group and for boys and girls separately. Data were presented as means and standard deviations. The possible differences in GMS of boys and girls were assessed by means of an independent samples t-test. Cohen's d effect size will be used to interpret the results of the t-test. The level of significance was set at  $p < 0.05$ . Possible correlations between SES and GMS were assessed by means of the Pearson correlation coefficient. Simple linear regression was used to test if SES significantly predicted the locomotor and object control scores of the 10-yr olds.

### **3.4.10 Ethics**

Ethics clearance was requested and obtained BM21/6/19, from the Biomedical Research Ethics Committee (BMREC), of the University of the Western Cape prior to any data collection.

Participants were informed verbally and in writing of the purpose of the study, the reason why they were asked to volunteer to participate, the importance of their participation, the valuable input they would make, and the procedures to be followed to conduct the interviews. Their participation in the project was

voluntary, and their identity remained confidential. They were able to withdraw from the study at any time before written consent forms were signed.

Data gathered from questionnaires and interviews was kept in a safe location by the researcher and will remain in there for a duration of five years after the completion of the study before it will be destroyed. All information was treated with strict anonymity, and the identity of participants was protected, with their names and personal information not included in any of the questionnaires and interviews or in report findings. Confidentiality of the remaining data was ensured by making sure no data results were shared or released into the public domain without the permission of the participants.

#### **3.4.10.1 Informed consent**

Participants were invited to a briefing, where the aims and objectives of the study, as well as the procedures and protocols involved in the testing, were explained both verbally and in writing in an information sheet (APPENDIX A). The testing protocols were also explained. Participants were assured that measurement would be conducted in a professional environment. Participants were encouraged to ask questions, and the researchers provided truthful answers to ensure that the participants were fully informed before deciding whether to participate. Participation in the study was completely

voluntary. Should recruited participants have agreed to participate in the research, they were asked to sign an assent form (APPENDIX E).

The participant's parents were invited to a briefing, where the aims and objectives of the study was explained (APPENDIX C) and permission was obtained through a consent form (APPENDIX G) asked to complete and sign a consent form as permission for participation (APPENDIX G).

#### **3.4.10.2      Autonomy**

Autonomy means that the patient had the freedom to exercise independent thought, intention, and action when making decisions regarding healthcare procedures. Therefore, the decision-making process was free of coercion or coaxing. To ensure that participants could make fully informed decisions, the researcher ensured that they understood all the risks and benefits of the procedure and the likelihood of success (Fouka & Mantzorou, 2011).

#### **3.4.10.3      Confidentiality**

Participants' personal information was kept confidential by maintaining their anonymity, and their data was securely stored in a locked filing cabinet in the supervisor's office. Additionally, any information obtained from this testing was only used for the purpose of the research study, and no identities were disclosed at any time. No names or personal information were required for this study. If a report or article was written about this research project, the

participants' identities were not divulged at any time (Fouka & Mantzourou, 2011).

#### **3.4.10.4 Non-maleficence**

It was required that the procedure did not harm the patient involved or others in society. This study employed the "do no harm" principles. The researcher ensured that the potential risk of the study was minimized by employing correct training and testing techniques (Fouka & Mantzourou, 2011).

#### **3.4.10.5 Beneficence**

This principle requires that the procedure be provided with the intent of doing 'good' for the patient involved. The intention of the research was to identify if there was an association between socio-economic status and gross motor skills. The research aimed to benefit not only the participants in the present study but also all individuals in various primary schools where gross motor skills are key determinants (Fouka & Mantzourou, 2011).

#### **3.4.10.6 Justice**

The idea that the burdens and benefits of new or experimental treatments must be distributed equally among all groups in society. The research will be published to inform the broader scientific communities of the benefits of the



gross motor skills under investigation (Fouka & Mantzourou, 2011).

#### **3.4.10.7 Anonymity**

Anonymity is the quality or state of being unknown to most people. The researcher will ensure that information accessed from participants will not be made known to anybody including co-participants in the study. Results will only be published as group data (Fouka & Mantzourou, 2011).

#### **3.4.10.8 Voluntary Participation**

The research participants were fully informed about the procedures and risks involved in the research and were required to give their consent to participate. The participants are allowed to withdraw without any penalties.

#### **3.4.10.9 Scientific Integrity**

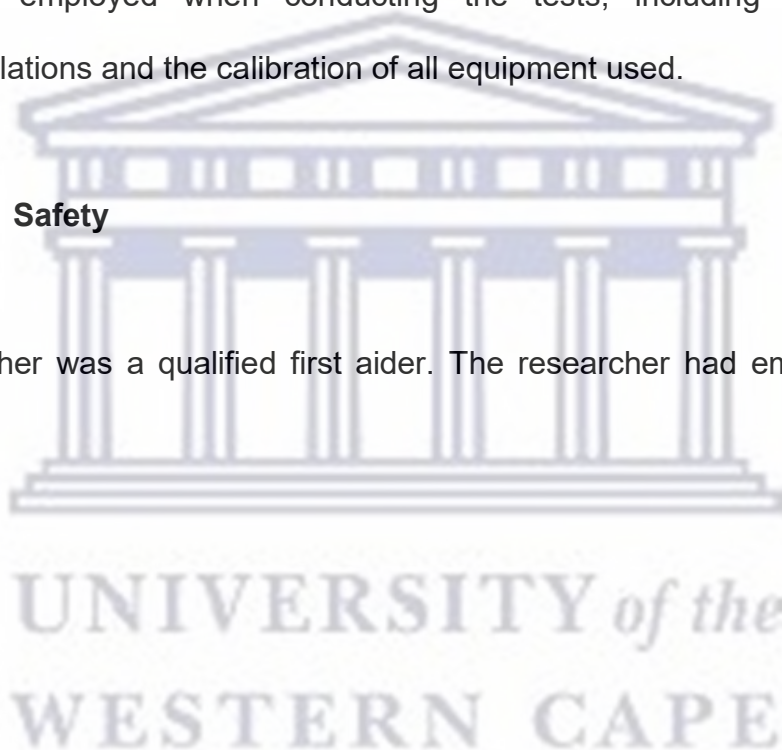
1. The researcher ensured that practices and procedures employed in the research were compliant with the ethical procedures. The research proposal was initially submitted to the departmental research committee at the University of the Western Cape in the Faculty of Community Health Sciences.
2. The researcher liaised with the participants regarding the most

convenient time for assessment and testing. The researcher further ensure that all participants were aware of their right to access the findings of the study at the Department of Sport, Recreation and Exercise Science at the University of the Western Cape once the study is completed.

3. The researcher ensured that proper techniques and correct protocols were employed when conducting the tests, including accurate calculations and the calibration of all equipment used.

#### **3.4.10.10 Safety**

The researcher was a qualified first aider. The researcher had emergency numbers.



## CHAPTER 4

### RESULTS

#### 4.1 Introduction

This study aimed to assess the possible relationship between the socio-economic status and the gross motor skills of 10-year-old grade-4 learners in the Eerste River region of the Western Cape, South Africa.

Sixty learners were selected from two primary schools in the Eerste River region of the Western Cape. Fifteen boys and fifteen girls per school were randomly selected from the total population of 10-year-old grade-4 learners at the respective schools. Permission to conduct the research at schools was granted by the Western Cape Department of Education (APPENDIX M).

#### 4.2 Descriptive Statistics

Table 5 contains descriptive data of the full group (n=60) and of the boys (n=30) and girls (n=30) separately. The mean ages for boys and girls were very similar, 10 and 10.1 years respectively.

**Table 5:** Descriptive statistics for the full group

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	60	9.58	10.50	10.06	0.23
LS Raw Score	60	33.00	48.00	43.93	3.46
LS Std Score	60	5.00	14.00	10.46	2.36
LS Percentile	60	5.00	91.00	57.56	2.57
OC Raw Score	60	32.00	48.00	44.96	3.37
OC Std Score	60	3.00	15.00	11.45	2.77
OC Percentile	60	1.00	95.00	65.53	27.69
Sum of Raw Scores	60	75.00	96.00	88.90	5.18
Sum of Std Scores	60	13.00	47.00	22.43	4.86
Gross Motor Quotient	60	79.00	124.00	105.60	10.87
SES	60	5.00	13.00	8.86	2.26

OC = Object Control Subtest

LS = Locomotor Subtest

**Table 6.** Descriptive statistics for boys and girls separately

	Gender	N	Mean	Std. Deviation
AGE	Girl	30	10.00	0.28
	Boy	30	10.10	0.16
LS Raw Score	Girl	30	43.27	3.50
	Boy	30	44.60	3.34
LS Std Score	Girl	30	9.93	2.46
	Boy	30	11.00	2.18
LS Percentile	Girl	30	53.23	26.70
	Boy	30	61.90	24.35
OC Raw Score	Girl	30	44.40	2.84
	Boy	30	45.53	3.79
OC Std Score	Girl	30	11.97	2.76
	Boy	30	10.93	2.72
OC Percentile	Girl	30	69.00	28.35
	Boy	30	62.07	27.05
Sum of Raw Scores	Girl	30	87.67	4.62
	Boy	30	90.13	5.48
Sum of Std Score	Girl	30	22.93	5.71
	Boy	30	21.93	3.87
Gross Motor Quotient	Girl	30	105.40	10.25
	Boy	30	105.80	11.63
SES	Girl	30	8.77	2.45
	Boy	30	8.97	2.09

OC = Object Control Subtest

LS = Locomotor Subtest

\*P<.05

### 4.3 Comparative Statistics

The independent samples t-test was used to assess differences between the mean scores and box plots to depict the differences in the median, minimum and maximum locomotor and object control scores of boys and girls. No mean or median differences were found between the two groups (Table 6 & Figures 1-10).

The box plots in Figures 1-8 depict the differences in the median, minimum and maximum locomotor and object control scores of boys and girls. No differences in median scores were found.

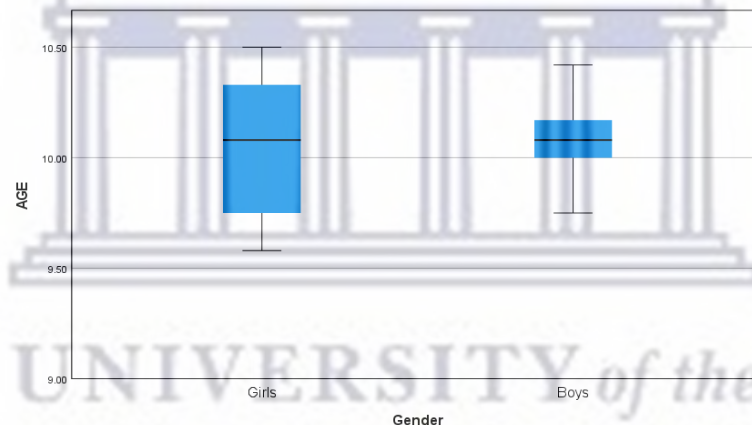


Figure 1: Age of boys and girls

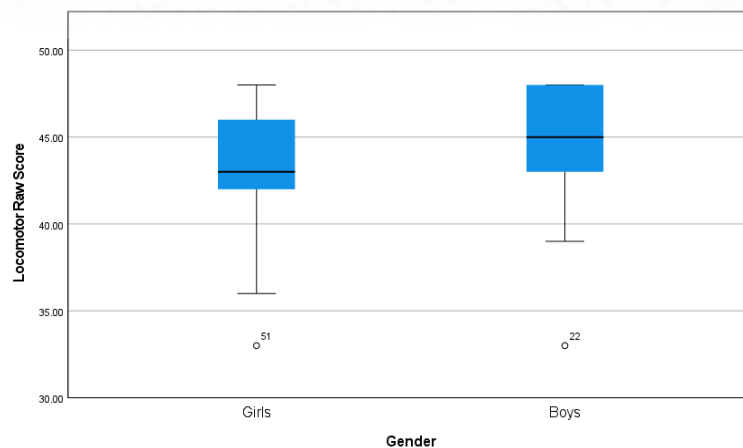


Figure 2: Locomotor raw scores of boys and girls



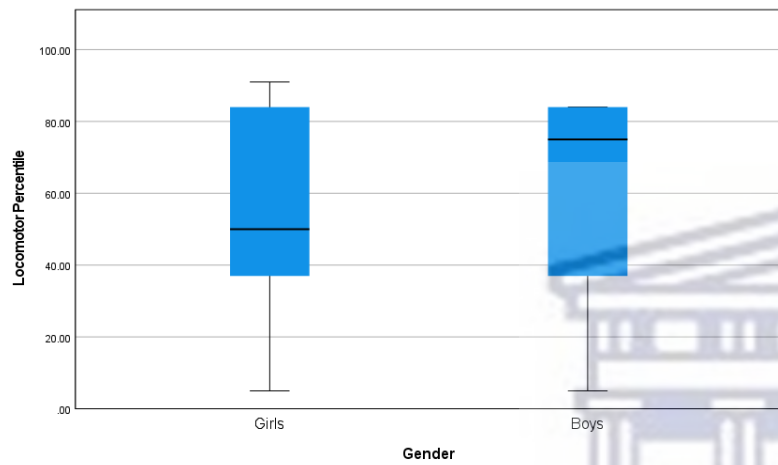


Figure 3: Locomotor percentile scores of boys and girls

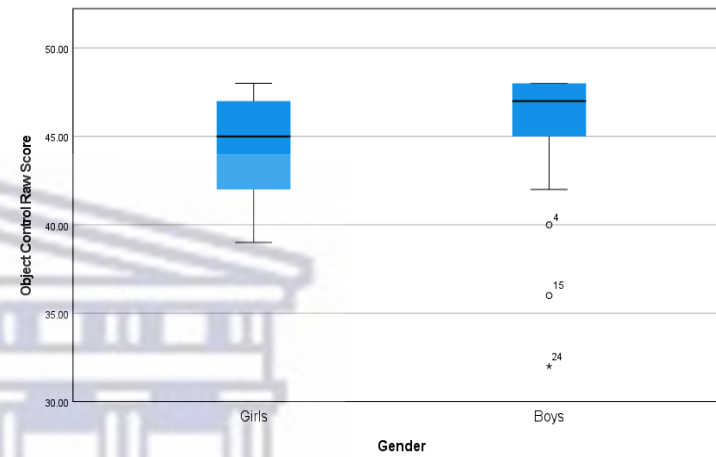


Figure 4: Object control raw scores of boys and girls

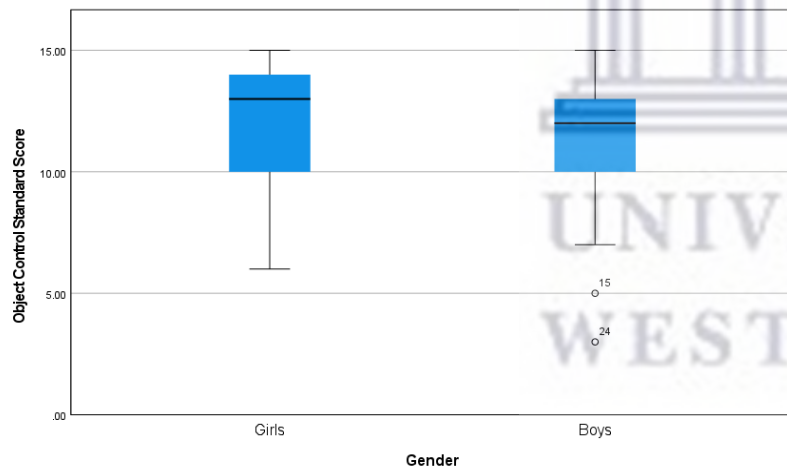


Figure 5: Object control standard scores of boys and girls

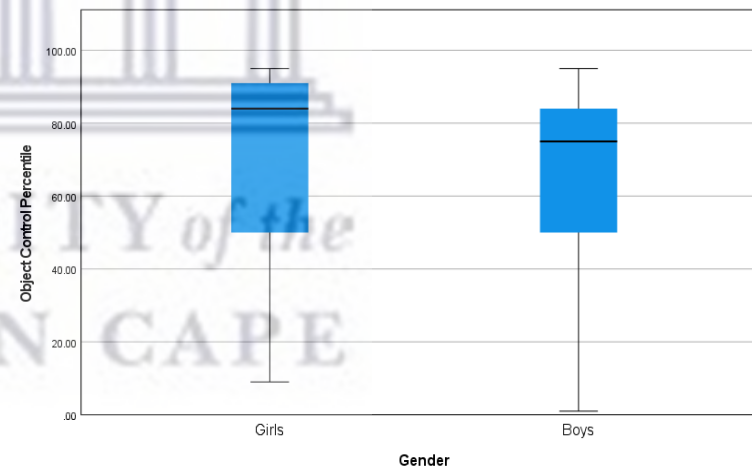


Figure 6: Object control percentiles of boys and girls.

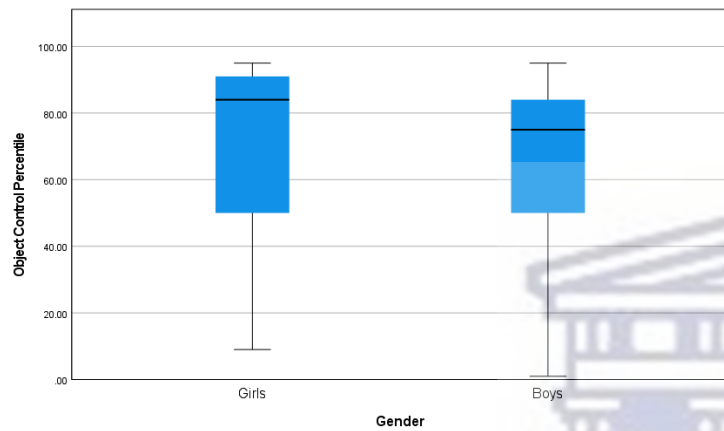


Figure 7: Object control percentiles for boys and girls

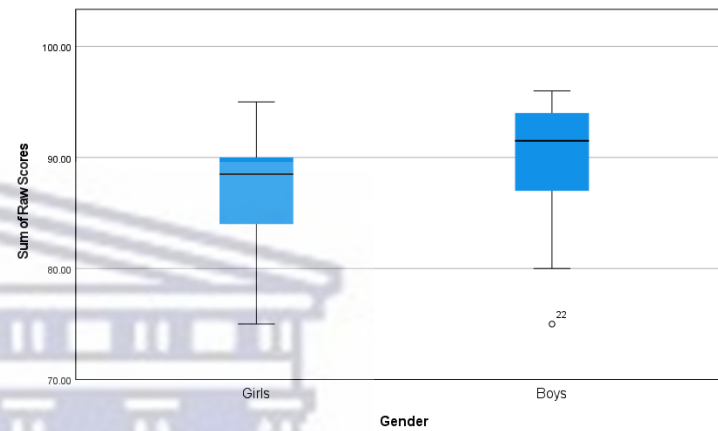


Figure 8: Sum of raw scores for boys and girls

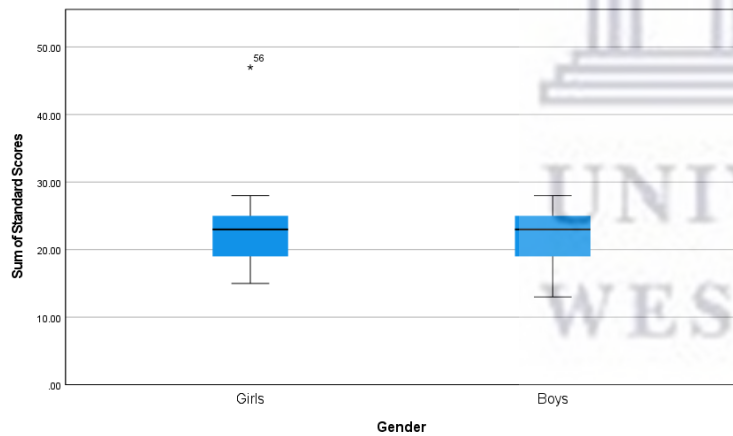


Figure 9: Sum of raw scores for boys and girls

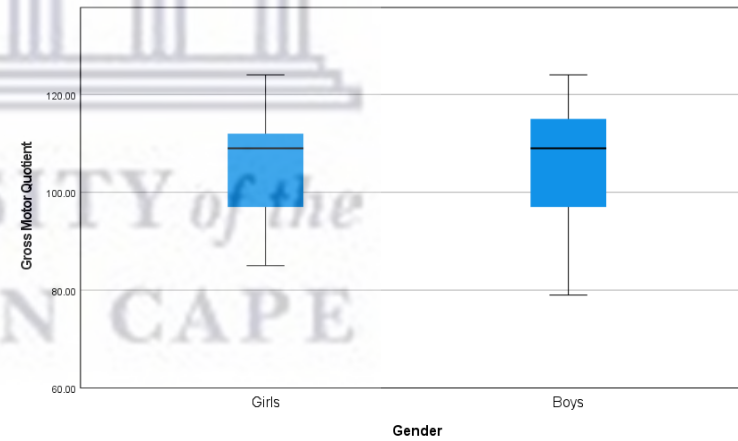


Figure 10: Gross motor quotient for boys and girls

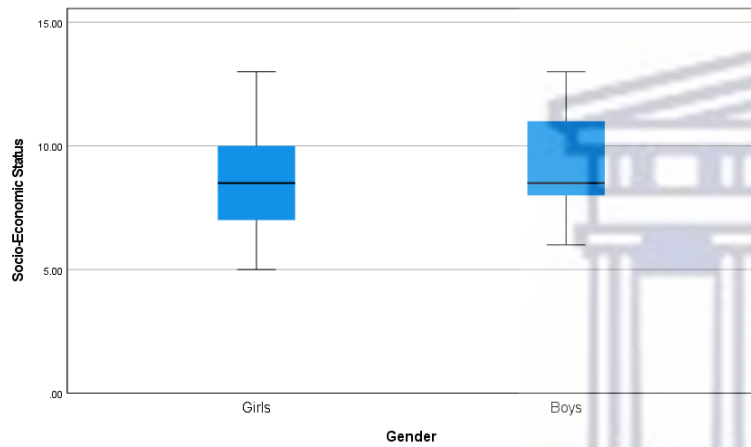


Figure 11: Socio-economic status for boys and girls



#### 4.4 TGMD Descriptive Rating Categories

TGMD descriptive rating categories for boys and girls separately and combined are depicted in Tables 8, 9 and 10. When analyzed separately, both boys and girls achieved good GMS scores with 83% of both groups falling in the average and above average categories (Tables 8 & 9). Only 16% of boys and 8% of girls were below average. The results of the full group yielded similar results. Eighty-three percent of the entire group were in the average and above average categories when analyzed as a collective.

**Table 7:** TGMD-2 Descriptive rating categories for boys

Subtest Standard Scores	GMQ	Descriptive Ratings	Total
17-20	>130	Very Superior	0
15-16	121-130	Superior	1
13-14	111-120	Above average	12
8-12	90-110	Average	13
6-7	80-89	Below Average	3
4-5	70-79	Poor	1
1-3	<70	Very Poor	0

**Table 8:** TGMD-2 Descriptive rating categories for girls

Subtest Standard Scores	GMQ	Descriptive Ratings	Total
17-20	>130	Very Superior	0
15-16	121-130	Superior	3
13-14	111-120	Above average	6
8-12	90-110	Average	19
6-7	80-89	Below Average	2
4-5	70-79	Poor	0
1-3	<70	Very Poor	0

**Table 9:** TGMD-2 Descriptive rating categories for the combined group

Subtest Standard Scores	GMQ	Descriptive Ratings	Total
17-20	>130	Very Superior	0
15-16	121-130	Superior	4
13-14	111-120	Above average	18
8-12	90-110	Average	32
6-7	80-89	Below Average	5
4-5	70-79	Poor	1
1-3	<70	Very Poor	0

#### 4.5 Correlations

Correlations between SES, locomotor and object control scores are depicted in Table 11. Although all the relationships are positive, they were low, and none were significant.

**Table 10:** Correlations of locomotor skills and object control with SES

		SES	LS Raw Score	LS Std Score	LS Percentile	OC Raw Score	AGE
SES	Pearson Correlation	1	.031	.100	.096	.068	.031
	Sig. (2-tailed)		.813	.446	.466	.605	.814
LS Raw Score	Pearson Correlation	.031	1	.884**	.809**	.149	-.085
	Sig. (2-tailed)	.813		<.001	<.001	.255	.520
LS Std Score	Pearson Correlation	.100	.884**	1	.928**	.170	-.181
	Sig. (2-tailed)	.446	<.001		<.001	.195	.167
LS Percentile	Pearson Correlation	.096	.809**	.928**	1	.177	-.265*
	Sig. (2-tailed)	.466	<.001	<.001		.176	.041
OC Raw Score	Pearson Correlation	.068	.149	.170	.177	1	-.086
	Sig. (2-tailed)	.605	.255	.195	.176		.514
AGE	Pearson Correlation	.031	-.085	-.181	-.265*	-.086	1
	Sig. (2-tailed)	.814	.520	.167	.041	.514	

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).



**Table 10: Continued**

		SES	OC Std Score	OC Percentile	Sum of Raw Scores	Sum of Std Score	Gross Motor Quotient
SES	Pearson Correlation	1	.083	.085	.065	.007	.165
	Sig. (2-tailed)		.530	.520	.621	.959	.208
OC Std Score	Pearson Correlation	.083	1	.985**	.587**	.458**	.761**
	Sig. (2-tailed)	.530		<.001	<.001	<.001	<.001
OC Percen	Pearson Correlation	.085	.985**	1	.614**	.454**	.785**
	Sig. (2-tailed)	.520	<.001		<.001	<.001	<.001
Sum of Raw Scores	Pearson Correlation	.065	.587**	.614**	1	.490**	.899**
	Sig. (2-tailed)	.621	<.001	<.001		<.001	<.001
Sum of Std Score	Pearson Correlation	.007	.458**	.454**	.490**	1	.577**
	Sig. (2-tailed)	.959	<.001	<.001	<.001		<.001
Gross Motor Quotient	Pearson Correlation	.165	.761**	.785**	.899**	.577**	1
	Sig. (2-tailed)	.208	<.001	<.001	<.001	<.001	

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

## 4.6 Regression Analysis

Simple linear regression was used to test if SES significantly predicted the locomotor and object control scores of the 10-yr olds. Table 11 is a model summary of the regression analysis. The overall regression was found to be low ( $R^2 = .160$ ), and the association was found to be non-significant ( $r > .05$ ) (Table 12). In this model SES was not significantly associated with locomotor or object control abilities.

**Table 11:** Model summary of regression analysis

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.400 <sup>a</sup>	.160	.009	2.25582	1.840

a. Predictors: (Constant), Gross Motor Quotient, Age, Sum of Std Score, Locomotor Std Score, Object Control Raw Score, Locomotor Score, Locomotor Percentile, Object Control Percentile

**Table 12:** Linear regression analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.497	9	5.389	1.059	.409 <sup>b</sup>
	Residual	254.436	50	5.089		
	Total	302.933	59			

a. Dependent Variable: SES

b. Predictors: (Constant), Gross Motor Quotient, Age, Sum of Std Score, Locomotor Std Score, Object Control Raw Score, Locomotor Score, Locomotor Percentile, Object Control Percentile

## CHAPTER 5

### DISCUSSION AND CONCLUSIONS

#### 5.1 Introduction

Gross motor skills are crucial for a child's overall development, and the decline in their competencies can be a cause for concern. Payne and Isaacs (2016) described GMS as the physical movement brought about by large muscle groups and are the bases of advanced motor behavior and advanced sport skills. They consist of locomotor skills (e.g., jumping and running), object control skills (e.g., catching and kicking) and balance skills. Gross motor skills have been associated with several positive qualities including enhanced cognitive abilities, improved cardio-respiratory fitness, increased self-perception, and higher levels of participation in physical activity (De Waal et al., 2016). Additionally, motor development is one of the key components of early childhood learning and development and social-emotional development which are essential components for school readiness.

The current study focused on four specific objectives: to assess the socio-economic status of grade 4 learners in two selected schools in Eerste River, Western Cape, South Africa; to assess their gross motor skill levels in terms of object control and locomotion; to assess GMS motor skill differences between boys and girls and to assess possible correlations between socio-economic status and GMS skill levels of the children.

The results of this study showed that the large majority (90%) of the 10-year-old grade-4 boys and girls, exhibited adequate levels of GMD with a relatively small percentage scoring below “average”. It concurs with the results reported by Tomaz et al. (2018), which showed that children from low-income areas were comparable in their skills when compared to children from high-income areas and in some instances they outperformed children from the high-income groups. However, it contradicts other studies which reported positive correlations between SES and GMS (Venetsanou, 2010; Chow, 2013) and low levels of GMS in children from low-income regions (Pope et al., 2011). The findings of the current study are also in direct contrast to the hypothesis, which stated that SES would negatively impact GMS development. It therefore suggests that a lack of access to equipment and facilities or structured and organized physical activity programs impedes the locomotor development of children. On the contrary, poorer children may have an advantage as they have limited access to “inactive” leisure activities such as computer games and watching television and their circumstances compel them to play outdoors and make use natural resources in the neighborhoods (Pope et al., 2011). The inconsequence of socio-economic status on gross motor skills is further evident from the fact that no significant correlations were found between SES and any of the gross motor skill variables under investigation. Although some positive correlations were reported they were generally weak. This is once again contrary to some of the research reported in the literature, which acknowledged that SES brings about developmental delays (Burger, 2010; Goodway et al., 2013; Draper et al., 2018).

No differences were found between boys and girls as far as their locomotor and control skills are concerned. Boys’ and girls’ physical and biological development, which include body shape and size, strength, and other physical fitness characteristics, are very similar prior to the onset of puberty. Since participants in the current study were pre-pubescent, their levels of motor skill development were very similar. Although no

differences were reported between boys and girls for general motor skills, more boys (43%) attained scores which were above average in the descriptive rating categories compared to girls (30%). Since these differences are most likely not brought about by physiological factors it could be the consequence of children's socialization into their perceived gender roles prevalent in different societies, which are often reflected in the games boys and girls play or are encouraged to play from a young age or the roles they play within the household (Hardy et al., 2010).

The outcome of this study could have been influenced by the fact that it focused on a relatively small geographical area in the Western Cape of South Africa, which could have contributed to the nonappearance of associations between SES and GMS. The age group of the participants in the current study should also be kept in mind when results are compared to other studies. Although the participants had varying levels of SES, the fact that they come from the same geographical area and live and play in the same physical environment could also have influenced the results of the study. Broader population studies, conducted over greater geographical areas may yield different results.

## **5.2 Limitations**

Limitations in this study include its lack of generalizability to other populations as all the participants in the study were conveniently chosen from a school in the Western Cape of South Africa. This, however, adds to its specificity to the population in the area. Testing time was limited and often disrupted due to the testing space as well as the weather circumstances. Testing more than one child in the setting that was used caused distractions during testing and may have limited the child's performance.

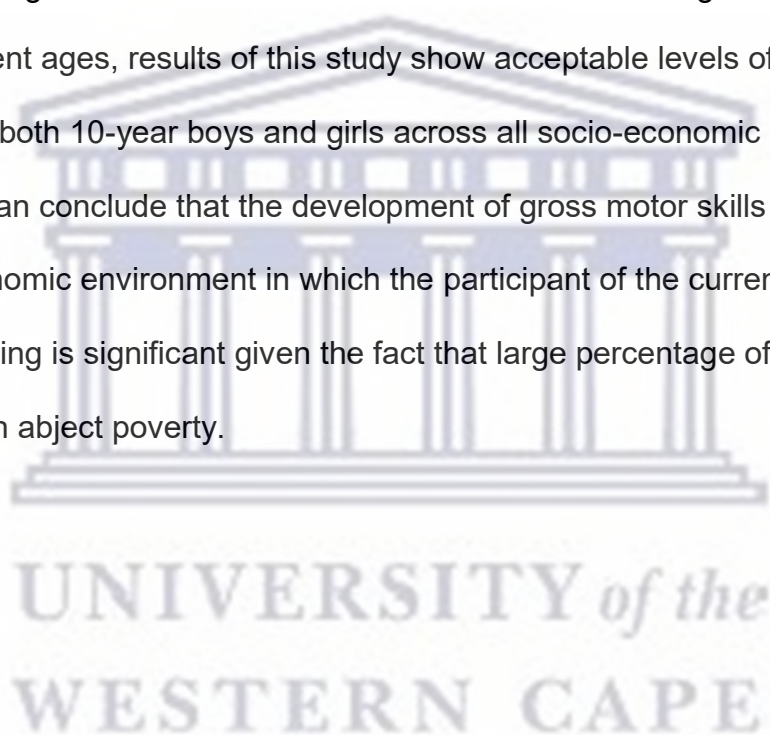


### **5.3 Recommendations**

A bigger sample size would be recommended, from more schools in the area and other provinces within South Africa. A large environment with smaller groups might aid in preventing distractions and allowing for more emphasis on the outcomes of the session.

### **5.4 Conclusion**

Although numerous studies (Travill, 2007 & 2011) have reported strong associations between SES and growth and fitness characteristics such as strength and power in children of different ages, results of this study show acceptable levels of GMS development for both 10-year boys and girls across all socio-economic levels. By implication, we can conclude that the development of gross motor skills is independent of the socio-economic environment in which the participant of the current study is reared. This finding is significant given the fact that large percentage of South African youth are living in abject poverty.





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## APPENDIX A



# UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
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## INFORMATION SHEET FOR CHILDREN

### **Project Title:**

The association of socio-economic status and gross motor skills of grade 4 learners in the Western Cape, South Africa.

### **What is this study about?**

Research is something we do to find new knowledge and to better understand how things and people work. We use research projects or studies to help us find out more about disease or illness. Research also helps us to find better ways of helping, or treating children who are sick. This research project is conducted by Emilia Adonis from the University of the Western Cape. She invites you to voluntarily (out of your free will) participate in the research project, which will provide us with information that will allow for the development of programs that will improve the motor skills of primary school learners.

### **What will I be asked to do if I agree to participate?**

You will be asked to do a gross motor skills test. The test procedure consists of two subtests i.e., the object control (strike, dribble, catch, kick, throw and roll) and the locomotion tests (run, gallop, hop, leap, jump, slide). This whole procedure will take 15-20 minutes. We will also ask your parents a few questions.

### **Would my participation in this study be kept confidential?**

Your personal information will be kept confidential which mean nobody except Emilia and her supervisors will see your responses. To help protect your confidentiality, your name will not be used in any of the documents but rather a code - so you cannot be identified for participating in this study. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. The reports will be kept in a locked cabinet and only the interviewer and the research supervisor will have access to this information. The research findings will not include any personal details.

### **Can anything bad happen to me?**

Any research has risks. Potential risks associated with the physical activities include tiredness, discomfort, strains, and sprains during assessments. The researcher is a qualified first aider and which means she can assist you if you feel any pain or discomfort.

### **What are the benefits of this research?**

Parents, teachers and the school environment play a huge role in a child's life. The school is the institution where a child spends most of his/her time and is therefore the ideal setting to encourage healthy lifestyles by being physical active and to prevent the increased growing numbers of children with obesity, high blood pressure etc. The results of this study will provide insight for the researcher on perceptions and attitudes toward physical education, which will guide the development of a physical education program, which is appropriate for your school and your community. This information is also important for government so that they can implement programs, which can facilitate other schools and allow learners, parents, and teachers to benefit from children being active and healthy creating a better awareness of the importance of one's health to create a better society and community.

### **Do I have to be in this research, and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to take part in the study. If you decide to participate in this research study, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

### **Is any assistance available if I am negatively affected by participating in this study?**

Every effort has been taken to protect you from any harm in this study. If, however, you may feel affected you can be referred to your nearest community resource for assistance.

### **What if I have questions?**

This research is being conducted by the Department of Sport, Recreation and Exercise Science with Professor Travill (contact details below) as the Head of Department at the University of the Western Cape. Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Prof A L Travill

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Exercise Science

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This research has been approved by the University of the Western Cape's  
Biomedical Research Ethics Committee

REFERENCE NUMBER: BM21/6/19





## Appendix B



### UNIVERSITY OF THE WESTERN CAPE

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### INLIGTINGSBLAD VIR KINDERS

#### **Projek Titel:**

Die assosiasie tussen sosio-ekonomiese status en die groot motoriese vaardighede van graad 4 leeders in die Wes Kaap, Suid Afrika.

#### **Waaroor gaan hierdie studie?**

Navorsing word gebruik om nuwe kennis oor iets waarvan ons min of geen kennis het. Hierdie navorsingsprojek word deur Emilia Adonis van die Universiteit van Wes-Kaapland uitgevoer en gaan oor hoe ons sosio-ekonomiese agtergrond ons groot motoriese vaardighede beïnvloed. U word uitgenooi om vrywillig (uit u vrye wil) aan hierdie navorsingsprojek deel te neem. Die inligting wat jy gaan verskaf sal ons in staat sal stel om 'n ontwikkelings program te ontwerp wat die motoriese vaardighede van laerskool kinders kan verbeter.

#### **Wat sal ek gevra word om te doen as ek toestem om deel te neem?**

Jy sal gevra word om objek beheer vaardighede (slaan van 'n bal, dribble, vang, skop, gooi, rol) and die lokomotoriese vaardighede (hardloop, galop, hop, gly, spring) uit te voer. Die toets sal ongeveer 15 – 20 minute duur. Jou ouers sal ook n paar vrae gevra word.

#### **Sal my deelname aan hierdie studie vertroulik gehou word?**

U persoonlike inligting sal vertroulik gehou word, wat beteken dat niemand behalwe Emilia en haar toesighouers u antwoorde sal sien nie. Om u vertroulikheid te beskerm, sal u naam nie in enige van die dokumente gebruik word nie, maar eerder 'n kode - dus u kan nie geïdentifiseer word vir deelname aan hierdie studie nie. As ons 'n verslag of artikel oor hierdie navorsingsprojek skryf, sal u identiteit soveel moontlik beskerm word.

Die verslae sal in 'n geslote kabinet gehou word enslegs die onderhoudvoerder en die navorsingsopsiener sal toegang tot hierdie inligting hê. Die navorsingsbevindinge sal geen persoonlike besonderhede bevat nie.

### **Kan enigeiets sleg met my gebeur?**

Enige navorsing het risiko's. Jy mag dalk sweet en dan 'n bietjie ongemaklik voel as gevold van die aktiwiteite wat jy moet uitvoer. As jy wel seer of siek voel na die praktiese sessie, moet jy jou ouers in kennis stel sodat hulle my kan kontak. As daar enige tyd insidente van risiko's of skade tydens die navorsingsproses is, is ons wettig verplig om die inligting te rapporteer. Emilia is 'n gekwalifiseerde noodhulpwerker en 'n kinderkinetikus wat beteken dat sy jou sal kan help as jy enige pyn of ongerief ervaar.

### **Wat is die voordele van hierdie navorsing?**

Ouers, onderwysers en die skoolomgewing speel 'n groot rol in die kind se lewe. Die skool is die instelling waar 'n kind die meeste van sy / haar tyd spandeer en is dus die ideale instelling om gesonde lewenstyl aan te moedig deur fisies aktief te wees en om die toenemende aantal kinders met vetsug, hoë bloeddruk, ens. te voorkom. Die resultate van hierdie studie sal insig gee vir die navorser oor die motoriese vaardighede en hoe kinders se sosiale ekonomiese status afekteer word. Die inligting van hierdie studies sal ook bydra tot die ontwerp van 'n fisiese opvoedingsprogram wat geskik is vir jou skool en jou gemeenskap. Hierdie inligting is ook belangrik vir die regering sodat hulle programme kan implementeer wat ander skole kan fasiliteer en leerders, ouers en onderwysers kan laat baat vind by kinders wat aktief en gesond is.

### **Moet ek aan hierdie navorsing deelneem, en mag ek op enige stadium onttrek?**

Jou deelname aan hierdie navorsing is heeltemal vrywillig. Jy mag kies om nie aan die studie deel te neem nie. As u besluit om aan hierdie navorsingstudie deel te neem, kan u op enige stadium onttrek en u sal nie enige voordele wat u andersins kwalifiseer, gepenaliseer of verloor word nie.

**Is daar enige hulp beskikbaar as ek negatief geaffelkeer word deur deelname aan hierdie studie?**

Alle pogings is aangewend om u te beskerm teen enige skade in hierdie studie. As u egter wel geraak kan word, kan u na u naaste gemeenskapsbronverwys word vir hulp. Die navorser is gekwalifiseerde noodhulpwerker.

**Wat as ek vrae het?**

Hierdie navorsing word deur die Departement Sport, Rekreasie en Oefenkunde met Doktor Marie Young (kontakbesonderhede op die briefhoof), as departementshoof aan die Universiteit van Wes-Kaapland, uitgevoer. Indien u enige vrae rakende hierdie studie en u regte as 'n navorsingsdeelnemer het of as u enige probleme rakende die studie aangemeld het, kontak asseblief:

Prof A Travill

HOD: Departement van Sport, Rekreasie en Oefenkunde

Universiteit van die Wes-Kaap

Privaatsak X17Belville 7535

Tel: 021 959 2377

Epos: [atravill@uwc.ac.za](mailto:atravill@uwc.ac.za)

Prof Anthea Rhoda

Dekaan: Fakulteit Gemeenskaps- en Gesondheidswetenskappe

Universiteit van die Wes-Kaap

Privaatsak X17Bellville 7535

Epos [chs-deansoffice@uwc.ac.za](mailto:chs-deansoffice@uwc.ac.za)

E Adonis

Cell: 0679056335

email: [adonisemiia@gmail.com](mailto:adonisemiia@gmail.com)

Hierdie navorsing is goedgekeur deur die Universiteit van die Wes-Kaap se Biomediese Navorsingsetiekkomitee

VERWYSINGSNOMMER: BM21/6/19

## Appendix C



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

#### **INFORMATION SHEET FOR ALL PARENTS**

##### **Project Title:**

The association of socio-economic status and gross motor skills of grade 4 learners in the Western Cape South Africa.

##### **What is this study about?**

This is a research project that is being conducted by Emilia Adonis from the University of the Western Cape. Your child has been invited to voluntarily participate in this research project. The project will allow us to assess the gross motor skills of grade 4 learners. This information will be used to develop programs that will focus on the development of these skills.

##### **What will your child be asked to do if she or he agrees to participate?**

You will be asked to complete a very simple questionnaire. The questionnaire should take about 15 minutes to complete. Your child will be asked to perform very basic physical activities, which include striking, dribbling, catching, kicking, and rolling a ball and running, galloping, hopping, leaping, and jumping. The activity test will last approximately 15-20 minutes.

##### **Would my participation in this study be kept confidential?**

Your and your child's personal information will be kept confidential. To help protect your confidentiality, the information you provide will be anonymous; no names will be used so you cannot be identified. Your name will not appear in any report or article emanating from the project. The reports will be kept in a locked cabinet and only the interviewer and the research supervisor will have access to this information. The research findings will not include any personal details.

### **What are the risks of this research?**

Any research has risks. If your child feels challenged in any way by the questions being asked, he or she may choose not to participate or withdraw at any time during the data collection process. Potential risks associated with the physical activities include fatigue, discomfort, strains, and sprains during assessments. The researcher is a qualified first aider.

If at any time there is disclosure of any incidents of risks or harm during the research process, we are legally compelled to report the information.

### **What are the benefits of this research?**

Parents, teachers, and the school environment play a huge role in a child's life. The school is the institution where a child spends most of his/her time and is therefore the ideal setting to encourage healthy lifestyles by being physical active and to prevent the increased growing numbers of children with obesity, high blood pressure etc. The results of this study will provide insight for the researcher to see how a child's socio-economic status influences their gross motor skills.

This information is also important for government so that they can implement program, which can facilitate other schools and allow learners, parents and teachers to benefit from children being active and healthy creating a better awareness of the importance of one's health to create a better society and community.

### **Do I have to be in this research, and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to take part in the study. If you decide to participate in this research study, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

### **Is any assistance available if I am negatively affected by participating in this study?**

Every effort has been taken to protect you from any harm in this study. The researcher is a qualified first aider. If, however, you may feel affected you can be referred to your nearest community resource for assistance.



### What if I have questions?

This research is being conducted by the Department of Sport, Recreation and Exercise Science with Prof Travill (contact details on the letterhead), as the Head of Department and project supervisor, at the University of the Western Cape. Should you have any questions regarding this study or if you wish to report any problems you have experienced related to the study please contact:

Prof A L Travill  
HOD: Department of Sport,  
Recreation and Exercise Science  
University of the Western  
Cape Private Bag X17  
Belville 7535  
Tel: 021 959 2377  
Email: [atravill@uwc.ac.za](mailto:atravill@uwc.ac.za)

Prof Anthea Rhoda  
Dean of the Faculty of Community and Health Sciences University of  
the Western Cape  
Private Bag  
X17 Bellville  
7535  
[chs-deansoffice@uwc.ac.za](mailto:chs-deansoffice@uwc.ac.za)

E Adonis  
Cell: 067905633  
email: [adonisemilia@gmail.com](mailto:adonisemilia@gmail.com)

This research has been approved by the University of the Western  
Cape's Biomedical Research Ethics Committee

REFERENCE NUMBER: BM21/6/19



## Appendix D



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

### INLIGTINGSBRIEF AAN ALLE OUERS

#### **Projektitel:**

Die assosiasie van sosio-ekonomiese status en groot motoriese vaardighede van graad 4-leerders in die Wes-Kaap, Suid-Afrika.

#### **Waaroor gaan hierdie studie?**

Dit is 'n navorsingsprojek wat uitgevoer word deur Emilia Adonis van die Universiteit van Wes-Kaapland. U kind is genooi om vrywillig aan hierdie navorsingsprojek deel te neem. Die projek stel ons in staat om die groot motoriese vaardighede van graad 4-leerders te toets. Hierdie inligting sal gebruik word om programme te ontwikkel wat fokus op die ontwikkeling van hierdie vaardighede.

#### **Wat sal u kind gevra word om te doen as hy of hy instem om deel te neem?**

U sal gevra word om 'n baie eenvoudige vraelys in te vul. Die vraelys neem ongeveer 15 minute neem om te voltooi. U kind sal gevra word om baie basiese fisiese aktiwiteite uit te voer, wat die volgende insluit: dribbel, vang, skop en rol van n bal, en hardloop, gallop en spring. Die aktiwiteitstoets sal ongeveer 15-20 minute duur.

#### **Sou my deelname aan hierdie studie vertroulik gehou word?**

U en u kind se persoonlike inligting sal vertroulik gehou word. Om u vertroulikheid te beskerm, is die inligting wat u verskaf anoniem; geen name sal gebruik word nie, dus kan u nie geïdentifiseer word nie. U naam sal nie in enige verslag of artikel wat voortspruit uit die projek verskyn nie. Die verslae word in 'n geslote kabinet bewaar en slegs die onderhoudvoerder en die studieleier sal toegang tot hierdie inligting hê. Die navorsingsbevindinge bevat geen persoonlike besonderhede nie.

#### **Wat is die risiko's van hierdie navorsing?**

Enige navorsing hou risiko's in. As u ongemaklik voel oor die vrae wat gevra word, kan u te eniger van die studie onttrek. Potensiële risiko's verbonde aan fisieke aktiwiteite waaraan u kind moet deelneem sluit in moegheid, ongemak, spanning en verstuikings tydens toetsing. Die navorser is 'n gekwalifiseerde noodhulp. As daar op enige tydstip aanmelding van voorvalle van risiko's of skade tydens die navorsingsproses is, is ons wetlik verplig om die inligting te rapporteer.

### **Wat is die voordele van hierdie navorsing?**

Ouers, onderwysers en die skoolomgewing speel 'n groot rol in die lewe van 'n kind. Die skool is die instelling waar 'n kind die meeste van sy / haar tyd spandeer en is dus die ideale omgewing om gesonde lewenstyle aan te moedig deur liggaamlik aktief te wees en om die toenemende aantal kinders met vetsug, hoë bloeddruk ens. te voorkom. Die resultate van hierdie studie sal die navorser insig gee oor hoe die sosio-ekonomiese status van 'n kind 'n uitwerking het op hul motoriese vaardighede.

Hierdie inligting is ook belangrik vir die regering sodat hulle programme kan implementeer, wat ander skole kan fasiliteer en leerders, ouers en onderwysers kan baat vind by die feit dat kinders aktief en gesond is, wat 'n beter bewustheid skep van die belangrikheid van 'n mens se gesondheid om 'n beter samelewing te skep.

### **Moet ek aan hierdie navorsing deelneem en mag ek enige tyd ophou deelneem?**

U deelname aan hierdie navorsing is heeltemal vrywillig. U kan kies om nie aan die studie deel te neem nie. As u besluit om wel aan hierdie navorsingstudie deel te neem, kan u enige tyd u deelname stop. As u besluit om nie aan hierdie studie deel te neem nie, of as u te eniger tyd ophou deelneem, sal u nie gepeenaliseer word of enige voordele verloor waaraan u andersins kwalifiseer nie.

### **Is daar hulp beskikbaar indien ek negatief geraak word deur aan hierdie studie deel te neem?**

Ons doen alles in ons vermoë om u teen enige skade in hierdie studie te beskerm. Die navorser is 'n gekwalifiseerde noodhulp en kinderkinetikus. As u egter voel dat u deelname aan die projek u negatief affekteer, sal ons u na die naaste gemeenskapsbron verwys vir hulp.

## **Wat as ek vrae het?**

Hierdie navorsing word uitgevoer deur die Departement Sport, Ontspanning en Oefenkunde aan die Universiteit van Wes-Kaapland met Prof Travill as Departementshoof en studieleier. Indien u enige vrae het rakende hierdie studie of as u enige probleme wat u met betrekking tot die studie ervaar het, kontak:

Prof A L Travill

HOD: Departement Sport, ontspanning en oefenwetenskap

Universiteit van die Wes-Kaap Privaatsak X17

Belville 7535

Tel: 021 959 2377

E-pos: [atravill@uwc.ac.za](mailto:atravill@uwc.ac.za)

Prof Anthea Rhoda

Dekaan van die Fakulteit Gemeenskaps- en Gesondheidswetenskappe Universiteit van Wes-Kaapland

Privaatsak X17 Bellville 7535

[chs-deansoffice@uwc.ac.za](mailto:chs-deansoffice@uwc.ac.za)

E Adonis

Cell: 067905633

epos: [adonisemilia@gmail.com](mailto:adonisemilia@gmail.com)

Hierdie navorsing is goedgekeur deur die Universiteit van Wes-Kaapland se Biomediese Navorsingsetiekkomitee

VERWYSINGSNOMMER: BM21/6/19

**Appendix E**



**UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

**ASSENT FORM**

**Title of Research Project:**

The association of socio-economic status and gross motor skills of grade 4 learners in the Western Cape, South Africa.

I, \_\_\_\_\_ (Full Name) understand that my parents/guardian have/has given permission for me to participate in the above study under the direction of Emilia Adonis. My participation in this project is voluntary and I have been told that I may stop my participation in this study at any time without penalty and loss of benefit to myself.

Participant's name: \_\_\_\_\_

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Researcher**

I read this document to the participant in English, or I gave it to him/her to read. I answered all questions posed by the participant.

**Researcher's Name:** .....

**Researcher's Signature** ..... **Datum** .....

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

**Study Coordinator's Name: Prof. A. Travill**

**Telephone: (021) 959-3934**

**Fax: (021) 959- 3688**

**Email: [atravill@uwc.ac.za](mailto:atravill@uwc.ac.za)**

## Appendix F



## UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

### TOESTEMMINGS VORM

#### **Titel van Navorsingsprojek:**

Die assosiasie tussen sosio-ekonomiese status en die groot motoriese vaardighede van graad 4 leerders in die Wes Kaap, Suid Afrika.

Ek, \_\_\_\_\_ (Volle Naam) verstaan dat my ouers / voog toestemming verleen het om aan die bogenoemde deel te neem onder die leiding van Emilia Adonis. My deelname aan hierdie projek is vrywillig en ek is meegedeel dat ek my deelname aan hierdie studie te eniger tyd kan eindig sonder straf en verlies van enige voordele.

**Deelnemer se naam** .....

**Deelnemer se handtekening** .....

**Datum**.....

#### **Navorser**

Ek het hierdie dokument aan die deelnemer, in Afrikaans gelees of dit vir hom/ haar gegee om te lees. Ek het probeer om sy / haar vrae tot die beste van my kennis te beantwoord.

**Deelnemer se naam** .....

**Navorser se handtekening** ..... **Datum** .....



## Appendix G



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

### CONSENT FORM FOR PARENTS TO GIVE PERMISSION FOR CHILDREN TO PARTICIPATE IN THIS STUDY

**Title of Research Project:**

**The association of socio-economic status and gross motor skills of grade 4 learners in the Western Cape, South Africa.**

The study has been described to me in a language that I understand. My questions about the study have been answered. I understand that by signing this consent form, I agree and allow my child to participate in this study. I understand that my child's identity will not be disclosed to anyone. I understand that my child may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

**Participant's (child's) name**.....

**Participant's signature**..... **Date**.....

**Parent/Guardian's name**.....

**Parent/Guardian's** ..... **Date**.....



## Appendix H



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa  
BMREC, Research Development, Tel: 021 959 4111,  
email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

### VRYWARINGS VORM VAN OUERS OM KINDERS TOESTEMMING TE GEE OM AAN DIE STUDIE DEEL TE NEEM

#### **Titel van Navorsingsprojek:**

Die assosiasie tussen sosio-ekonomiese status en die groot motoriese vaardighede van graad 4 leerders in die Wes Kaap, Suid Afrika.

Die studie is aan my beskryf in 'n taal wat ek verstaan. My vrae oor die studie is beantwoord. Ek verstaan dat ek, deur hierdie toestemmingsvorm te onderteken, saamstem en toelaat dat my kind aan hierdie studie deelneem. Ek verstaan dat my kind se identiteit nie aan enigiemand bekend gemaak sal word nie. Ek verstaan dat my kind enige tyd van die studie kan onttrek sonder om 'n rede te verskaf en sonder vrees vir negatiewe gevolge of verlies aan voordele.

**Deelnemer se naam** .....

**Deelnemer se handtekening** ..... **Datum** .....

**Ouer/ Voog se Naam:** \_\_\_\_\_

**Ouer/ Voog se Handtekening:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## Appendix I



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

BMREC, Research Development, Tel: 021 959 4111,

email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

### Letter of Permission

Title of the Research Project: The association of socio-economic status and gross motorskills of grade 4 learners in the Western Cape, South Africa.

Western Cape Education Department  
Room 9-26, 9th Floor  
Grand Central Towers  
Lower Parliament St  
Cape Town, 8001  
Postal Address:  
Private Bag X9114, Cape Town, 8000

Dear Sir

I, Emilia Adonis, 3352094, I am registered for a MPhil Sport for Development 2021, and have been granted permission by the Biomedical/Humanities and Social Sciences Research Ethics Committee, Faculty of Community and Health Sciences, UWC, to conduct the above-mentioned study.

Research Ethics Clearance Number: BM21/6/19

I hereby request permission to conduct my research involving all Grade 4 learners from the following schools in the Eerste River community, both girls and boys.

I trust that you will give my request your favorable consideration, and I look forward to a positive response.

Thank you.

Yours faithfully

Emilia Adonis

0679056335

[adonisemiia@gmail.com](mailto:adonisemiia@gmail.com)

## Appendix J

### Socio-Economic Variables

IDNR				
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**HIGHLY CONFIDENTIAL**















Mother's Education	Grade 6 and Below		Grade 7 - 9		Grade 10 - 12		Post Matric	
Father's Education	Grade 6 and Below		Grade 7 - 9		Grade 10 - 12		Post Matric	
Number of Siblings	1	2	3	4	5	6	7	...
Marital Status of Parents	Single		Married		Divorced			
Type of Accommodation	House		Informal Dwelling		Backyard room			
Parental Income	Under R2000 per Month		Between R2000- R5000 p/m		More than R5000 p/m		Don't know	
Number of Occupants in House	2 - 4		5 - 7		7 - 9		10 or more	
Parental Occupation	Unemployed		Unskilled laborers		Skilled Labourers/ Artisans		Professional	

**Mark the appropriate block with and X (Do not write your name on the form)**



**APPENDIX K – POLICE CLEARANCE**

TO BE COMPLETED IN BLOCK LETTERS

Full name and surname <u>Emilia Adoni</u>		<b>OFFICE USE ONLY</b>		
Identity number <u>9412040347983</u>		FIMS Enq. No. <u>19116943</u>		
Town and country of birth <u>South Africa</u>		Barcode No. <u>20190325</u>		
Address <u>40 Frazier Street Klemdo, Esterhuysen</u>		Received <input checked="" type="checkbox"/> M <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> AC <input checked="" type="checkbox"/> NAB	Verify	
Date of birth <u>1994-12-26</u> Race: <input checked="" type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> W Gender: <input checked="" type="checkbox"/> M <input type="checkbox"/> F		FIMS <u>2019-03-25</u>	Validate	
Statement by the person whose fingerprints are taken: * I have not been convicted of any offence (date and sentence)		Scanned <u>12/28/18</u>	SRE	
unconditionally indemnify the South African Police Services and all its members, employees as well as the Government of the Republic of South Africa against any liability which results or may result from furnishing information in this regard.				
Signature of applicant <u>002 360368</u>		Call phone no of applicant _____ * Delete which is not applicable		
I certify that the above applicant's signature was placed on this form in my presence and that the fingerprints taken by me.		These finger- and palm prints MUST be checked for quality by a senior member of the station BEFORE the individual is released. If unsuitable the prints MUST be retaken.		
Initials and surname <u>PN Moya</u> (Signature of official responsible)		Checked by <u>Moya</u> PERSAL no. <u>72609</u>		
Designation <u>Constable</u>		Business address <u>Klemdo SAPS</u> (Street address)		
LEFT THUMB  Fold	Reason for enquiry: <u>Name clearance</u>		RIGHT THUMB  Fold	
1 RIGHT HAND Thumb Fold 	2 Forefinger Fold 	3 Middle finger Fold 	4 Ring finger Fold 	5 Little finger RIGHT HAND Fold 
6 LEFT HAND Thumb Fold 	7 Forefinger Fold 	8 Middle finger Fold 	9 Ring finger Fold 	10 Little finger LEFT HAND Fold 
Left hand (Plain impressions of four fingers taken simultaneously) 		Right hand (Plain impressions of four fingers taken simultaneously) 		

**CRIM LCRC BELLVILLE**

SOUTH AFRICAN POLICE SERVICE



SUID-AFRIKAANSE POLISIEDIENS



SOUTH AFRICAN POLICE SERVICE

AMAPOLISA OMZANTSI AFRICA

INDEMNITY

I Emilio Adonis (name & surname)

ID NUMBER: 9412060347683

ADDRESS: 40 Inessa Street  
Kleinlei  
Eersteruig  
7100

Hereby request the availability of my criminal record, if any, in my own capacity.

I hereby authorize the South African Police Service to take/have my fingerprints, together with my name, surname and identity number and to make it available to the Criminal Record Centre of the South African Police Service for record tracing purposes.

I furthermore authorize the South African Police Service to furnish personal information regarding my criminal background, criminal history, previous convictions and/or any other relevant information such as usually furnished by the Criminal Record Centre of the South African Police Service in this regard and to post it to the nearest Police Station in my vicinity or to send it by post to my address, where I shall take receipt of it.

I furthermore unconditionally indemnify the South African Police Service and all its members, employers as well as the Government of the Republic of South Africa against any liability which results of may result from furnishing information in this regard, including documents or information in this regard, which may come to the attention of any other person or institution by any other means.

Signed at: KLEINVLEI SAPS On the 2019, 03, 19

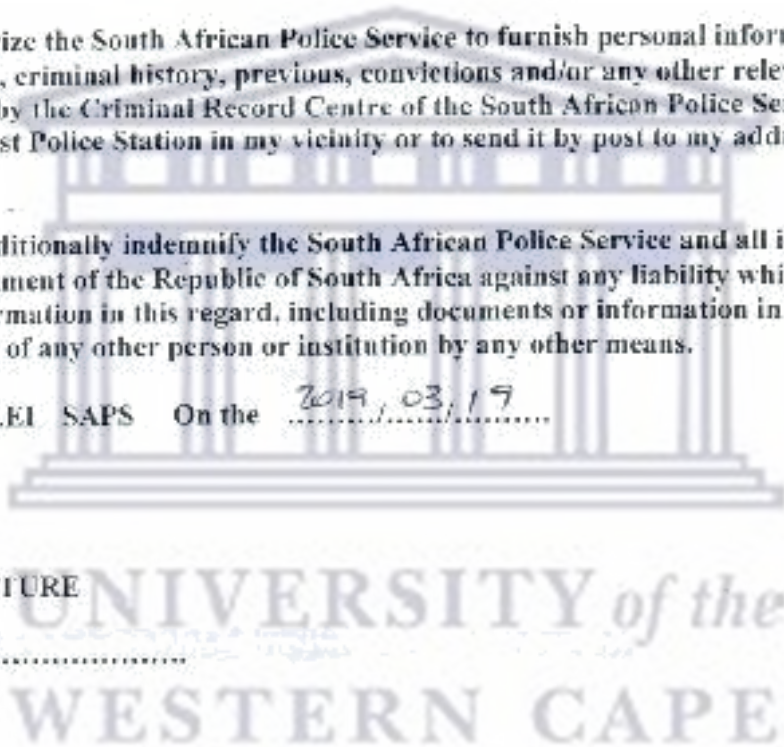
APPLICANT SIGNATURE

[Signature]

WITNESSES

1 [Signature]

2 .....









BENYS VAN BETALING / PROOF OF PAYMENT

ONTVANGSTE NR./INBOEKING NR: 37020364

DOEL V ONTVANGSTE (KONTANSIE NR./PURPOSE RECEIPT NR: 13581387

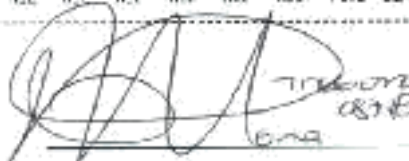
DATE/DATE: 2019-03-19

REKUNSTIGDE/BENEFICIARY: MISS E ADAMS

BEDRAG/AMOUNT: D0 D00 000 056 , 00

NUL	NUL	NUL	NUL	NUL	NUL	NUL	NUL	NUL	VF	SPS	NUL	NUL
NUL	NUL	NUL	NUL	NUL	NUL	NUL	NUL	NUL	FOVE	SID	NUL	NUL

LITSCREIF/TSUIT:



T. ADAMS  
0876

DEUR/BY : MOWA FN ( 30017 ) 2019-03-19 10:05:36  
KASSIER NR./CASHIER NR: 582 KLEEMW.EI

DOEL VAN ONTVANGSTE/PURPOSE OF PAYING

PRODUK (STAATS INKOMTE ) / PRODUCT (STATE INCOME )

POLICE SERVICES: CLASSIFICATION FINGERPRINT-SMP91 ( 1 OR 56 EACH ) 05/7/19 56,00

\*\*\*\*\* FINTE VAN BENYS/END OF PROOF \*\*\*\*\*



UNIVERSITY of the  
WESTERN CAPE

## Appendix L



**UNIVERSITY of the  
WESTERN CAPE**



19 August 2021

Ms E Adonis  
Sport Recreation and Exercise Science  
Faculty of Community and Health Sciences

**Ethics Reference Number:** BM21/6/19

**Project Title:** The association of socio-economic status and gross motor skills of grade 4 learners in the Western Cape.

**Approval Period:** 18 August 2021 – 18 August 2024

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

**Please remember to submit a progress report annually by 30 November for the duration of the project.**

*Permission to conduct the study must be submitted to BMREC for record-keeping.*

The Committee must be informed of any serious adverse event and/or termination of the study.

*Ms Patricia Josias  
Research Ethics Committee Officer  
University of the Western Cape*

NHREC Registration Number: BMREC-130416-050

Director: Research Development  
University of the Western Cape  
Private Bag X 17  
Bellville 7535  
Republic of South Africa  
Tel: +27 21 959 4111  
Email: research-ethics@uwc.ac.za

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

## Appendix M



### Directorate: Research

[meshack.kanzi@westerncape.gov.za](mailto:meshack.kanzi@westerncape.gov.za)  
Tel: +27 021 467 2350  
Fax: 086 590 2282  
Private Bag x9114, Cape Town, 8000  
[wced.wcape.gov.za](http://wced.wcape.gov.za)

**REFERENCE:** 20211014-6731

**ENQUIRIES:** Mr M Kanzi

Ms Emilia Adonis  
49 Bloekom Avenue  
Forest Heights  
Eerste River  
7100

Dear Emilia Adonis,

**RESEARCH PROPOSAL: THE ASSOCIATION OF SOCIO-ECONOMIC STATUS AND GROSS MOTOR SKILLS OF GRADE 4 LEARNERS IN THE WESTERN CAPE, SOUTH AFRICA.**

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **18 April 2023 till 30 September 2023**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Mr M Kanzi at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

The Director: Research Services  
Western Cape Education Department  
Private Bag X9114  
CAPE TOWN  
8000

We wish you success in your research.

Kind regards,  
Meshack Kanzi  
Directorate: Research  
DATE: 18 April 2023

A handwritten signature in black ink, appearing to read 'Meshack Kanzi'.

1 North Wharf Square, 2 Lower Loop Street,  
Foreshore, Cape Town 8001  
tel: +27 21 467 2531

Private Bag X 9114, Cape Town, 8000  
Safe Schools: 0800 45 46 47  
[wcedonline.westerncape.gov.za](http://wcedonline.westerncape.gov.za)