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# **OCCUPATIONAL ADAPTATION IN ADOLESCENT FEMALE ARTISTIC GYMNASTS**

**Stacey Smith**

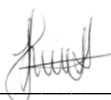
**A research report submitted to the Faculty of Health Sciences,  
University of the Witwatersrand, Johannesburg, in partial  
fulfilment of the requirements for the degree of Master of Science  
in Occupational Therapy.**

**Johannesburg**

**2020**

## Declaration

I, Stacey Joy Smith hereby declare that this research report is my own work. It is being submitted for the degree of Masters of Science in Occupational Therapy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

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\_\_\_\_\_ 13 \_\_\_\_\_ Day of \_\_\_\_\_ October \_\_\_\_\_, 2020.

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## **Abstract**

Adolescence is a time period defined by much change. This change is not only limited to biological change as experienced during puberty but also environmental change as adolescents transition from primary school into high school. Adaptation is required in order to cope with this change, especially if they are to maintain successful participation in various occupations. In order to examine the level of adaptation of adolescent females aged 13 to 17 who take part in artistic gymnastics in relation to their occupational identity and occupational competence, a descriptive cross sectional analytical approach was used. Twenty-two participants completed an online self-administered questionnaire. The questionnaire consisted of a demographic questionnaire as well as a questionnaire based on the interview questions and rating scales in the Occupational Performance History Interview (OPHI-II) for occupational identity and occupational competence. These were analysed together in order to determine the level of occupational adaptation. Data was analysed using Statistica v13.1. The majority (63.63%) of participants were 13 years of age, competing in level 6 in artistic gymnastics (31.82%) with 81.82% having competed at National Championships. Eighty-two percent of participants had experienced injuries during their participation in gymnastics with 54.54% of their participation having been affected by these injuries. The overall occupational identity score of the participants was positive (86.36%) with older adolescents and participants in level 8-9 having the highest overall percentage scores (90.0% respectively). The overall occupational competence score of the participants was positive (80.56%) with younger adolescents and participants in level 5 having the highest overall percentage scores (81% and 82% respectively).

The overall occupational adaptation score was reflected by the average of the total percentage scores for occupational identity and occupational competence combined. This score was also positive (84.60%) with younger adolescents having the higher overall percentage (87.63%). The only factor which showed significance ( $p=0.050$ ) to occupational adaptation was the presence of injury which influenced participation. The presence of injury also showed significance ( $p=0.030$ ) on occupational identity.

## Table of Contents

Declaration .....	i
Acknowledgments.....	iii
Abstract .....	iv
Table of Contents .....	v
List of Tables .....	ix
List of Figures .....	x
Operational Definitions.....	xi
Abbreviations.....	xii
CHAPTER 1 INTRODUCTION .....	1
1.1 Introduction and background to the study .....	1
1.2 Statement of the Problem .....	3
1.3 Purpose of the Study .....	5
1.4 Research Question .....	6
1.5 Aim .....	6
1.6 Objectives.....	6
1.7 Justification.....	6
1.8 Layout of research report .....	7
CHAPTER 2: LITERATURE REVIEW.....	9
2.1 Introduction.....	9
2.2 Occupational participation, adaptation, identity and competence .....	9
2.2.1 Occupation participation.....	9
2.2.2 Adaptation.....	10
2.2.3 Occupational Identity.....	11
2.2.4 Occupational Competence .....	12
2.3. Adaptation in adolescence and the effect thereof on occupational identity and occupational competence .....	13
2.3.1 Physical, cognitive and psychological changes .....	14
2.3.2 Sleep.....	17
2.3.3 Autonomy.....	18
2.3.4 Environmental change.....	19
2.3.5 Relationships.....	19
2.4 Other factors affecting occupational identity and competence in artistic gymnastics ..	20
2.4.1 Influence of society, parents, coaches.....	20
2.4.1. Expectations and demands within artistic gymnastics .....	21
2.4.2 Injuries .....	24
2.5 Assessment of occupational identity and competence .....	25

2.6 Summary.....	26
CHAPTER 3: METHODOLOGY.....	28
3.1 Introduction to Methodology.....	28
3.2 Summary of Research Design.....	28
3.3 Population and sampling.....	28
3.3.1 Sample size.....	29
3.3.2 Selection Criteria.....	29
3.4 Research Instrumentation.....	30
3.4.1 Demographic questionnaire.....	30
3.4.2 Questionnaire based on Occupational Performance History Interview (OPHI-II) .....	30
3.4.3 Pilot study.....	33
3.5 Research procedure.....	35
3.5.1 Data Collection.....	35
3.6 Data management.....	36
3.7 Data Analysis.....	37
3.7 Ethical Considerations.....	37
3.7.1 Distress Protocol:.....	38
3.8 Summary of Methodology.....	38
CHAPTER 4: RESULTS.....	40
4.1 Introduction.....	40
4.2 Demographic information.....	40
4.2.1 Age.....	40
4.2.2 Grade at school.....	40
4.3 Factors related to involvement in gymnastics.....	41
4.3.1 Age started gymnastics.....	41
4.3.2 Reason for starting gymnastics.....	41
4.3.3 Level of gymnastics.....	42
4.3.4 Training.....	42
4.3.5 Competitions.....	43
4.3.6 Achievements.....	43
4.3.7 Injuries.....	44
4.4 Occupational Identity.....	46
4.4.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Identity.....	52
4.5 Occupational Competence.....	52
4.5.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Competence.....	57

4.6 Occupational Adaptation .....	57
4.6.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Adaptation .....	58
4.7 Summary of results .....	59
CHAPTER 5: DISCUSSION.....	61
5.1 Introduction .....	61
5.2 Demographic information .....	61
5.2.1 Personal factors .....	61
5.2.2 Factors related to involvement in gymnastics .....	62
5.3 Occupational identity.....	66
5.4 Occupational competence.....	69
5.5 Occupational adaptation .....	74
5.6 Strengths and limitations of the study.....	76
CHAPTER 6: CONCLUSION .....	78
6.1 Introduction .....	78
6.2 Conclusion .....	78
6.3 Recommendations .....	80
6.3.1 The sport of gymnastics .....	80
6.3.2 Future research.....	81
References .....	82
Appendix A – Demographic and General Information Questionnaire .....	91
Appendix B – Questionnaire based on the Occupational Performance History Interview .	93
.....	93
.....	94
.....	95
.....	96
.....	97
.....	98
.....	99
.....	100
Appendix C – Occupational Performance History Interview II – Interview Questions .....	101
Appendix D – Occupational Performance History Interview II Rating Scales.....	117
Appendix E- Ethics clearance .....	123
Appendix F- Permission letter South African Gymnastics Federation.....	124
Appendix G - Permission Letter Gymnastics clubs.....	128
Appendix H - Information Sheet for Parents.....	132
Appendix I - Informed consent .....	134
Appendix J - Information Sheet for Gymnasts .....	135

Appendix K - Informed Assent .....	136
Appendix L – Turn it in report.....	137

## List of Tables

Table 4.1 Age of participants (n=22) .....	40
Table 4.2 Grade of participants (n = 22).....	41
Table 4.3 Age participants started gymnastics (n=22).....	41
Table 4.4 Reasons for starting gymnastics (n=22) .....	41
Table 4.5 Days per week and hours per week spent training gymnastics according to age (n=22).....	42
Table 4.6 Competitions competed in (n=22).....	43
Table 4.7 Performance in competitions (n=22).....	43
Table 4.8 Best achievement in gymnastics (n=22).....	44
Table 4.9 Injuries experienced in gymnastics.....	44
Table 4.10 Injuries affected participation in gymnastics .....	45
Table 4.11 Difference between younger and older adolescents for factors related to involvement in gymnastics .....	46
Table 4.12 Components of Occupational Identity.....	48
Table 4.13 Influence of level achieved in competition .....	52
Table 4.14 Components of Occupational Competence .....	53

## List of Figures

Figure 4.1 Level of gymnastics (n=22) .....	42
Figure 4.2 Number of weeks not able to participate in gymnastics as a result of injuries (n=12) .....	45
Figure 4.3 Difference in percentage occupational identity scores for younger and older adolescents .....	49
Figure 4.4 Difference in percentage occupational identity scores for different levels of gymnastics.....	51
Figure 4.5 Difference in percentage occupational competence scores for younger and older adolescents.....	54
Figure 4.6 Difference in percentage occupational competence scores for different levels of gymnastics.....	56

## Operational Definitions

Adolescence	Adolescence is a period of time which brings about much transition and change both biologically (emotional and physical changes associated with puberty) as well as environmentally (as one transitions from primary school into high school) (Kielhofner, 2008)
Apparatus	Specialised equipment used during training and competing in women's artistic gymnastics namely the vault, uneven bars, balance beam and floor (South African Gymnastics Federation, 2019a)
Artistic gymnastics	The type gymnastics whereby women compete in four disciplines or apparatus namely vault, uneven bars, balance beam and floor (Atikovic, Čuk & Kalinski, 2017)
Autonomy	The ability to make one's own, informed decisions (Phelan & Kinsella, 2009)
Occupation	Meaningful and purposeful activities in which one participates on a daily basis, including survival skills, self-care tasks, rest and sleep, work, play, leisure, education and social participation (American Occupational Therapy Association, 2014)
Occupational adaptation	The ability to adapt to changing circumstances during the active participation of an occupation (Grajo, Boisselle & DaLomba, 2018)
Occupational competence	Maintaining participation in an occupational which provides self-fulfilment and is reflective of one's definition of one's self (occupational identity) (Kielhofner, 2008)
Occupational identity	One's definition of one's self in relation to occupations which one has and is currently participating in (Kielhofner, 2008)
Participation	Active engagement or involvement in an occupation (Kielhofner, 2008)

## **Abbreviations**

FIG	Federation of International Gymnastics
OPHI-II	Occupational Performance History Interview II
REDCap	Research Electronic Data Capture
SAGF	South African Gymnastics Federation
USA	United States of America

# CHAPTER 1 INTRODUCTION

## 1.1 Introduction and background to the study

*“The uniqueness of occupational therapy lies in its focus on occupation as central in promoting and maintaining health and well-being”* (Law, Steinwender & Leclair 1998, p. 82).

The theory base of occupational science emphasises health as personal fulfilment in relation to occupations, and the ability to adapt to challenges to achieve health and wellbeing. An adaptive response should be flexible in terms of the individual’s capacity to perform to the best of their ability when dealing with the challenges of life (Hartweg, 1990).

Thus, occupational adaptation is required to achieve a “state of competency in occupational functioning” (Schkade & Schultz, 1992) which aligns with an individual’s aspirations. Occupational adaptation is a developmental process that occurs over time and has two components- occupational identity and occupational competency (Kielhofner, 2008).

On the one hand, occupational identity considers the definition of one’s self in relation to occupation. It is defined by Kielhofner as a sense of “who one is and wishes to become” (Kielhofner 2008, p. 119). It can be viewed as the internalisation of participation in an occupation in relation to capacity, and the effectiveness of one’s doing, satisfaction, roles as well as the obligations the occupation presents (Kielhofner, 2008). Furthermore the importance of the occupation, the familiarity of the routine involved and how the environment supports or distracts from the occupation are included (Kielhofner, 2008). This brings light to the fact that engagement in occupations may be affected by both personal and environmental factors.

On the other hand, occupational competence may be referred to as the extent to which a person can maintain participation in an occupation which satisfies them and which is concomitant with their occupational identity. It involves meeting one’s expectations while fulfilling roles inherent of the occupation, sustaining a productive routine and achieving productivity and fulfilment (Kielhofner et al., 2001; Kielhofner, 2008). Both occupational identity and occupational competence are required to adapt in achieving

a standard of performance that is required for fulfilment in occupations. In sporting activities such as artistic gymnastics this may be aligned with the degree to which an individual identifies with the athlete role (Brewer, Raalte & Linder, 1993) where performance is judged against others. This is true for engagement in competitive sporting activities.

Artistic gymnastics is a skill-based leisure or sport occupation where female gymnasts compete on four apparatus or events. These events include vault, uneven bars, balance beam and floor. Gymnasts compete at various levels in this sport, starting at Level One and progressing to Senior Olympic Level. It is a sport that is usually started in childhood and occupational adaptation is required when the sport is continued into adolescence.

Research indicates that artistic gymnastics, as with other competitive sports, presents many challenges. These challenges include long hours of training, commitment and the demanding need to practice if proficiency is to be achieved (Gagné, Ryan & Bargmann, 2003). As a result, other aspects of life may be neglected (Brewer, Raalte & Linder, 1993) in order to achieve the goals in relation to performance in artistic gymnastics.

There are various personal and environmental factors which may influence participation and adaptation in this sport, particularly for adolescents. Personal factors which adolescent females may be confronted with include maintaining the required body physique particularly as physical maturity occurs in adolescence (Davis, 1997), physiological changes which affect self-identity and other aspects such as the need for more sleep (Casas et al., 2013). Other changes include the need for more autonomy which may be difficult in artistic gymnastics which is controlled to a large extent by the coach and regulations set out by the sport. The time needed to practice may now also clash with other needs and obligations such as increased academic demands and socialising with peers, which increases during adolescence (Carskadon, 2011).

The biomechanics in artistic gymnastics as well as the effects of physical activity on quality of life and self-image have been well researched and published (Kirkcaldy, Shephard & Siefen, 2002; Prassas, Kwon & Sands, 2006; Asseman, Caron &

Crémieux, 2008; Garcia et al., 2011; Gloria, 2014). However, there is very little literature on the identification of capacity from past experience and self-appraisal in terms of satisfaction in the present within this occupation which are related to occupational adaptation (Kielhofner, 2008). There is also very limited literature to determine how the above supports the development of the gymnasts' future aspirations.

## **1.2 Statement of the Problem**

A number of life changing adjustments are needed as an individual moves from childhood to adolescence. For example, the change from primary school into high school brings about environmental and social changes as well as an increase in academic demands. This is coupled with a number of physiological changes which are associated with puberty. For females involved in artistic gymnastics adapting to these changes may affect the way in which they identify with this occupation. The greatest changes include those related to biological maturation and transformation of the body. In sports like artistic gymnastics females are pressurised to remain thin and to restrict food intake in order to maintain the expected physique associated with the sport. This can result in a negative occupational identity related to body dissatisfaction and negative adaptation resulting in psychological addiction to exercise which can be associated with other risk behaviours such as anorexia (Fortes et al., 2013). A study by Corujeira et al (2012) discusses that competitive gymnasts are observed to have a lower body fat percentage as compared to a control group and that competitive gymnastics has an influence on body composition but that this does not seem to "compromise their nutritional status" (Corujeira et al., 2012). This study is based on a small sample and also highlights the need for further studies in order to investigate this concept further. This is contradicted by Dallas et al (2016) who highlight that pre-adolescent and adolescent athletes who participate in aesthetic sports such as artistic gymnastics are at a high risk of being deficient in basic nutrients (Dallas, Dallas & Simatos, 2016). The difficulty with identifying eating-disorders in groups such as competitive artistic gymnasts is that extreme behaviours and attitudes and traits such as perfectionism and obsessiveness associated with eating disorders may be rationalised in a competitive sporting context and therefore are difficult to differentiate between problematic or beneficial (Tan et al., 2016).

However the bodily changes which occur in puberty, may also increase bodily strength, speed and dynamic force (Muehlbauer, Gollhofer & Granacher, 2012) as well physical fitness (Douda et al., 2007), and flexibility (Douda et al., 2008). These changes, along with an increase in and maturation of executive functioning due to brain development during adolescence, may ultimately lead to an improved cognitive ability and positive adaptation facilitating the ability to perform and excel in the highly demanding requirements of artistic gymnastics (Selemon, 2013). An improvement in higher order cognitive functions may also positively influence a gymnasts' ability to analyse and understand components of movement, as well as other challenging aspects of the sport, such as the code of point and scoring calculations, which may also lead to an improvement in performance in and satisfaction with the sport (Windee & Maureen, 2007).

A study which examined the personality traits of adolescent gymnasts indicated that they score high in their ability to cope with adversity and performance under pressure, which may indicate the positive adaptation despite the number of changes and pressures which are experienced in adolescence, though this has not been specifically defined in research (Kaplánová, 2019).

It should be noted that in artistic gymnastics, there are differences in peak ages between men and women. The reasons for this are based on the fact that a key factor in men's gymnastics is strength whereas in women's gymnastics a weight to strength ratio is important (Delaš Kalinski, Jelaska & Knezević, 2017). For this reason, men's performance peaks in their twenties, whereas women peak at a much younger age (15 to 20), therefore placing more pressure on them during their adolescent years (Atikovic, Čuk & Kalinski, 2017; Delaš Kalinski, Jelaska & Knezević, 2017). The occupational adaptation of adolescent females, their occupational identity and competence when engaging in artistic gymnastics amid all the changes in adolescence is unknown. It is unclear whether aspects such as satisfaction with the occupation, perceived capacity and effectiveness of doing as well as obligations and routine required in view of their individual aspirations result in positive or negative adaptation in relation to this sort as the gymnastics deal with other changes that occur during adolescence.

### **1.3 Purpose of the Study**

The purpose of the study is to describe the adaptation of adolescent females between the ages of 13 and 17 years who take part in the occupation of artistic gymnastics, in relation to their occupational identity and competence (specifically personal goals and projects, commitments and values, obligations, expected success, ability appraisal and responsibilities related to engagement in artistic gymnastics as an adolescent). The change in meaning and effectiveness of adaptation from childhood into adolescence will also be described. Therefore, occupational adaptation in the occupation of artistic gymnastics in relation to the life changes associated with adolescence will be addressed by establishing the response to challenges in maintaining the females' occupational identity and competence within artistic gymnastics.

The purpose of this study is to contribute to the body of knowledge and understanding of occupational adaptation, specifically related to sport as an occupation, as there is a lack of research on this topic. The occupational adaptation of female artistic gymnasts is not known. The impact of changes occurring during adolescence on occupational adaptation is also not known. The researcher personally noted that there is a school of thought among non-competitive sports participants that competing in a sport such as gymnastics while transitioning from childhood into adolescence is looked at negatively and that it is believed that this adaptation is not positive due to the various factors at play during this time. The researcher also noted that there is a belief that transitioning from childhood into adolescence affects participation in competitive sport negatively (specifically artistic gymnastics), although it is not attributed to any specific factors. This study will assist with understanding factors which impact the participation of adolescent females in artistic gymnastics and may assist with identifying techniques and strategies which may assist with the occupational adaptation of female gymnasts during the period of adolescence. Additional factors which will be looked at include the level in which gymnasts are competing in, the competitions they compete in, their performance in competitions, their achievements as well as the presence and impact of injuries on participation, as they may provide valuable information which may be related to overall occupational adaptation.

Additionally, the results will also be described according to the differences between younger and older adolescents, to reduce the age range of adolescence (13 to 17) and allow for specific comparisons between the age groups.

### **1.4 Research Question**

What is occupational adaptation of female adolescent artistic gymnasts in Gauteng?

### **1.5 Aim**

To determine the occupational adaptation of female adolescent artistic gymnasts in Gauteng

### **1.6 Objectives**

1. To determine factors related to involvement in gymnastics for female adolescent artistic gymnasts in Gauteng
2. To determine the occupational identity and occupational competence of female adolescent artistic gymnasts in Gauteng
3. To determine the level of adaptation of female artistic gymnasts from childhood to adolescence and how this relates to life-changes
4. To determine differences for occupational identity and occupational competence and level of adaptation for female adolescent artistic gymnasts in young adolescents (13-15 years) and older adolescents (16-17 years) and the level of gymnastics at which they compete

### **1.7 Justification**

Occupational therapy focuses on occupation and the value thereof in attaining health. Where there is development of a positive occupational identity and achievement of occupational competence, this is termed as “constructive” occupational adaptation, which in this study will be referred to as positive occupational adaptation (Kielhofner, 2008). Adaptation is developmental and is required in certain occupations such as artistic gymnastics which begin in childhood and continue into adolescence. It is important to note that many changes occur when a child enters adolescence, and it is therefore important to understand the occupational identity and competence of these gymnasts as well as whether this changes in adolescence or not. Understanding the

challenges adolescents are going through as well as factors which influence positive adaptation will assist in supporting adolescent females to make the transition easier.

## **1.8 Layout of research report**

### 1.1.1 Chapter 1: Introduction

Chapter 1 focusses on the introduction to the research report. It provides background information related to occupational adaptation, occupational identity, occupational competence as well as the sport of artistic gymnastics. Furthermore, it includes statement of the problem, as well as the specific aims and objectives of the study.

### 1.1.2 Chapter 2: Literature review

Chapter 2 provides information about the study and information available in literature about artistic gymnastics, occupational adaptation, occupational identity, and occupational competence, as well as changes which occur during adolescence.

### 1.1.3 Chapter 3: Methodology

Chapter 3 provides information about the methodology of the study, as well as describing the tools which were used in the study. It provides information about the pilot study and the design of the questionnaire based on the Occupational Performance History Interview II.

### 1.1.4 Chapter 4: Results

Chapter 4 provides the statistical findings of the research. It provides statistics related to demographic information, factors related to involvement in gymnastics as well as occupational adaptation, occupational identity and occupational competence.

### 1.1.5 Chapter 5: Discussion

Chapter 5 discusses the findings of the study according to demographic information, occupational adaptation, occupational identity, occupational competence and factors related to involvement in gymnastics. This chapter highlights how these

findings relate to existing research, and highlights the strengths and limitations of the study.

#### 1.1.6 Chapter 6: Conclusion

Chapter 6 draws conclusions based on the findings of the study. It also provides recommendations for coaches and parents as well as for future research.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

In this chapter the literature on occupation, adaptation, artistic gymnastics and changes in adolescence will be reviewed. The review will begin with a discussion of occupational participation, occupational adaptation, occupational identity and competence as well as how these may relate to artistic gymnastics. The benefits and challenges in the occupation or sport of artistic gymnastics and what effect the changes which occur in adolescence may have in the engagement in this sport are also considered.

Data was sourced from Science Direct, PubMed, EBSCO, as well as research gate in order to obtain background information for the study. The articles and books used were published between 1992 and 2019. Some of the older books and articles were used as they provide original information of occupational identity and competence which was published in the 1990's.

## 2.2 Occupational participation, adaptation, identity and competence

### 2.2.1 Occupation participation

Each individual has a unique set of occupations which they participate in on a daily basis, and fundamental to understanding each person as an individual, is understanding their unique occupational profile (American Occupational Therapy Association, 2014). To clarify this, occupations refer to the various clusters of purposeful and valued activities which individuals and communities engage in on a daily basis out of personal choice (Kielhofner, 2008; American Occupational Therapy Association, 2014). Additionally, occupations include survival skills, sleep and rest, self-care tasks, work, play, leisure, education and social participation (Kielhofner, 2008; American Occupational Therapy Association, 2014). Accomplishing selected action in an activity or occupation is referred to as occupational performance.

Notably not all individuals view specific occupations in the same way, and they may attach different meaning to them (American Occupational Therapy Association, 2014). For example, a sport may be classified as work to one person but as leisure to another, depending on the nature of their participation therein (American Occupational Therapy

Association, 2014). Therefore participation in activities or occupations contributes to a healthy lifestyle, and ultimately shapes our identity (Kielhofner, 2008). Not only does participation in occupations contribute to a healthy lifestyle but it's the balance of this participation that leads to well-being and satisfaction (Wilcock, 2006). This occupational balance looks at the balance between engagement in obligatory and chosen occupations; between enjoyable and non-enjoyable occupations; between calming and strenuous occupations or even the balance between "doing and being" (Wilcock, 2006). For example, if one is only to participate in obligatory occupations, participation in these occupations alone will not necessarily bring about health well-being and satisfaction.

### **2.2.2 Adaptation**

Occupational "adaptation is characterised as the change agent for the person and becomes an outcome of active engagement in occupation" (Grajo, Boisselle & DaLomba 2018, p. 2). Occupational adaptation has been described as the internal process that occurs during participation in occupations as well as the outcome of participation in occupations (Kielhofner, 2008). Other studies on occupational adaptation describe it as a way of coping and using appropriate strategies for changing life occurrences (Dale et al., 2002, Nayar & Stanley, 2015). Occupational adaptation is noted to be dependent on a person's ability to respond to challenges brought about by internal and external change (Schkade & Schultz, 1992).

Moreover, occupational adaptation can occur as a response to physical change (Fine, 1991), meaning of the occupation and motivation to participate to achieve occupational competence in one's environment (Schultz & Schkade, 1992). Kielhofner (2008) emphasised that occupational identity and competence are crucial components for the adaptation process. Specifically if the individual is to overcome challenges and achieve mastery in the occupation by the process of accepting "I am not who I was before" to accepting "the new me" (Klinger 2005, p. 11).

Correspondingly, this applies to children involved in sports as they move from childhood to adolescence, where adaptation is required in terms of both physical and psychological changes that occur as well as external expectations in terms of their competence in the occupation. Managing the demands presented by this change may

make adaptation difficult for adolescents, as they are still developing problem solving and coping skills (Hampel & Petermann, 2006).

### **2.2.3 Occupational Identity**

Literature pertaining to the concept of identity in a number of disciplines in the social sciences, includes the dimension of both occupational identity and athletic identity which consider engagement in work and sport alone (Brewer, Raalte & Linder, 1993, Skorikov & Vondracek, 2011). In occupational science, which forms the philosophical basis for occupational therapy, occupational identity was first addressed by Christiansen (1999). Kielhofner (2008) clarified this concept further as one's personal definition of one's self in relation to all the occupations in which one participates and has participated. The approach of both Christiansen and Kielhofner to occupational identity emphasises the control the individual has over their identity in relation to participation in an entire range of everyday activities.

Additionally, the constructs of occupational identity as described by Christiansen (1999) focus on self-efficacy, self-confidence and self-esteem as well as personal success, personal motivators and personal goals or achievements. All these concepts contribute to and need to be in place for the development of a positive occupational identity which requires capacity to achieve in the occupation and satisfaction with the occupation (Christiansen, 2004; Kielhofner, 2008). Occupational Identity is related to expectations of success or failure which stem from what society demands and accepts (Christiansen, 2004; Phelan & Kinsella, 2009).

Occupational identity is modified and changed over the life span and is shaped by the relationship between occupational competence and occupational adaptation (Kielhofner, 2008). Occupational identity starts to develop in childhood, and Kielhofner (2008) explains that children entering adolescence have "a fairly well-developed sense of who they are" (p. 131). Unruh, (2004) corroborates this and takes it further to state that occupational identity is based on achievement in meaningful activities that result in the social recognition which provides coherence and meaning for everyday events.

Correspondingly, the development of occupational identity includes interpretations of action in different contexts as well as a positive perception of the environment related to the occupation (Kielhofner, 2008). In other words, the environment should allow the

opportunity to develop the skills necessary to engage in chosen occupations and should encourage reflection on the quality of participation (Phelan & Kinsella, 2009).

It is important to understand that occupational science research has focused predominantly on individually oriented determinants of occupation. In like manner, this is the approach which has been followed in the current study. Furthermore, this study has adhered to the assumption that individuals choose the occupations that shape their occupational identity and these are not ascribed and prescribed (Cote & Levine, 2014). Therefore, the ability to fulfil the roles, obligations and routines associated with the occupation, while they shape and are shaped by relationships with others and are dependent on social approval and other external factors, will be considered from the individual's perspective in terms of their occupational identity (Christiansen, 1999, 2004; Kielhofner, 2008).

Positive occupational identity is an essential element in promoting well-being and life-satisfaction. Wilcock as early as 1999 described this as a result of the balance between *doing* in the occupation and the identity related to *being*. This also supports personal growth, allowing the individual to internalise who they are and who they wish to become in the future (Wilcock, 1999; Kielhofner, 2008). To put it another way, when someone explores unique interests, they individualise their identity and begin to develop occupational competence.

#### **2.2.4 Occupational Competence**

Occupational competence is achieved by fulfilling the expectations and is seen as the result of the dynamic interaction between the individual, the environment, and occupation (Martini, Polatajko & Wilcox, 1995). The feedback from the environment combines with the individual's needs, skills, and perceptions, to enable evaluation of efficacy or the desired result. A perception of efficacy in any particular situation, modifies needs and skills in relation to future demands. The Cycle of Competence (White, 1959) proposes a spiral where one experience builds on another, changing contact, interactions with environment, as the individual learns and alters themselves. This supports the maintenance of participation in an occupation, to experience further success and social approval which satisfies and reflects one's occupational identity (Kielhofner et al., 2001; Kielhofner, 2008). Kielhofner (2008) emphasised the

importance of maintaining the routine related to the occupation, having variety in what is done and pursuing the values related to the occupation.

In the current study these concepts are reviewed in relation to participation in sport, specifically artistic gymnastics.

### **2.3. Adaptation in adolescence and the effect thereof on occupational identity and occupational competence**

Kielhofner (2008) describes adolescence as a stressful period accompanied by many changes, including biological changes related to puberty, social change and even institutional change as they enter into high school (Kielhofner, 2008). During this period, adolescents start making choices related to both activities and occupations which not only meet demands set out by their environments but also meet their interests and bring them joy (Kielhofner, 2008). With this increase in choices, adolescents also begin to understand and clarify their values, and with that may begin to dismiss previous values as well as values set out by other people (such as their parents) (Kielhofner, 2008). The social environment which adolescents find themselves in also shapes the interests of these individuals, and it is noted that there is an increase in interests which reflect those of their peers (Kielhofner, 2008). Adolescents are able to participate in a wider range of occupations (due to the change in their age and level of responsibilities) which therefore also results in a shift in interests which become more reflective of their identities (Kielhofner, 2008).

For many children and adolescents, sport is a meaningful occupation in which they can participate at an age appropriate level to develop both an occupational identity and competence. There is a general belief that participating in sport has a positive impact on development as well as the potential to build occupational identity (Bignold, 2013). In childhood the possible identity which may be built through sport may be focused on participation and social skills rather than competitiveness and aggression (Bignold, 2013). Social benefits even in lifestyle sports, such as gymnastics, which are more individually focussed and where individuals will compete alone, still have the opportunity for social interaction and the development of social skills since individuals will train in a group setting. This benefit may, however, occur to a lesser degree than with team sports (Bignold, 2013).

Positive occupational identity may be promoted in children and adolescents by the physical nature of sports with benefits of participation including physical health and wellness (Bignold, 2013). The dedication of time also provides structure and routine which therefore encourage constructive use of time, and ultimately limits the participation in negative or harmful behaviour such as drinking, smoking and the use of drugs (Bignold, 2013). However, competing in sports, especially at a young age, can have negative effects on the social as well as the physical and psychological well-being of the children, as a result of the environment and culture associated with competitive sports (Brackenridge et al., 2010). For example, participating in competitive sports at a young age may result in significant pressure and resultant anxiety, depression, fatigue, injuries and may open children up to emotional and psychological abuse (Brackenridge et al., 2010) One such intense competitive elite sport which may result in positive and negative occupational identity (Taylor & Kay, 2015) is artistic gymnastics.

Artistic gymnastics is a lifestyle or individual sport which children are generally encouraged to participate in from a young age to acquire skill and maintain flexibility which is continued with participation into adolescence and adulthood (Caine & Nassar, 2005). This form of gymnastics is a skill-based sporting activity which requires strength, skill and aesthetic flair (Duffy, 2008) that can be participated in on a recreational and competitive basis.

As one progresses from childhood into adolescence there are many changes which influence on one's life, one's identity and one's participation. These physical, emotional, social and environmental changes may therefore also have an influence on an adolescent's participation in sport, especially a practise intensive competitive elite sport such as gymnastics. These changes which occur in adolescence, necessitate adaptation if females are to continue participating in gymnastics.

### **2.3.1 Physical, cognitive and psychological changes**

Body changes associated with puberty may increase strength, speed and dynamic force (Muehlbauer, Gollhofer & Granacher, 2012) as well as physical fitness (Douda et al., 2007) and flexibility (Douda et al., 2008) of adolescents which may improve performance in gymnastics and lead to the development a positive identity and competence and ultimately positive adaptation within the occupation of artistic

gymnastics. The brain also undergoes development during adolescence which results in various cognitive changes. This includes the increase in and maturation of executive functioning which may ultimately lead to an improved cognitive ability and positive adaptation facilitating the ability to perform and excel in the highly demanding requirements of artistic gymnastics (Selemon, 2013). An improvement in higher order cognitive functions may also positively influence a gymnasts' ability to analyse and understand components of movement, as well as other challenging aspects of the sport, such as the code of point and scoring calculations, which may also lead to an improvement in performance in and satisfaction with the sport (Windee & Maureen, 2007).

Other changes related to the physical body which occur when puberty is reached brings on the development of breasts and the start of the menstrual cycle, which may also be accompanied by weight gain and changes in body shape (Dahl & Forbes, 2010). These rapid physical changes and appearance of secondary sexual characteristics may add to the existing pressure which is placed on the gymnasts to maintain a specific body physique and build.

Involvement in artistic gymnastics may have a negative effect on physical and psychosocial health including identity related to self-esteem and self-concept (Dubuc et al., 2010). Donti et al (2012) studied self-esteem and levels of anxiety differences in female artistic gymnasts aged 10 – 12 years participating in recreational and competitive gymnastics. Both groups of gymnasts had similar levels of self-esteem, with gymnasts who participated on a competitive level scoring significantly higher in terms of trait anxiety indicating possible lower satisfaction with their competence. Interestingly, neither group scored high in self-esteem related to physical appearance, despite their stereotypical thin, lean bodies, which may highlight the effect competing in an aesthetic sport may have on body dissatisfaction and potential eating disorders (Donti et al., 2012; Rohde, Stice & Marti, 2015; Smits, Jacobs & Knoppers, 2017). While these studies were not completed in South Africa, the results may have relevance in South Africa due to the demands set by the sport of gymnastics regardless of the country of participation.

Since body aesthetics is related to success in artistic gymnastics, a lean physique is expected, and team, coach and peer pressure to maintain a desirable weight in these

females may affect their identity. This adds a dimension of pressure which may not ordinarily be considered when thinking of the impact of sport on adolescent females. A study by Rohde indicated that at the age of 12 years, a smaller and thinner body size is considered desirable for artistic gymnasts (Rohde, Stice & Marti, 2015). Since thinness is required for performance, reduced food intake is therefore encouraged (Fortes et al., 2013) and trying to maintain a lean physique can be a significant predictor of a possible eating disorder which can increase dramatically in any adolescent females between the ages of 13 and 21 years (Rohde, Stice & Marti, 2015; Smits, Jacobs & Knoppers, 2017). Smits et al (2017) highlighted that the regulation of female gymnasts' bodies is a standard part of practice, through weight monitoring which is done in both a direct and indirect manner on an ongoing basis (Smits, Jacobs & Knoppers, 2017). Again it should be emphasised that although these studies did not take place in South Africa, the relevance thereof in the South African context still stands due to nature of gymnastics and the focus of body aesthetics being a factor related to the sport itself and not specific to the country.

The tight fitting and revealing clothing used during training and competitions also encourage lean weight and may leave female artistic gymnasts feeling uncomfortable (Salbach et al., 2007); although this uniform is justified by the freedom it provides in terms of executing movement (Stewart et al., 2010). In terms of competence in an aesthetic sport, the fact that it is not only the execution of skill which is judged, but that part of the scoring system focuses on self-presentation of a gymnast further highlights the problem with meeting expectations (Duffy, 2008). Physical appearance in relation to self-presentation is judged, and adds a subjective aspect to scoring whereby judges may consider factors such as weight and body shape, as these may influence appearance and presentation (Duffy, 2008).

This indicates the potential of the sport in the development of a negative or damaging occupational identity in terms of satisfaction with personal capacity to conform with appearance criteria and also when trying to comply with societal expectations (Phelan, 2012).

A study conducted in 2014 by Lindwall et al examined the changes in global self-esteem, physical self-concept as well as the physical activity in 705 female adolescents over a twelve month period in Canada (Lindwall, Asci & Crocker, 2014).

The participants of this studies were not gymnasts specifically, but active female adolescents in Canada although they represented a range of socio-economic backgrounds. The physical self-perception consisted of the following variables: physical strength, physical conditioning, body attractiveness and sports competence. They concluded that the physical self-perception declined on average for females in grade 9 to 11 (age 14 to 17), which therefore indicated a shift to a more negative physical self-perception over time which supports previous work in terms of sport competence (Lindwall, Asci & Crocker, 2014). The exception was body attractiveness which showed improvement supported research by Morin et al. (2011) that body image improved over time during adolescence. Reinforcing the recovery for this concept in late adolescence from previous low levels documented in late childhood and early adolescent females (Baldwin & Hoffmann, 2002) This may be explained by the occupational identities of early adolescents' being focused primarily on pleasure, whereas as in later adolescence the focus of occupations begins to shift more towards internal values and feelings of competence and fulfilment where body image may have been assimilated with a shift toward specific occupations required when entering adulthood (Kielhofner, 2008).

Global self-esteem, however, demonstrated no average change during the adolescent years and stayed the same over time (Lindwall, Asci & Crocker, 2014) contrary to other studies (Baldwin & Hoffmann, 2002). This finding is also consistent with research by Morin et al (2011) who found that self-esteem remained high and stable over adolescence. Regardless of this, adolescence remains a key period of development and during this time there is a chance that development (specifically of self-esteem) is very vulnerable (Morin et al., 2011).

### **2.3.2 Sleep**

Adolescents require more hours of sleep (Carskadon & Tarokh, 2014). If an adolescent is struggling to get to bed early and wake up early, it is likely that they may not be receiving an adequate amount of sleep, which will make participation and performance of daily roles more challenging. When participation is limited, performance and adaptation in various roles (including school and sport) will be difficult affecting competence.

In a study by Dubuc et al. (2010) adolescent gymnasts reported being exhausted and not having their disappointment in their performances as a result of this recognised by parents and coaches. These findings may well be related to the various emotional and psychological changes which accompany physical changes undergone in adolescence, resulting in feelings of inadequacy and incompetence (Dahl & Forbes, 2010). This can impact occupational identity and specifically body image, self-esteem and physical self-concept, although controversial findings about these concepts in adolescence have been found.

### **2.3.3 Autonomy**

As children become older, they are expected to start actively participating in decision making in settings outside the sporting environment (Smits, Jacobs & Knoppers, 2017). This leads to the development and need for autonomy in the lives of adolescents. In the world of elite-gymnastics, gymnasts are not encouraged to offer opinions, participate in decision-making or complain about anything (Smits, Jacobs & Knoppers, 2017). Instead, the culture is for gymnasts to do what they are told and to keep their coaches happy (Smits, Jacobs & Knoppers, 2017). This does not support or encourage these gymnasts to be autonomous. This behaviour is explained by Smits et al (2017) in relation to age. At a young age the young gymnasts are primed to feel that they are young and therefore should trust the coach as their elder as they know what is best for the young gymnast. Although assertiveness begins to develop in adolescence, the gymnasts feel they are not allowed to say anything as they realise they need their coach in order to succeed in the sport (Smits, Jacobs & Knoppers, 2017).

The general belief that gymnasts should trust the coach as knowing better and being dependent on them for success, with the internal development of assertiveness may leave the adolescent gymnasts with conflicted feelings but ultimately leads to the development of a culture where the gymnasts keep quiet and follow what they are told to do. This situation may also highlight the issue that gymnasts will not speak out about injuries or even possible abuse which may occur (Smits, Jacobs & Knoppers, 2017). The only autonomy allowed is at higher levels of competition where gymnasts may progress to a level where they may choose the design of their leotards, the music for their floor routines and may have an influence on the type of dance moves

incorporated into their floor and beam routines. Allowing gymnasts to have input in the aspects mentioned above may also support the self-exploration and unique expression of adolescents facilitating occupational identity and a feeling of control (Smits, Jacobs & Knoppers, 2017).

#### **2.3.4 Environmental change**

The transition into high school as one enters adolescence, adds an environmental change. High school brings about its own challenges. School times and required work and homework both increase. This reduces the time available for training for gymnasts. As these gymnasts spend less time training, they may not experience as much success and proficiency in this sport (Smits, Jacobs & Knoppers, 2017). This may also impact how they identify with this sport, due to the fact that past experiences help shape our occupational identity (Kielhofner, 2008).

The stringent requirements in artistic gymnastics may impede rather than support engagement in a variety of activities since the gymnasts attain top performance internationally at 16 to 18 years. These gymnasts may be unable to fulfil the roles, obligations and routines required in other aspects of their lives as they have less time to spend on academic activities and time spent with peers and friends socially is limited (Donti et al., 2012). Research found that gymnasts participating on a competitive level had lower scores than those competing for recreation when it came to scholastic ability and acceptance on a social level, as the competitive gymnasts had more obligations to their training routine (Donti et al., 2012). Dubuc et al (2010) found that gymnasts found balancing their commitments with school, friends, and other extracurricular activities, was a challenge (Dubuc et al., 2010).

#### **2.3.5 Relationships**

Adolescence also brings about social changes with the desire to spend more time with friends, as the need for relating to peers and belonging within a group begins to develop (Dahl & Forbes, 2010). When interests shift more towards peer interactions, it is likely that adolescents may begin to invest more time in those relationships than in training for artistic gymnastics (Dahl & Forbes, 2010). Adolescents may either choose to spend more time with friends or if they do not have the choice and have to continue to spend the same amount of time training in gymnastics, they may start to

feel the isolation associated with not being part of the group. It has been highlighted in literature that social isolation is a technique used by coaches in order to develop obedience of gymnasts (Smits, Jacobs & Knoppers, 2017). Gymnastics practice often occurs behind closed doors with only coaches and gymnasts present, which limits interaction with family, friends and peers outside the sport, especially during training hours (which may often be up to 6 hours daily) (Smits, Jacobs & Knoppers, 2017). When spending such a large portion of the day training in these isolated conditions, one has limited time to develop relationships outside of the gymnastics world. This may leave gymnasts feeling isolated from friends at school and may further isolate them and leave them with conflict as their need for social interactions increases in adolescence.

It should also be noted that gymnasts may then rely on friends at gymnastics with whom they are spending the majority of their time outside of school to reduce feelings of isolation, but may not feel socially satisfied by their interactions with fellow gymnasts. However, a study by Stuntz and Weiss (2009) found that adolescents who have strong friendships and experience acceptance in a group setting are more committed and motivated to continue participating in sport (Stuntz & Weiss, 2009).

## **2.4 Other factors affecting occupational identity and competence in artistic gymnastics**

### **2.4.1 Influence of society, parents, coaches**

Generally, parents are responsible for the development and wellbeing of their children, and although a parent would want a child to enjoy their participation in a sport, they may also want their child to succeed and achieve goals such as becoming a prize winning gymnast (Smits, Jacobs & Knoppers, 2017).

When considering occupational identity, Iwama (2003) argued that society has greater power than the individual on what expectations should be met and what is worth doing (Iwama, 2003). This is particularly true for children and thus young gymnasts, who start this sport at as young as 5-6 years of age, may be influenced by societal expectations resulting in increasingly high training pressures and loads which may ultimately result in intense stress in terms of meeting these expectations (Caine & Nassar, 2005; Donti et al., 2012; Phelan, 2012). This brings about conflict in interest as the child may no longer see the occupation or sport as meaningful and it may impact

negatively on their occupational identity, with the possibility of parents being unwilling to allow the child to stop participation in the sport due to the resources that have been sacrificed (Smits, Jacobs & Knoppers, 2017).

Other external factors which may influence affect occupational identity and occupational competence include the age and reason that gymnastics was started. A report based on British Gymnastics highlighted that that when it came to participation in gymnastics (both recreational and competitive) there was a significant increase in participation up to seven years of age, with a plateau at seven to eight years (North, 2012), hence the age of starting gymnastics may impact on participation. Children may start gymnastics for a range of reasons. It may be because a parent or family member introduced them to it, but may also be due to personal interest and decision to do so. Exploration of personal interests as opposed to those imposed on us by others, may have a positive impact on motivation and commitment to gymnastics and ultimately the development of a positive occupational identity and the development of occupational competence (Kielhofner, 2008). Pressure to participate and achieve competence in gymnastics may be brought about by parents as well as coaches.

There is a growing concern about the well-being of competitive gymnasts in particular (Donti et al., 2012), specifically related to achieving competence. The role of the coach has been researched in which it was indicated that the gymnastics identity must be supported by providing support by managing the challenges of the sport according to the child's age as well as setting expectations according to their ability (Nunomura, Okade & Tsukamoto, 2009). This supports the development of competence and counteracts demotivation and drop out which were commonly reported when gymnasts and coaches expectations differed (Nunomura, Okade & Tsukamoto, 2009). There is a call for further research, longitudinal in nature, to establish the effect of training and competing on the perceived value and meaning of the sport to young gymnasts and whether this affects their self-esteem and levels of anxiety as well as the effect that coaches, parents and peers may have on their identity, competence and development (Donti et al., 2012).

#### **2.4.1. Expectations and demands within artistic gymnastics**

Artistic gymnastics is a sport which is governed by specific rules and regulations. In South Africa, The South African Gymnastics Federation sets up the rules and

regulations in the Modified South African Code and Levels Manuals which are based on the FIG (International Gymnastics Federation) Code of Points (South African Gymnastics Federation, 2019b,a). When competing in gymnastics there are various levels which can be competed in, all governed by a code of points. These levels start at level one and run to level nine, after which there is an Olympic Entry Level, Junior Olympic Level and Senior Olympic Level.

Furthermore, gymnasts competing individually are required to participate on all four apparatus (vault, uneven bars, balance beam and floor). When competing a gymnast is eligible to win a medal on all four apparatus as well as an overall placement medal. Gymnasts compete individually, but are additionally able to compete in teams (in team competitions) in the Junior and Senior Olympic levels, when competing internationally. Level one to level three are considered to be the beginner levels, and may be competed in by individuals aged six to seventeen (South African Gymnastics Federation, 2019b). These levels have compulsory prescribed routines on all apparatus with set music on floor (South African Gymnastics Federation, 2019b). In addition gymnasts competing in levels one to level three are required to wear compulsory club, provincial or regional leotards depending on the competition (South African Gymnastics Federation, 2019b).

Gymnasts in level four to nine, Olympic Entry Level, Junior Olympic Level and Senior Olympic Level are considered higher levels and may be competed in by individuals aged six to eighteen and up. These levels have specific requirements in terms of what should be included in their routines, but it allows for some individualisation as they are allowed to create their own routines on beam and floor, as well as choose their own floor music and leotards (within regulations) (South African Gymnastics Federation, 2019a,b). Although there is allowance for some individuality in the higher levels in terms of own routines, dance moves, own floor music and own leotards, all of these factors are regulated and still require strict adherence to the rules. For example, the neckline of leotards may not be below half way down the sternum and not lower than the lower aspect of the shoulder blades (South African Gymnastics Federation, 2019a). In addition, leotards may not have any cut-outs or see-through inserts and underwear may not be visible underneath or over the leotard (South African Gymnastics Federation, 2019a).

Moreover floor music should be a specific length of time, and should be flawless without any interruptions with no words or lyrics in the music (South African Gymnastics Federation, 2019a). Although there is some room for expression of individuality, routines are strictly choreographed by coaches and the coach has the final input into aspects such as leotards and music.

Routines are scored according to their difficulty values and execution. Although there are requirements for some levels in terms of what should be included in the routines, these gymnasts may include extra moves and may upgrade the difficulty of their routines in order to obtain higher scores. This places additional demands on the gymnasts as they aim to achieve the highest scores not only through precise execution but through higher difficulty values as well. Exploring the challenges brought about by the sport itself as well as those challenges experienced in adolescence, may identify important information regarding the occupational identity of artistic gymnasts during this phase, the occupational environment in which they function, as well as the occupational competency and ultimately their occupational adaptation.

When examining the effect of training and competing on the occupational identity and competence, factors which should not be overlooked include the number of hours spent training per week as well as the level at which gymnasts compete. The higher the level of gymnastics, the higher the demands are in terms of performance and as a result, the time spent training is increased in order to achieve competence and meet the demands set by that level of difficulty associated with the competition level (Malina et al., 2013).

Participation in competitive gymnastics has grown and the sport itself has undergone much change and development with inclusion at the highest level into the Olympics (Caine & Nassar, 2005; Donti et al., 2012). Some of the changes in competitive gymnastics relate to the level of difficulty of the elements which are performed, as well as the required precision of execution of these elements (International Federation of Gymnastics (FIG)., 2009). As a result, there is more pressure and demand put on competing gymnasts, and the gymnasts who participate competitively, train for approximately four hours a day, six times per week (Donti et al., 2012). Thus, it is a sport requiring discipline with a rigorous training routine in order to attain competence and success.

The demands set out by competitive gymnastics require the construction of a strong identity with the sport in terms of fulfilling the obligation to the training regime and to meet expectations and achieving competence (Kielhofner, 2008). Taylor and Kay (2015) support this notion in their research on the occupational identity of individuals engaging in serious leisure occupations where engagement was intense and required specialist skills. The study emphasised both positive and negative aspects in terms of the participants internalised and social identity. Thus, although artistic gymnastics may allow for the development of a positive occupational identity, research indicates that there are aspects of the sport that may be detrimental to other aspects of occupational identity and competence.

### **2.4.2 Injuries**

In a study by Dubuc et al in 2010 they found that there was a fear of injury among the gymnasts, specifically adolescent gymnasts (Dubuc et al., 2010). Research indicates that as a result of the increase in participation in gymnastics, there has been an increase in the number of gymnasts who start at a younger age as well as an increase in the number of gymnasts who specialise in this sport. Gymnasts start training and competing in this sport as young as six years of age and only reach their peak in performance at about age 16, over ten years (Caine & Nassar, 2005; Bradshaw, 2010; Hassmannová, Pavlů & Nováková, 2019). During this time, the demands increase in terms of intensity and duration of training as well as the level of difficulty which they are expected to attain. This places a huge demand on the young, growing bodies of these gymnasts, thereby increasing the prevalence of injuries in this population (Hassmannová, Pavlů & Nováková, 2019).

A study by Hassmannová, Pavlů and Nováková (2019) reported on the prevalence of injuries in children who participate in gymnastics including artistic, aerobic and rhythmic gymnastics. The participants were all female and aged 12 to 15 years, with an average age of 13.5 years. The finding indicated pain and/or injuries were present in 98% of their selected population. Interestingly, pain was reported more frequently in gymnasts with a lower training load and gymnasts who did not attain medal positions in competitions, although injuries were present consistently through high and low training loads and intensities (Hassmannová, Pavlů & Nováková, 2019). Another study by Caine and Nassar (2005) reviewed the current available research on injuries in

gymnastics and found that most injuries take place during practice (79% to 96.6%) rather than during competitions. However, when the number of injuries were compared according to exposure, then the injury rates during competitions are greater than during practice (Caine & Nassar, 2005). This therefore indicates that gymnasts who compete are at greater risk for developing injuries.

Catastrophic injuries are those severe injuries which end a gymnastics career. Although there is limited information available on this matter, the information which has been described in research, as reported by Caine and Nassar 2005, is that there is a higher prevalence of catastrophic injuries in competitive gymnasts (Caine & Nassar, 2005) which are a likely contributing factor to the retirement from gymnastics (Caine & Nassar, 2005). Injuries have an impact both on competence due to enforced periods of rest and when catastrophic may result in a loss of identity in terms of the role in the sport.

The assessment of the ability to adapt to changes which occur in adolescence based on the assessment of occupational identity and competence need to be considered in view of these factors to determine how they affect the continued participation in the sport.

## **2.5 Assessment of occupational identity and competence**

Kielhofner (2002) summarises the assessment of occupational identity as determining who you are (related to roles and relationships), what things you as an individual are interested in, what you feel you are obliged to do and what is important to you, as well as your perception of how effective you are (Kielhofner, 2008). He further summarises the assessment of occupational competence as determining your participation in a variety of occupations which promote satisfaction, which maintain a certain lifestyle with specific routines, ultimately satisfying your expectations of your values, your roles and your anticipated level of performance (Kielhofner, 2008).

He suggests that in order to assess occupational identity and competence, questions specifically related to the factors which constitute these concepts should be asked, such as what an individual is interested in, what they enjoy doing, what their perception of their effectiveness is in terms of their performance in a specific occupation (in this case artistic gymnastics) is, amongst other things. The Occupational Performance

History Interview II (OPHI-II) was designed to use as a guideline to assist with the phrasing and layout of questions in order to assess level of occupational identity, occupational competence and ultimately occupational adaptation. The OPHI-II was developed to gather information about an individual's past and current occupational functioning and has an occupational competence scale and an occupational identity scale. An occupational behaviour settings scale can also be used as part of the assessment (Kielhofner, et al., 2004).

The occupational competence scale was designed to measure the degree to which individual can sustain a productive and satisfying pattern of occupational behaviour. The occupational identity scale measures the internalisation of a positive occupational identity including the individual's values, interests, confidence; perception of their occupational roles; and desired life goals. The occupational behaviour settings scale considers the environment related to occupations. The scales can be scored in terms of the extent to which one or more of these components support adaptation.

In a study by Kielhofner (2001), it was found that the OPHI-II is valid when used by occupational therapists who have not been specifically trained in the use of the instrument and may be used for people of varying demographics including varying ages, ability and cultures. Rasch analysis showed internal validity for the rating scales of the OPHI-II, and the separation statistics presented in this research indicated that the scales were completed with similar degrees of leniency and severity by individual raters. The validity testing was conducted in 8 countries, although it should be noted that South Africa was not one of these countries ). The ages included in this study ranged from 16 – 95 (Kielhofner et al., 2001). No data is currently available about the reliability of the tool.

## **2.6 Summary**

This chapter provided information and reviewed literature about occupational identity, competence and adaptation, specifically related to adolescence. It also provided information about artistic gymnastics and participation therein by adolescent female gymnasts. Factors (both internal and external) which may influence participation in gymnastics were also described. The method of assessing occupational identity, competence as well as adaptation was also described.

This literature review identified a lack of research related to occupational adaptation, specifically related to sport as an occupation. How one views oneself and one's participation in the light of the specific occupation of artistic gymnastics, as well one's ability to maintain participation in an occupation which reflects one's views and standards, all contribute to the occupational adaptation (Kielhofner, 2008). These factors are further influenced by the changes which occur in adolescence including, but not limited to, change of environment as one enters high school, the social and emotional changes as well as all the physical changes. The sport of gymnastics itself then adds another dimension of challenges which may influence participation including increasing training demands and pressures as well as injuries.

It should be highlighted that studying the occupational adaptation of female artistic gymnasts will assist in understanding what factors influence participation and may pave a way forward in order to identify techniques and strategies which may be used to assist these gymnasts in occupational adaptation during this time. This will ultimately assist these gymnasts and facilitate their experience of a positive adaptation which will support participation in this occupation.

# CHAPTER 3: METHODOLOGY

## 3.1 Introduction to Methodology

This chapter describes the methodology of the study in order to achieve the aims and objectives of the study. It outlines the research design as well as provides information about the population and sampling. Furthermore, information is provided about the instrumentation used as well as the pilot study and actual data collection. Information is also provided on the data management and analysis.

## 3.2 Summary of Research Design

This study made use of a descriptive cross sectional analytical design in order to determine aspects related to the adaptation of adolescent females participating in artistic gymnastics. The study describes the satisfaction, capacity, routines and obligations of adolescents as they participate in artistic gymnastics (based on the rating scales in OPHI-II). No attempt was made to manipulate variables or change their participation, and the researcher described their occupational identity and occupational competence with reference to the occupation of artistic gymnastics. The data were collected at exposure at one point in time. The study was analytical in that the occupational identity, occupational competence of the gymnasts was calculated and factors of each were examined. Occupational identity and competence scores were then combined to determine the occupational adaptation of the participants. These scores were converted into percentage scores and the findings were compared according to young and older adolescents and factors influencing involvement in gymnastics (Alexander et al., 2014).

## 3.3 Population and sampling

The population which was used for this study were adolescent females participating in artistic gymnastics in the Johannesburg and Pretoria regions, at three specific gymnastics clubs, namely Gymagic Gymnastics Club, Johannesburg Gymnastics Club, and TUKS Gymnastics Club. A sample of convenience was used to select the gymnastic clubs, and therefore three clubs which were known to the researcher in the Pretoria and Johannesburg regions were approached for this study due to their availability. The participants were not known by the researcher.

Within the clubs in Johannesburg and Pretoria regions gymnasts were approached to participate in the study if they met the following inclusion criteria:

- Female adolescents (ages 13–17) participating in artistic gymnastics
- Competing at a provincial level, as these are gymnasts who have achieved a level of success in competition by attaining provincial colours in this sport
- Have been involved in artistic gymnastic since childhood (started by age 12).

To ensure that the participants met the inclusion criteria, the club owners were asked to provide a list of gymnasts who met this criteria, and those gymnasts were then approached to participate in the study.

### **3.3.1 Sample size**

Between the three selected clubs, there were 62 gymnasts in total who met the inclusion criteria for the study. Total population sampling was used in that all gymnasts in the clubs who met the inclusion criteria were asked to take part in the study.

Once signed informed consent and assent were obtained, data collection commenced. The female artistic gymnasts aged 13 to 17 who met the criteria for the study and had provided informed consent from parents/guardians and informed assent were then invited to complete the questionnaires on a specified date, as discussed previously. Of the 62 possible candidates, 24 participants completed consent forms. Of the 24 consent forms received, 22 participants completed questionnaires. The 2 participants who did not complete the questionnaires were unable to confirm a specific date and time for completion of the questionnaire due to strict policies during training times and outside commitments.

The participants were given a choice to whether they wanted to complete the question on paper or electronically (web-based). All of the participants chose to complete the questionnaires electronically. The researcher provided electronic tablets for the participants to complete the web-based questionnaire while they were onsite at their clubs

### **3.3.2 Selection Criteria**

**Inclusion Criteria:** Female adolescents (ages 13-17) participating in gymnastics in

Johannesburg and Pretoria regions, who started gymnastics before the age of 13.

**Exclusion criteria:** Gymnasts who have not competed at a provincial level or higher.

### **3.4 Research Instrumentation**

#### **3.4.1 Demographic questionnaire**

A demographic questionnaire designed by the researcher was used in order to collect background information of all the participants and included aspects such as age, school grade, time spent doing gymnastics on a daily basis, the age at which gymnastics was started, achievements, injuries, activities outside gymnastics and daily routine (Appendix A).

#### **3.4.2 Questionnaire based on Occupational Performance History Interview (OPHI-II)**

A questionnaire based on the interview questions in the Occupational Performance History Interview (OPHI-II) (Kielhofner et al., 2004) was also used in order to determine the occupational identity and occupational competence of participants (Appendix B). The OPHI-II interview questions (Appendix C) and OPHI-II rating scale (Appendix D) were adapted so that the questions used applied to the occupation of artistic gymnastics as suggested in the instrument which provides guiding questions to be asked to determine occupational performance. For example, one item rating scale for *Occupational Identity is Expects success, with the ratings as follows:*

Rating 4:

- Extremely confident about overcoming obstacles/limitations/failures
- Looks forward to challenges
- Strong belief in personal effectiveness
- Feels in control of where life is headed
- Accepts circumstances beyond control without discouragement

Rating 3:

- Maintains adequate confidence about overcoming obstacles/limitations/failures
- Faces challenges with hope for success
- Expects success in a number of areas

- Adequate belief in personal effectiveness

Rating 2:

- Doubts ability to control self/face obstacles/limitations/failures
- Feels uncertain about prospects for success
- Difficulty sustaining confidence about overcoming obstacles/limitations/failures
- Easily discourages when faced with challenges

Rating 1:

- Pessimistic view of own potential to perform
- Feels hopeless
- Feels unable to control self
- Feels hopeless in the ability to influence outcomes
- Gives up in the face of obstacles/limitations/failures

The OPHI-II questions related to this rating scale are:

- “What is the biggest challenge you are facing now?” and
- “When you run into obstacles or difficulties how do you handle it?”

The questionnaire given to the participants then asks the following questions:

**What are some of your current obstacles in gymnastics?**

- Lack of time
- Lack of energy
- Lack of specific skills
- Fear of specific skills
- Fear of a specific apparatus
- Difficulty keeping up with the pace
- Fear of competitions
- I am not sure what obstacles I have
- I have no obstacles

(You can select more than one)

**How will you be able to overcome these obstacles?**

- Prioritise on how I spend my available time so that gymnastics takes preference
- Put in extra effort with specific skills/apparatus
- Spend more time on difficult areas
- I am unsure how I will overcome these obstacles
- I do not think I will be able to overcome these obstacles

**When you experience an obstacle or failure in gymnastics**

- It is always due to my personal actions
- It is usually due to my personal actions
- It is never due to my personal actions
- I can use feedback to help me improve
- I look for feedback and corrections so that I can make improvements
- I usually feel that the feedback and corrections I receive are overwhelming

**How do you feel about challenges in gymnastics?**

- I look forward to challenges
- I hope for success when I face challenges
- I am not sure if I am able to overcome challenges
- I am discouraged and demotivated when faced with a challenge

The answers given are then marked on the scale. The rating with the most requirements met is then the final rating given to that item. If there are two ratings which have equal weighting, then the lower score is used.

The past and present occupational history related to participation in artistic gymnastics was obtained from participants through the questionnaire on occupational identity and occupational competence, which highlighted specific facilitators or barriers for adapting as they entered adolescence.

The demographic questionnaire contained 13 questions of which all were open ended except for which level of gymnastics they compete in; which competitions they have competed in (which allowed for additional options to be filled in if there were other

competitions which were not specified) as well as whether or not participation in gymnastics had been influenced by an injury or not.

In the occupational identity questionnaire there were 25 questions, of which 20 questions were closed ended, and 5 questions were closed ended with the option to add additional information if there was anything that was not covered by the options provided such as current goals, strengths as a gymnast, limitations as a gymnast, other important areas in their lives, as well as other roles within gymnastics.

In the occupational competence questionnaire there were 16 questions, of which 15 questions were closed ended, and one question was closed ended with the option to add additional information if there was anything that was not covered in the options provided. This included adding information about other sports and other activities which the participants spend time doing. The questions in the occupational identity questionnaire and the occupational competence questionnaire were worded specifically so that the participants knew that the questions were related to their participation in artistic gymnastics.

Relevant questions from the questionnaire were used, and other questions were adapted to relate more directly to artistic gymnastics. The information from the questionnaire was used to score the participants on the rating scales from the OPHI II for occupational identity and occupational competence. The occupational behaviour settings scale was not included in this study since the setting in which the study was conducted was similar for all participants.

The rating scales have subsections; of which each was scored on a scale of one to four. The scales indicate whether there is exceptionally competent occupational functioning and occupational identity (score of four); appropriate, satisfactory occupational functioning and occupational identity (score of three); some occupational functioning and occupational identity problems (score of two) or extreme occupational functioning and occupational identity problems (score of one). The overall scores were then calculated for the scales, in order to determine the level of adaptation.

### **3.4.3 Pilot study**

A pilot study was conducted to assess the content of the adapted questionnaire. It was

important to determine if the questions were clear and relevant for the information to be obtained and if the information was allowed for options for the completion of the rating scales. Three occupational therapists who are familiar with the Model of Human Occupation and the concepts of occupational identity and occupational competence were asked to look at the questionnaire and comment on content validity of the questionnaire as applied to artistic gymnasts.

Two artistic gymnasts over the age of 17 were also invited to participate in a pilot study. They completed the background information form as well as the adapted questionnaire based on the OPHI-II.

The gymnasts and therapists were asked to comment on the wording and ease with which questions were answered, the time taken to complete the questionnaire, the language used and any other relevant findings. Once this was completed, adjustments were made to the questionnaire according to the suggestions made.

Changes made to the questionnaire were as follows:

- Changing age to an open ended question as opposed to giving age ranges to make it more specific
- Asking how many days per week spent practicing gymnastics before how many hours per week
- Changing wording from “what level of artistic gymnastics do you take part in” to “what level of artistic gymnastics do you compete in”
- The question “How have you done in competitions” was very vague so “(Please specify if you have placed)” was added
- In the question “What are some of your strengths as a gymnast” there was an option that said “I am able to balance my lifestyle” which was vague so it was changed to “I am able to balance my lifestyle between school, gymnastics, etc”
- With the question “How do you feel about your lifestyle” an explanation about what lifestyle is, was added in order to make the question more clear
- With the question “Do you meet the expectations set by these other roles” an explanation was added about what roles are to make the question more clear
- When the participant was able to choose more than one option, a note was made of this so that they were aware that they could choose more than one option

- With the question “What are some important areas in your life?” more options were added to include other hobbies, religious roles as well as the option to say they are unsure of what other roles are important, and saying they don’t have other important areas in their life
- The question “How do you match up to your own expectations of your performance” was rephrased to “Do you believe you meet your own expectations when you perform”
- “Do you participate in your activities of interest” was rephrased to “Do you participate in any of your activities which you find interesting”
- “In the past (before you turned 13) how did you feel you accomplished your goals?” was rephrased to “In the past (before you turned 13) how did you feel you achieved your goals?”

Once the questionnaire was finalised it was converted to a web based questionnaire using Research Electronic Data Capture (REDCap) (“Research Electronic Data Capture”, 2004)

### **3.5 Research procedure**

A total population sample was used for the three selected gymnastics clubs which were chosen through a sample of convenience. Once ethical clearance (see Appendix E) and permission was obtained for the South African Gymnastics Federation (see Appendix F) and club owners (see Appendix G), the parents of the gymnasts were approached and given information about the study. They were asked for signed informed consent in order to approach their children for permission to participate in the study (see Appendix H). The gymnasts were then approached with permission, and given information about the study. If they agreed, they then signed the assent form, which is discussed in the section detailing ethical considerations below (see Appendix J).

#### **3.5.1 Data Collection**

As previously reported, the gymnasts were given the option of completing the paper based questionnaire or electronic version thereof. All the gymnasts chose to complete the electronic version. The researcher had 6 tablets available with access to the online questionnaire. The gymnasts completed the questionnaires in groups of 6 and the

researcher was available if they had any questions or required any clarification on any concepts. Once they had completed the questionnaire, it was saved to the online data base. The researcher kept a list of participants who had completed consent and assent forms so that she could mark off the participants as they completed the questionnaires.

### **3.6 Data management**

For the purpose of data quality control, cleaning and checking of data took place. Once the questionnaires had been completed, the questionnaires were accessed on REDCap for analysis. Each questionnaire was scored by the researcher using the OPHI-II rating scales. This was done by looking at the answers given by the participant and marking if off on the corresponding part of the rating scale. For example:

Question: Do you think your goals are attainable?

- Yes, they make me very excited (scored as rating 4)
- Yes, I am motivated to achieve my goals (scored as rating 3)
- I am not completely committed to achieving these goals (scored as rating 2)
- I am not motivated because my goals are excessive (scored as rating 1)

Rating Scale: Has Personal goals and projects:

- Rating 4: Feels energized/excited about future goals/personal projects
- Rating 3: Motivated to work on goals/personal projects
- Rating 2: Limited commitment/excitement/motivation
- Rating 1: Lacks commitment/motivation to the future

The scores along with demographic information were captured onto an excel spreadsheet in order to do statistical analysis. The excel spreadsheet was set out with participant numbers down column A, and the rows at the top were labeled for each demographic questionnaire answer as well as the scores for each section of the rating scales of occupational identity and occupational competence. Statistica v 13.1 was used in order to do data analysis and processing. Only the researcher and the supervisor had access to the data which was anonymous.

### **3.7 Data Analysis**

This research study was quantitative by nature. Demographic information was presented using nominal, ratio and descriptive data. Frequencies, and percentages were used to analyse demographic information. Difference between younger adolescents 13-14 years and older adolescents 16-17 years for factors related to involvement in gymnastics was determined using a Chi-square test to identify any significant variables. Significance was noted if the p-value was  $\geq 0.05$ .

Data for the occupational identity and occupational competence rating scales were ordinal. Frequencies according to the scores on the occupational identity and occupational competence rating scales were analysed. Differences between younger adolescents 13-14 years and older adolescents 16-17 years for occupational identity and occupational competence was determined using a Chi-square test. Difference for factors related to involvement in gymnastics for occupational identity and occupational competence was determined using a Chi-square test. Significance was noted if the p-value was  $\geq 0.05$ .

The median percentage of scores for occupational identity and occupational competence were used to determine the percentage level of adaptation of the sample. Occupational adaptation was calculated by adding up the scores for occupational identity and occupational competence for each participant and converting them to a percentage of the possible total. These percentages were then added together and averaged in order to calculate the overall occupational adaptation.

Difference between younger adolescents 13-14 years and older adolescents 16-17 years for adaptation was determined using a Chi-square test. Difference for factors related to involvement in gymnastics for level of adaptation was determined using a Chi-square test. Significance was noted if the p-value was  $\geq 0.05$ .

### **3.7 Ethical Considerations**

Ethical approval was attained from the Human Research Ethics Committee (HREC) at the University of the Witwatersrand (M 160947) (Appendix E). Permission was also obtained from the South African Gymnastics Federation in order to carry out this research (Appendix F). Further permission was obtained from the various club owners for permission to carry out this research at the specific clubs (Appendix G). The parents

received an information sheet which provided relevant information including the objectives and purpose of the study, procedure and duration of the study (Appendix H). Written consent was obtained from the parents of the participants (Appendix I). The children were also given an information sheet briefly explaining the study (Appendix J). Signed assent was obtained from the participants themselves, so that they too were agreeing to being part of the study (Appendix K). The demographic information obtained did not have direct identifying variables such as name, surname or date of birth, in order to maintain confidentiality. Final results of the study were made available to the participants' parents on request, as this would aid them in understanding the complete process of the research project as well as understanding the relevance and importance thereof. Individual results, however, remained confidential and were not disclosed. The participants and parents were made aware that participation was voluntary and that they could withdraw from the study at any stage with no consequences. Participants were also informed of their right to refuse participation.

The questionnaires were all completed using a web-based program called REDCap, where the completed questionnaires were stored. REDCap ensured confidentiality as the submitted questionnaires were captured with no identifying information and accessed by the researcher through a web based platform. The completed questionnaires did not remain on the tablet once it was submitted.

### **3.7.1 Distress Protocol:**

If were to be noted that there are gymnasts who become upset or distressed by questions in the questionnaire, these gymnasts would have been referred to a Sports Psychologist so that they were given the opportunity to work through this and deal with these feelings appropriately. This was not necessary for any of the participants.

## **3.8 Summary of Methodology**

Chapter 3 describes the research methodology in detail in order to gain an understanding of how the study was conducted in order to achieve the objectives as set out in the introduction. The study was descriptive cross-sectional study which made use of self-reported, web-based questionnaires. There was a demographic questionnaire as well as a questionnaire adapted from the OPHI-II which looked at factors related to occupational identity and occupational competence. The information

gained from the adapted questionnaire was used to score that participants in terms of their occupational identity and occupational competence. The demographic information was summarised along with the scores into an excel spreadsheet in order to input them and analyse them on Statistica.

This data obtained about the occupational identity and occupational competence was then used to identify the occupational adaptation of the participants. Chapter 4 which follows, provides the results which were obtained from the study after data analysis occurred.

# CHAPTER 4: RESULTS

## 4.1 Introduction

This chapter presents the results of the questionnaires of which were distributed to 22 potential participants. Of the 22 questionnaires distributed, all of them (recruitment rate of 100%) were completed and returned. Of these 22 participants, all 22 completed the entire questionnaire. The demographics of the sample as well as their participation in gymnastics are described with the results related to occupational identity, competence and adaptation of the participants following.

## 4.2 Demographic information

### 4.2.1 Age

The gymnasts were all female as per the inclusion criteria and their ages ranged from 13 to 17, Table 4.1 indicates that most of the participants (63.63%) were 13 years of age. It should be noted that there were no participants 15 years of age.

**Table 4.1 Age of participants (n=22)**

<b><u>Age</u></b>	<b><u>n</u></b>	<b><u>%</u></b>
13	14	63.64
14	3	13.63
16	3	13.64
17	2	9.09
<b>Total</b>	<b>22</b>	<b>100</b>

### 4.2.2 Grade at school

The grades the participants were in at school ranged from grade 7 to grade 12. Table 4.2 indicates that most of the participants (63.64%) were in Grade 7 and have thus not entered high school yet. The remaining participants were in high school ranging from grade 8 to grade 12.

**Table 4.2 Grade of participants (n = 22)**

<b><u>Grade</u></b>	<b><u>n</u></b>	<b><u>%</u></b>
7	14	63.64
8	3	13.64
10	2	9.09
11	2	9.09
12	1	4.54
<b>Total</b>	<b>22</b>	<b>100</b>

### 4.3 Factors related to involvement in gymnastics

#### 4.3.1 Age started gymnastics

Participants started gymnastics from ages 1 to 12 years. Table 4.3 indicates the ages the participants started gymnastics with most participants starting gymnastics between the ages of 6-10 years.

**Table 4.3 Age participants started gymnastics (n=22)**

<b><u>Age started gymnastics (years)</u></b>	<b><u>n</u></b>	<b><u>%</u></b>
1 -5	5	22.74
6 -10	14	63.63
11-12	3	13.63
<b>Total</b>	<b>22</b>	<b>100</b>

#### 4.3.2 Reason for starting gymnastics

There were various reasons giving by the participants for why they started gymnastics. A content analysis was done in order to highlight common themes and group these answers together. These answers are presented in Table 4.4 with personal interest being the most common reason for starting gymnastics.

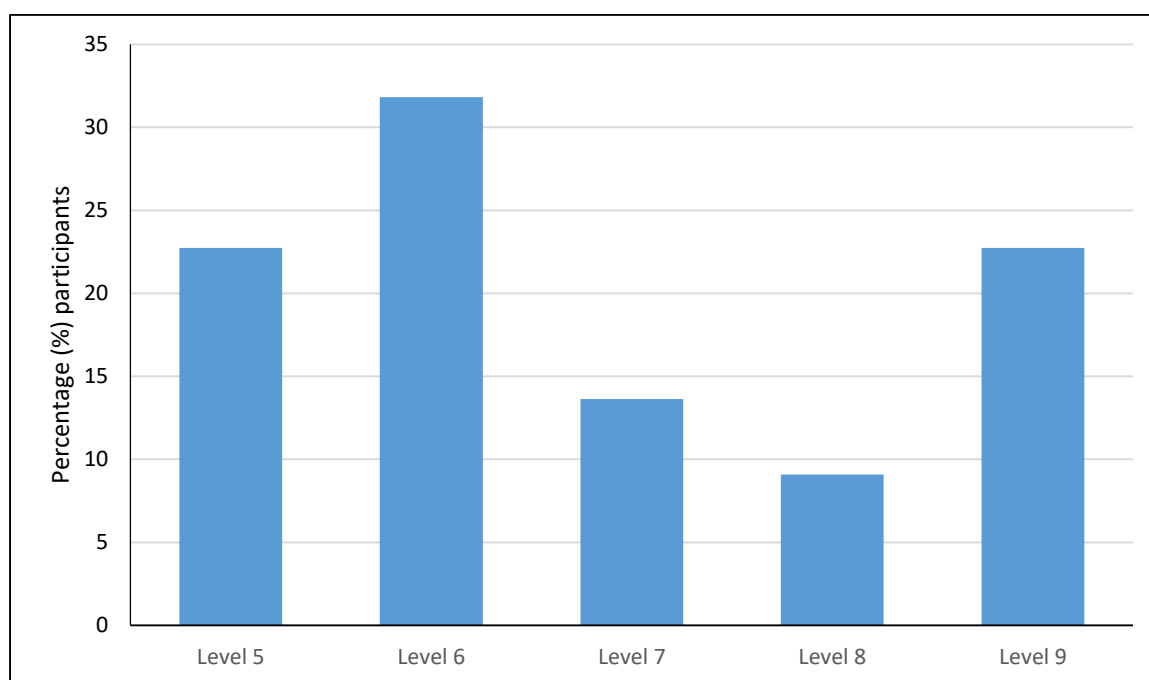
**Table 4.4 Reasons for starting gymnastics (n=22)**

<b><u>Reasons for starting</u></b>	<b><u>n</u></b>	<b><u>%</u></b>
Suggested by family	5	22.72
Watched it on television	6	27.28
Someone familiar did it	2	9.09
Personally interested in doing it	9	40.91

<b>Total</b>	<b>22</b>	<b>100</b>
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### 4.3.3 Level of gymnastics

Figure 4.1 indicates the level of gymnastics which the participants are currently in. These level range from level 5 to level 9, with the most gymnasts being in level 6 (31.82%).



**Figure 4.1 Level of gymnastics (n=22)**

### 4.3.4 Training

Gymnasts were asked to comment on their training in terms of how many days per week they train as well as the hours per week they spend training. These answers were summarized in Table 4.5

**Table 4.5 Days per week and hours per week spent training gymnastics according to age (n=22)**

<b>Days per week</b>	<b>n</b>	<b>%</b>	<b>Hours per week</b>	<b>n</b>	<b>%</b>
2	1	4.54	3 -6	3	13.64
3	4	18.18	9-11	5	22.72
5	13	59.10	12-18	12	54.55
6	4	18.18	20-30	2	9.09

### 4.3.5 Competitions

Gymnasts were asked to comment on their participation and performance in competitions. These results are summarised in Table 4.6 and 4.7 below.

**Table 4.6 Competitions competed in (n=22)**

<u>Competitions competed in</u>	<u>n</u>	<u>%</u>
Provincial competitions	4	18.18
National championships	18	81.82
TOTAL	22	100

A content analysis was used to summarise the data in terms of the gymnasts' performance in competitions, as seen in Table 4.7. When participating in artistic gymnastics it is possible to place on four apparatus as well as obtaining an overall placement. 50.00% of participants obtained an overall medal placement. One participant (4.55%) of participants reported that they had placed previously but not recently, which may indicate a decrease in performance.

**Table 4.7 Performance in competitions (n=22)**

<u>Performance</u>	<u>n</u>	<u>%</u>
Medal placement on one or more apparatus	9	40.90
Medal placement overall	11	50.00
Placed previously but not recently	1	4.55
Satisfactory performance but wants to do better	1	4.55
Total	22	100

### 4.3.6 Achievements

Gymnasts were asked to comment on their best achievement thus far. A content analysis was done and the answers were summarised in Table 4.8.

**Table 4.8 Best achievement in gymnastics (n=22)**

<b>Achievement</b>	<b><u>n</u></b>	<b><u>%</u></b>
Performing a specific skill	4	18.18
Competing at National Championships	3	13.63
Placement at a competition	9	40.91
Receiving a special award	1	4.55
Performance compared to peers	1	4.55
Competing at a specific level	3	13.63
Achieving a specific score for an apparatus	1	4.55
<b>Total</b>	<b>22</b>	<b>100</b>

#### 4.3.7 Injuries

Participants were asked to comment on whether they had experienced any injuries in gymnastics as well as whether it affected their participation in gymnastics and how long they were unable to participate in gymnastics for as a result of these injuries. As seen in Table 4.9, the majority of participants had experienced injuries with a total of 81.82 % (including minor injuries).

**Table 4.9 Injuries experienced in gymnastics**

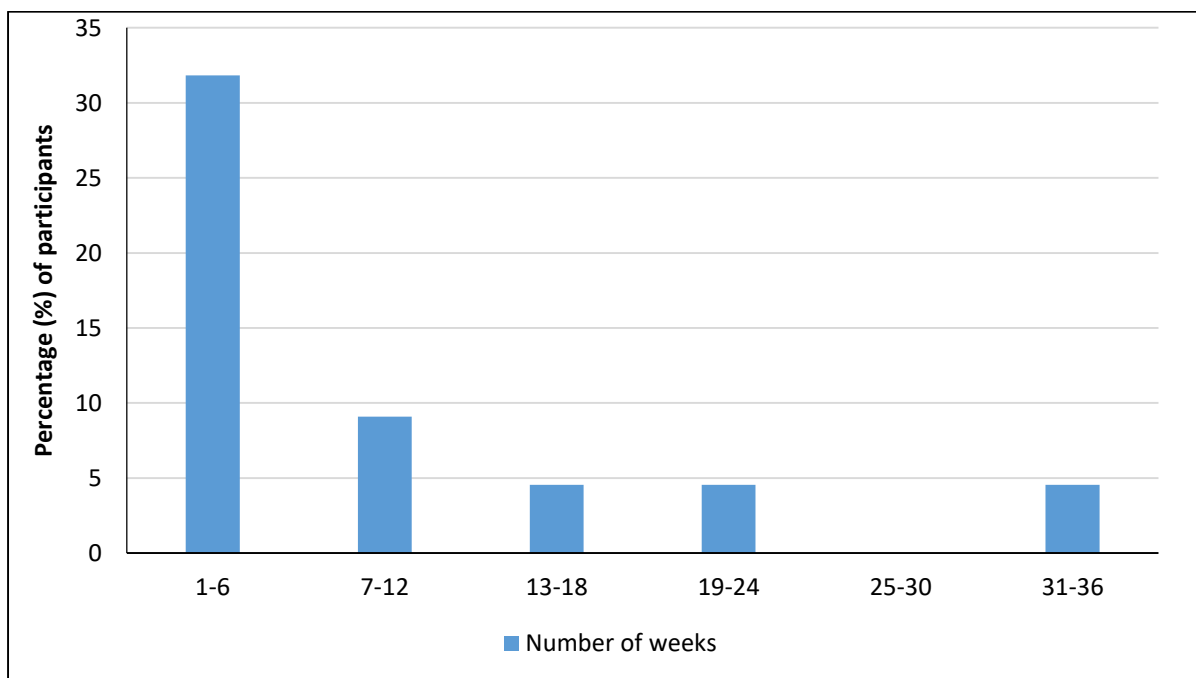
<b>Injuries</b>	<b><u>n</u></b>	<b><u>%</u></b>
Yes	14	63.64
No	4	18.18
Minor injuries	4	18.18
<b>Total</b>	<b>22</b>	<b>100</b>

Table 4.10 indicates whether participation in gymnastics was affected as a result of injuries.

**Table 4.10 Injuries affected participation in gymnastics**

Injuries affected participation in gymnastics	<u>n</u>	<u>%</u>
N/A	1	4.55
No	9	40.91
Yes	12	54.54
<b>Total</b>	<b>22</b>	<b>100</b>

To further analyse the effect of injuries on participation, the participants who reported that injuries affected participation in gymnastics were asked to provide the amount of time they were unable to participate in the sport for. This has been summarised according to the number of weeks (in ranges) for the 12 participants in Figure 4.2.



**Figure 4.2 Number of weeks not able to participate in gymnastics as a result of injuries (n=12)**

Table 4.11 provides information about other factors related to participation in gymnastics and indicates the differences between younger and older adolescents.

**Table 4.11 Difference between younger and older adolescents for factors related to involvement in gymnastics**

		Younger adolescents 13-14 (n=17)		Older adolescents 16-17 (n=5)		p value
		Mean	SD	Mean	SD	
Age started gym		7,38	2,89	7,40	3,28	0.906
Days per week (practice)		4,88	0,99	4,00	1,41	0.196
Hours per week (practice)		14,14	6,65	12,00	4,24	0.167
Level of gymnastics		6.47	1.37	7.80	1.64	0.077
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
Level of competition	National	13	76.47	5	100	0.307
	Provincial	4	23.52	0	0	
Injury	Yes	12	70.59	4	80.00	0.677
	No	5	29.41	1	20.00	
Medal placements	1st	6	35,29	3	60.00	0.327
	2nd	1	5,88	1	20.00	
	3rd	4	23,52			
	Not placed	6	35,29	1	20.00	

Significance  $p \leq 0.05^*$

#### 4.4 Occupational Identity

The questionnaires which were completed by the participants were scored according to a rating scale from The Occupational Performance History Interview (OPHI – II).

Table 4.12 indicates the various components which make up Occupational Identity. In terms of *Has personal goals and projects*, the majority of participants (72.73%) scored appropriately for this component. There was only one participant (4.55%) who presented with some difficulty in this area.

When looking at *Identifies a desired occupational lifestyle*, the majority of participants (81.82%) of the participants scored appropriately for this component while 18.18% of the participants were exceptionally competent in identifying a desired occupational lifestyle. There were no participants who had difficulty in this area.

The majority of participants (81.82%) scored appropriately in terms of *Expects success*, although only one participant (4.55%) had difficulty in this area. This was also true for *Accepts responsibility* whereby 68.18% of participants were appropriately able in this component, although there was a small percentage (4.55%) who had some difficulty with this component. The same pattern is seen with *Has commitments and values* whereby the majority of participants (54.55%) scored exceptionally within this area, although there was one (4.55%) whom had difficulty with this component.

Table 4.12 indicates that the greatest percentage of participants (68.18%) scored as exceptional for *Recognises identity and obligations* related to that identity, although there were 18.18% of participants had difficulty in this area.

There were no participants who had difficulty with *Has interests*. All of the participants scored appropriately or exceptionally for this area. It can also be seen that the majority of participants (54.55%) had appropriate, satisfactory in their occupation for *Felt effective (past)* while 31.82% of participants reported exceptionally competent for this component, although there was still a small percentage of the participants (13.64%) had some difficulty in this area.

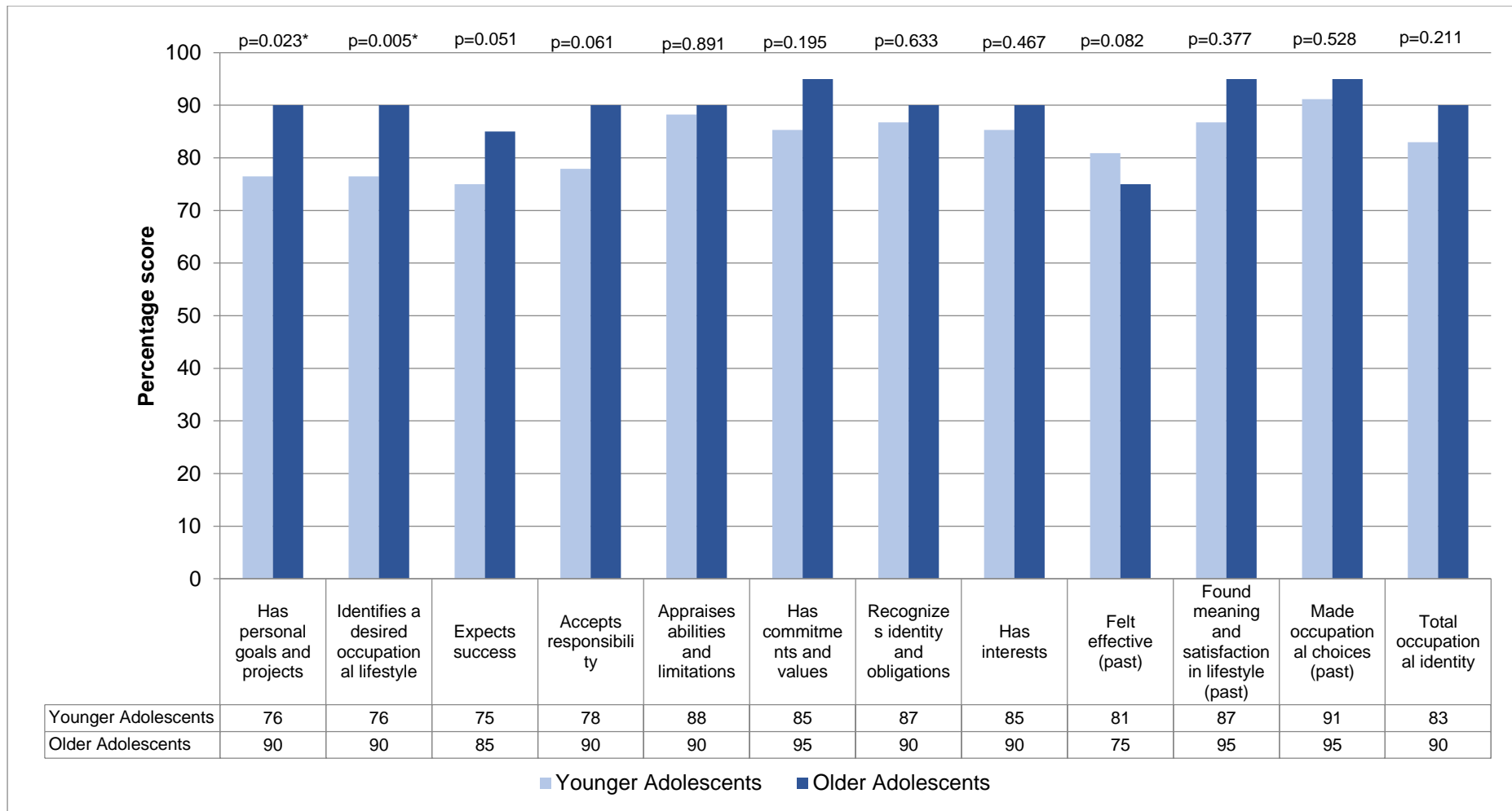
The majority of participants (63.64%) scored exceptionally in terms of *Found meaning and satisfaction in lifestyle (past)* (before the age of 13) with only one (4.55%) participant had difficulty in this area. Table 4.12 also indicates that 68.18% of participants scored 4 as exceptional for *Made occupational choices (past)* (before the age of 13) and 31.82% of participants made appropriate occupational choices, while there were no participants who had any difficulty with making occupational choices.

**Table 4.12 Components of Occupational Identity**

Components of Occupational Identity	Score					
	2 Some occupational functioning problems		3 Appropriate, satisfactory occupational functioning		4 Exceptionally competent occupational functioning	
	n	%	n	%	n	%
Has personal goals and projects	1	4.55	16	72.72	5	22.73
Identifies a desired occupational lifestyle			18	81.82	4	18.18
Expects success	1	4.55	18	81.82	3	13.63
Accepts responsibility	1	4.55	15	68.18	6	27.27
Appraises abilities and limitations	1	4.55	8	36.36	13	59.09
Has commitments and values	1	4.55	9	40.90	12	54.55
Recognises identity and obligations	4	18.18	3	13.64	15	68.18
Has interests			12	54.55	10	45.45
Felt effective (past)	3	13.63	12	54.55	7	31.82
Found meaning and satisfaction in lifestyle (past)	1	4.55	7	31.82	14	63.63
Made occupational choices (past)			7	31.82	15	68.18

Figure 4.3 presents the percentage scores for Occupational Identity (according to its components) as categorised by different age categories (younger adolescents age 13-14 years and older adolescents age 16-17 years). The older adolescents scored higher in all components of occupational identity except for feeling effective in the past, where younger adolescents scored higher.

There was a significant difference between the scores of younger and older adolescents in the component of *Has personal goals and projects* ( $p= 0.023$ ). A significant difference was also noted with the component of *Identifies a desired occupational lifestyle* whereby the older adolescents also scored significantly higher ( $p=0.005$ ) than the younger adolescents.

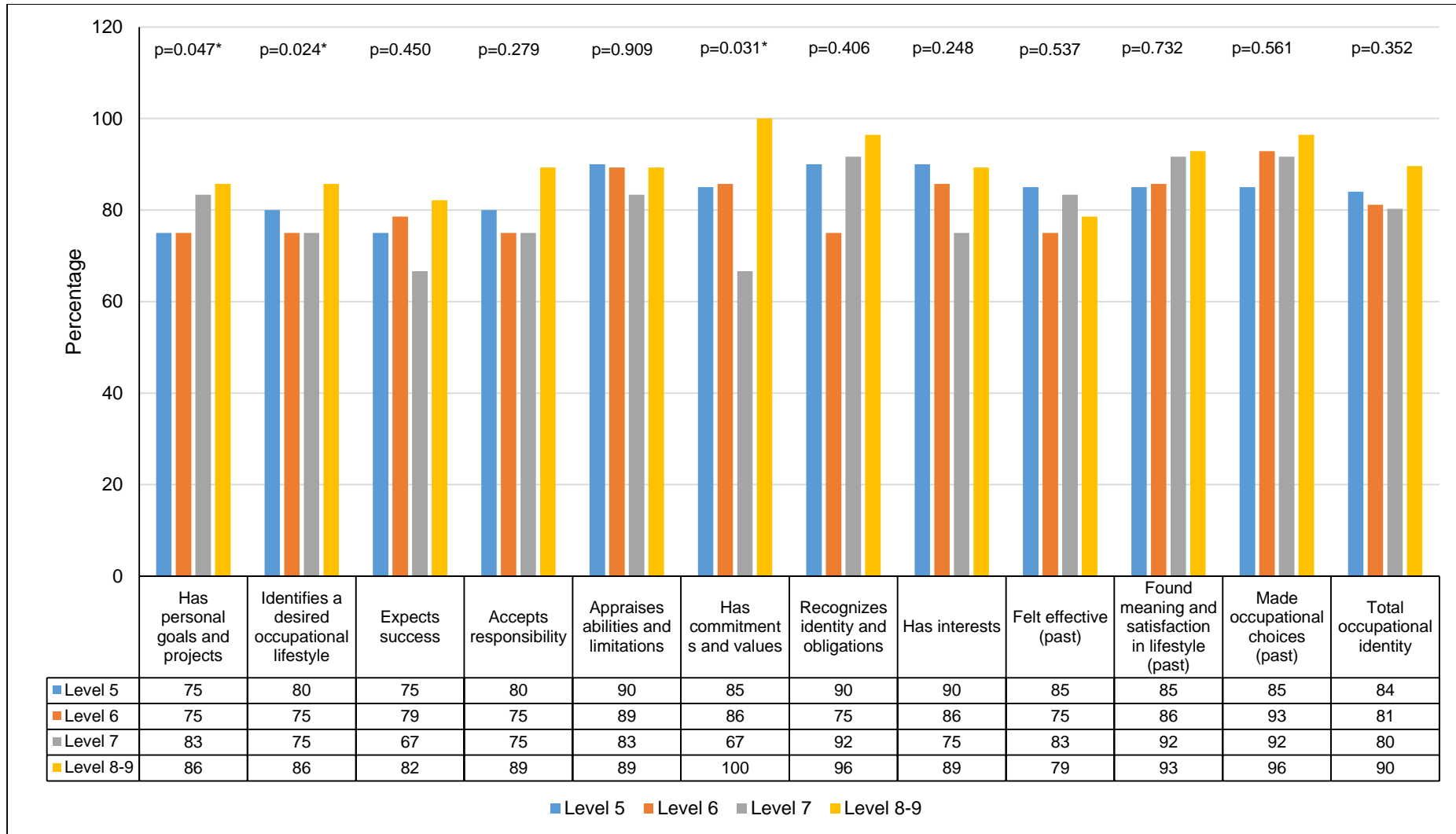


Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

**Figure 4.3** Difference in percentage occupational identity scores for younger and older adolescents

The components of Occupational Identity according to level of gymnastics was analysed and is presented in Figure 4.4. There was a statistically significant difference in occupational identity related to having personal goals and projects ( $p=0.047$ ) with participants participating at level 8-9 in gymnastics. For a desired occupational lifestyle, the significant difference was ( $p=0.024$ ) and participants at level 5 and level 8-9 had higher scores. The participants also had significantly different scores for commitments and values ( $p=0.031$ ) with those at level 8-9 having higher scores for this component. In all three components which showed significant differences, the group of level 8-9 scored the highest of the different levels.

Participants participating at level 8-9 also had higher scores for all components of occupational identity except for has interests and feeling effective in the past. The participants at level 5 had the highest scores for has interests and higher scores than participants at level 6 and 7 for accepts responsibilities, recognises indent and obligations and felt effective in the past as well as total occupational identity.



Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

**Figure 4.4 Difference in percentage occupational identity scores for different levels of gymnastics**

#### 4.4.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Identity

It should be noted that the only factor of occupational identity which had significance on occupational identity was the effect of level achieved in competition on the component of expecting success. This indicated that achieving in competitions had a significant impact on expecting success in the future.

**Table 4.13 Influence of level achieved in competition on expectation of success**

	<b>Expects success</b>
	<b>p-value</b>
Level achieved in competition	0.002

Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

#### 4.5 Occupational Competence

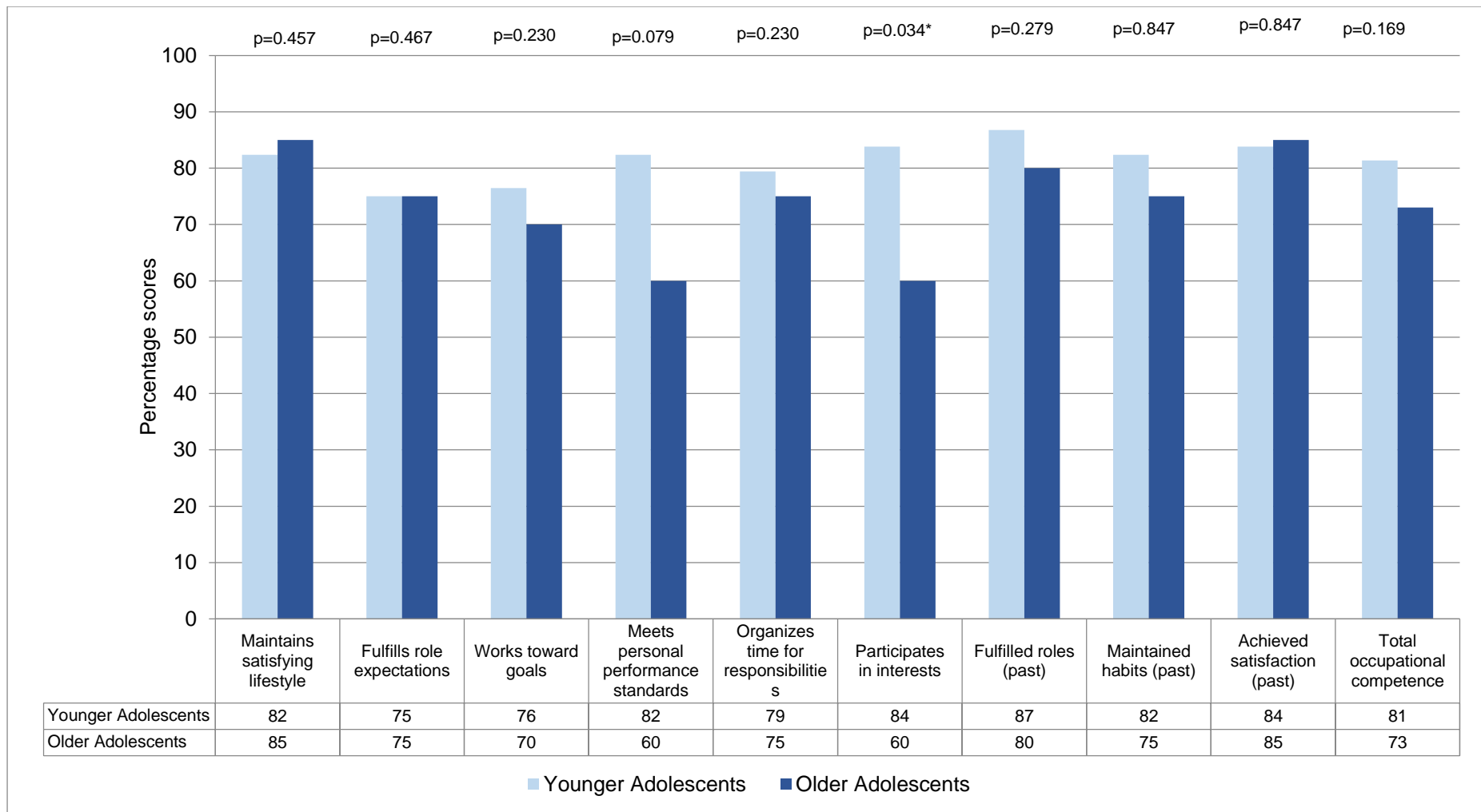
In Table 4.14 the various components which make up Occupational Competence are listed. The participants' responses to maintaining a satisfying lifestyle should be noted as most of participants (45.45%) scored exceptionally in terms of maintaining a satisfying lifestyle, while 40.91% of participants scored appropriately and some of participants (13.64%) had some difficulty with this component of occupational competence. In terms of maintaining fulfilling role expectations, the majority of participants scored appropriately, although there were a number of participants who had difficulty in this area (27.27%) with 63.64% of participants working appropriately towards their goals, although 18.18% of participants had some difficulty doing so. Table 4.13 also indicates that most of participants (40.91%) appropriately meet their personal performance standards, although there were a number of participants who had some difficulty with this (18.18) and 4.55% (one participant) who had severe difficulty with this. When organising time 77.27% of participants responded they did this appropriately for their responsibilities while 31.81% of participants participate appropriately in their interests, and 40.91% of participants participate exceptionally in their interests. There were no participants who had any difficulty with fulfilling roles or achieving success in the past. There was a small percentage of participants (13.64) who had difficulty maintaining habits in the past, despite the majority of participants scoring appropriately (50.00%) and exceptionally (36.36%) in this area.

**Table 4.14 Components of Occupational Competence**

Components of Occupational Competence	Score							
	1 Extreme occupational functioning problems		2 Some occupational functioning problems		3 Appropriate, satisfactory occupational functioning		4 Exceptionally competent occupational functioning	
	n	%	n	%	n	%	n	%
Maintains satisfying lifestyle			3	13.64	9	40.91	10	45.45
Fulfils role expectations			6	27.27	10	45.45	6	27.27
Works toward goals			4	18.18	14	63.64	4	18.18
Meets personal performance standards	1	4.55	4	18.18	9	40.91	8	36.36
Organizes time for responsibilities			1	4.55	17	77.27	4	18.18
Participates in interests			6	27.27	7	31.82	9	40.91
Fulfilled roles (past)					13	59.09	9	40.91
Maintained habits (past)			3	13.64	11	50.00	8	36.36
Achieved satisfaction (past)					14	63.64	8	36.36

Figure 4.5 presents the percentage scores for Occupational Competence (according to its components) as categorised by different age categories (younger adolescents age 13-14 years and older adolescents age 16-17 years). The younger adolescents had higher scores for seven of the 10 components of occupational competence, equal in one component (fulfils role expectations) and lower in two components (maintains satisfying lifestyle and achieved satisfaction in the past).

There was a significant difference between the scores of younger and older adolescents in the component of meeting personal performance standards ( $p=0.047$ ) and in the component of participating in interests ( $p=0.034$ ). In both of these components the younger adolescents scored significantly higher than the older adolescents.



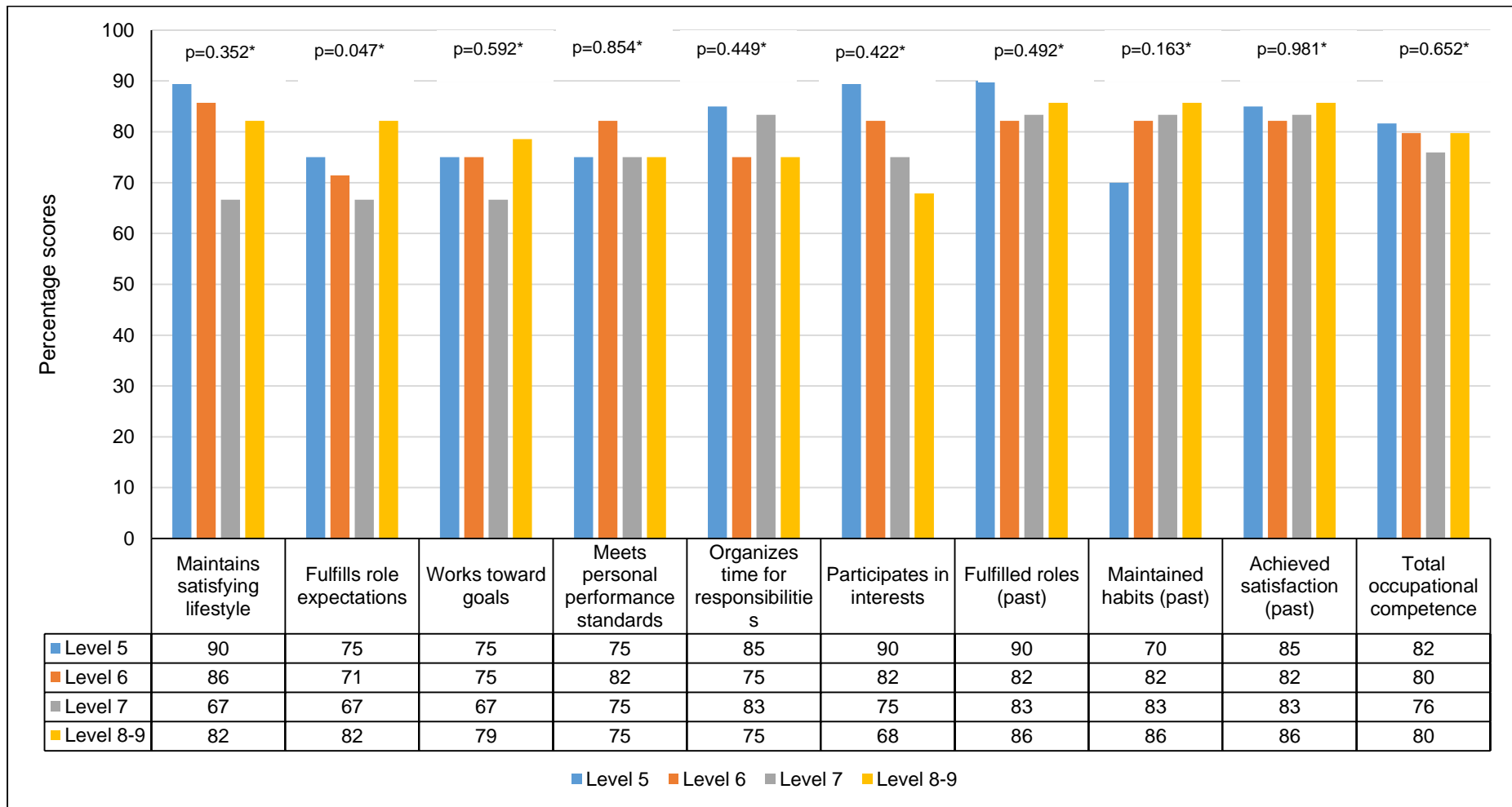
Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

**Figure 4.5 Difference in percentage occupational competence scores for younger and older adolescents**

To further analyse the results of Occupational Competence, Figure 4.6 breaks down the components of Occupational Competence according to level of gymnastics. There was a significant difference in the scores of the component *Fulfils role expectations* ( $p=0.047$ ) where participants participating at level 8-9 scored higher than the other participants.

Participants at level 5 of gymnastics had higher scores for *Maintains a satisfying lifestyle*, *Participates in interests*, *Fulfilled roles (past)* and *Organised time for responsibilities*. They also had the highest score for total occupational competence.

Those participating at level 9 had the highest scores for *Works towards goals* and *Maintains habits* with the lowest score for *Participates in interests*. Participants at level 6 had the highest score for *Meeting personal standards*.



Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

**Figure 4.6 Difference in percentage occupational competence scores for different levels of gymnastics**

### 4.5.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Competence

It should be noted that the only factor of occupational competence which had significance to other demographic factors was the effect of hours of practice per week on the component of maintaining a satisfying lifestyle. This indicated that the hours spent practicing gymnastics per week had a significant impact on maintaining a satisfying lifestyle.

**Table 4.15 Influence of hours practiced per week**

	Maintains satisfying lifestyle
Hours practice per week	p-value
	0.036

Significance  $p \leq 0.05^*$   $p \leq 0.01^{**}$

### 4.6 Occupational Adaptation

Occupational adaptation was reflected by the average of the total percentage scores for occupational identity and occupational competence combined (table 4.16).

**Table 4.16 Percentage identity, competence and adaptation for all participants**

Variable	Median (upper and lower quartile)
% Identity	86.36 (90.91; 79.55)
% Competence	80.56 (86.11; 75.00)
% Adaptation	84.60 (87.63; 78.03)

Table 4.17 provides information about the percentage of occupational adaptation according to age. Older adolescents have the higher percentage of occupational adaptation (85.73%). Both older and younger adolescents have a positive occupational adaptation percentage.

**Table 4.17 Percentage of adaptation according to age**

Variable	Younger adolescents				Older adolescents			
	n	Median	Lower quartile	Upper quartile	n	Median	Lower quartile	Upper quartile
% Adaptation	17	84.34	78.41	87.63	5	85.73	73.74	86.62

Table 4.18 indicates the percentage of adaptation according to level of gymnastics. The level 8-9 has the highest percentage of adaptation (86.48%) and level 7 has the lowest percentage of adaptation (78.41%). All the groups had positive adaptation percentages.

**Table 4.18 Percentage of adaptation according to level of gymnastics**

		n	Median	Lower quartile	Upper Quartile
% Adaptation	Level 5	5	85.73	78.66	87.88
	Level 6	7	84.34	69.07	87.63
	Level 7	3	78.41	71.97	83.96
	Level 8-9	5	86.48	82.19	88.57

#### **4.6.1 Influence of factors related to involvement in gymnastics on aspects of Occupational Adaptation**

It should be noted that there were no other factors related to involvement in gymnastics which showed significance related to occupational adaptation except for injury. The prevalence of injury had significance to not only occupational adaptation, but to having commitments and values (component of occupational identity) as well as to occupational identity itself. The significance of injury to these factors is indicated in Table 14.19.

**Table 4.19 Influence of injury on participation**

	<b>Has commitments and values</b>	<b>Occupational Identity</b>	<b>Occupational Adaptation</b>
	<b>p-value</b>		
Injuries	0.021	0.030	0.050

#### **4.7 Summary of results**

Chapter 4 describes the findings of this study using descriptive statistics based on the information obtained from the demographic questionnaire as well as the questionnaire of occupational identity and occupational adaptation as adapted by the OPHI-II.

The questionnaires were completed by 22 participants. All of the participants were female, majority of which were aged 13 years and in grade 7 (senior phase of primary school). The majority of participants started gymnastics between the ages of 6 and 10, and because of a personal interest and decision to do so. The majority of participants practice gymnastics 5 days per week (12 – 18 hours per week).

All the gymnasts had competed at a provincial level, with 81.82% having competed at National championship level and 50.00% of the participants having a medal placement overall at competitions.

There was a high prevalence of gymnasts who had experienced an injury (63.64%). Of the gymnasts who experienced an injury, 54.54% of these gymnasts' participation in gymnastics was affected. Injuries showed to have a significant influence on occupational performance, specifically related to having commitments and values ( $p=0.021$ ), occupational identity ( $p=0.030$ ) and occupational adaptation ( $p=0.050$ ).

The median percentage for occupational identity for all participants was 86.36%, with older adolescents having a higher median percentage for occupational identity (90.00%). Gymnasts in level 8-9 had the highest median percentage for occupational identity (90.00%). Other factors which showed significance related to occupational identity components was that of level achieved in competitions and expecting success ( $p=0.002$ ).

The median percentage for occupational competence for all participants was 80.56% with younger adolescents having the higher median percentage for occupational competence (81.00%). Gymnasts in level 5 had the highest median percentage for occupational competence (82.00%). Other factors which showed significance related to occupational competence components was that of hours of practice per week and maintaining a satisfying lifestyle ( $p=0.036$ ).

The percentage adaptation for all participants was 84.60%, with older adolescents having the higher percentage occupational adaptation (85.73%). Gymnasts in level 8-9 had the highest percentage occupational adaptation (86.48%).

# CHAPTER 5: DISCUSSION

## 5.1 Introduction

The aim of this study was to determine the occupational adaptation of female adolescent artistic gymnasts in Gauteng. This chapter will discuss the key findings of the study related to the objectives of the study as well as to available literature related to this topic. The overall occupational identity, occupational competence and occupational adaptation scores are discussed as well as highlighting specific factors which showed significance to these scores.

## 5.2 Demographic information

### 5.2.1 Personal factors

Gymnasts in the study were aged 13 – 17 years old as per inclusion criteria. The majority of the participants were 13 years of age. The number of participants in each age category decreased as age increased (see Table 4.1). This is consistent with what is reported in literature in terms of participation in gymnastics. According to North (2012) in British Gymnastics, there is an increase in participation in gymnastics at three to seven years of age, and that by age nine there is a plateau. It was further indicated that there is a significant decline in participation from eight to nine years to about 11 years of age, and a slower decline from age 12 to 13, after which there is another sharp decline at 14 years and 16 to 17 years (North, 2012).

The results of the current study with the majority of participants being aged 13, support the sharp decline in participation at age 14. This was ascribed to children transitioning into high school or secondary school and the many changes which occur during this period. Physical changes (puberty), emotional changes, social changes as well as environmental changes (going to high school) all play a role. The transition to high school is accompanied with social pressure such as peer pressure to participate in social events, and be part of the group as opposed to practicing gymnastics (North, 2012). This contributes to the drop out of gymnasts at this age as the need to feel part of a group increases, and being left out of social cliques can result in feeling very lonely (North, 2012; Swift, 2016).

In accordance with their age the majority of participants were in grade 7 (63.64%) which is the last year of primary school and the minority in grade 12 (4.54%). As with age, the number of participants decreased as grade increased which supports the research discussed above (see Table 4.2). Secondary school does not only present with social pressures but with academic pressures as well. Due to the increased amount of work and homework, time available for participation in gymnastics is also reduced which may also contribute to proficiency and attrition rates (Smits, Jacobs & Knoppers, 2017). A study by Johns, Lindner and Wolko (1990) reported the reasons for and rates of drop out within a group of female gymnastics with 65.6% reporting it was due to time constraints.

### **5.2.2 Factors related to involvement in gymnastics**

The majority of participants started gymnastics between the ages of six and ten years of age (63.63%). This is in line with what is reported in literature in that gymnasts start training and participation in gymnastics from as early as three years of age (Caine & Nassar, 2005). A report based on British Gymnastics indicated that with recreational and competitive gymnastics there was a significant increase in participation up to seven years, with a plateau at seven to eight years (North, 2012).

Even though they were young when they started gymnastics, over 40% of participants became involved in gymnastics due to a personal interest and a personal decision to participate in the sport. This provides motivation and commitment as well as allowing for the exploration of individual interests which contributes to a positive occupational identity and the development of occupational competence in the activity (Kielhofner, 2008).

Other reasons for the participants becoming involved in gymnastics included seeing it on television (linked to aesthetics and skills observed) as well as suggestion and influence of family or peers (see Table 4.4). This finding supports the peer and family influence and for the display and aesthetics of the sport, reported as reasons for becoming involved for British gymnastics (North, 2012). Reasons for engagement in gymnastics which were highlighted in the report by North (2012) included learning movement skills and the excitement of achieving and mastering a move. This was however, not mentioned by participants in the current study. The guidance from peers and especially by parents or family members in choosing to participate in gymnastics

was appropriate for the developmental level when the participants started the sport. Kielhofner (2008) describes that children's occupational choices are often guided by parents who assist with identifying and establishing roles, projects and habits.

Nearly a third of the participants perform at level 6 (31.82%) with nearly a quarter at level 5 and at level 9 (see Figure 4.1). The current study was therefore not reflective of research reported by Swift (2016) who looked at attrition rates in United States of America Gymnastics (USA). She reported that participation decreases significantly from level 4 where gymnastics become competitive and judging of skill on a set routine occurs. The decrease continues to at a lesser rate until level 10. The reason for having gymnasts only in level 5 to 9 was due to the selection of participants who were adolescents competing at least at a provincial level. Thus, the significant attrition which should reportedly occur at level 4 probably had already have occurred in this sample of participants.

Due to the levels at which the participants in the current study perform their training schedules are intense. The majority of participants train 5 days per week (59.10%) and 54.55% of participants train between 12 and 18 hours per week. The overall findings indicated that the participants trained between 3 and 30 hours per week (see Table 4.5). In Russia, gymnasts train for 8 hours per week at 5-6 years of age and increases to 32-36 hours per week at 16-18 years of age for elite training, whereas English gymnasts train 9 to 18 hours per week between ages 8 and 16 (Malina et al., 2013). Participants in the current study (level 5 to level 9) reported training hours similar to that of English gymnasts but their training time was much lower than that reported in Russia and United States of America. Swift (2016) reported that in the USA gymnasts in level 4 and 5 train an average of 12 hours per week (3 hours, 4 times per week), gymnasts in level 6 and 7 train an average of 20 hours per week (4 hours, 5 days per week), and elite gymnasts (level 8 and up) train an average of 36 hours per week (3 hours twice per day, 6 days per week). It should be noted that both the USA and Russia, with a successful history at the Olympics in both individual and team final events and as fierce competitors on the international gymnastics platform have higher standards and place higher demands on gymnasts than in South Africa. South Africa does compete internationally, but not in the women's artistic gymnastics Olympics (South African Gymnastics Federation, 2019a).

The hours of training for the participants in this study are in line with what is expected in countries that are less competitive in gymnastics internationally and most of the participants competed at National championships (81.82%) although none had competed in international competitions (see Table 4.6). Competing at a national level indicates that the nature of the participants' participation is at a stage which requires motivation and commitment to the sport. When reporting on the greatest achievement within gymnastics, the majority of participants commented on placing at competitions (40.91%). This high percentage is relevant due to the all the participants being competitive gymnasts, hence their goals are competition orientated. This adds a different dynamic, highlighting that these participants are not participating in gymnastics as a leisure time activity, but rather that their participation is competitive in nature requiring the participants in to be competence in gymnastics. It can therefore be assumed that the measure of their goals and success is mostly mastery and performance based. This positively predicts performance in sports deliberate practice to the efficiency of executing skills and the refinement of abilities (Ericsson & Charness, 1994). These goals and performance measures are concrete and realistic within this context, and link to the occupational identity component of having goals as well as expecting success (Kielhofner et al., 2001).

Though the participants in this study may be training less than reported by USA gymnasts, training for long hours may increase the risk of repetitive strain and overuse injuries (Hassmannová, Pavlů & Nováková, 2019). It has also been noted in literature that gymnasts with both higher and lower training loads are at risk of developing injuries with gymnasts who compete being at an even higher risk (Caine & Nassar, 2005). Injuries are therefore a reality for most gymnasts with 63.64% of participants having experienced injuries and an additional 18.18% having experienced minor injuries. Thus, a total of 81.82% of participants in the current study had experienced an injury of some sort (see Table 4.9). These findings are congruent with those reported by Hassmannová, Pavlů and Nováková (2019) which considered the prevalence of injuries in gymnasts (artistic, rhythmic and aerobic gymnastics) aged 12 to 15 years. They found that 90% of their population had pain and/or injuries. The study looked at different disciplines of gymnastics as well as the prevalence of pain and injuries, with many gymnasts presenting with pain but not reporting an injury. A shortcoming of the current study is that participants were only asked about injuries

and not the presence of pain therefore percentage was less than that reported by Hassmannová, Pavlů and Nováková (2019).

When the younger and older adolescents were compared for the factors related to involvement of gymnastics there was no significant difference between the two groups. However, the younger adolescents trained for more hours a week and for more days a week. This may be due to availability of time as they were in lower grades at school and the desire to achieve better performance and be included in national competitions. Literature indicates that older gymnasts do train for fewer hours a week due to greater awareness of what needed to be done and internalisation of movements, skills or exercises (Kerr et al., 2015). The current study did support the findings of Hassmannová, Pavlů and Nováková (2019) that there was a higher incidence of injuries in gymnasts exposed to lower training intensity as the older adolescents had more injuries than the younger adolescents.

However, their finding that more gymnasts who achieved better results in competitions had less injuries was not replicated as the older adolescents who had placed in more completions had more injuries. The difference in the results may again be due to the lack of information on pain without injury in the current study. Hassmannová, Pavlů and Nováková (2019) also completed their study in the Czech Republic where the authors felt there was more emphasis on winning achieving in competitions and little concern about injury.

Of the gymnasts in this study whom had experienced injuries, over half (54.54%) had their participation in gymnastics affected. The question on what effect the injuries had on participation affecting gymnastics may have been too vague and therefore may have limited the number of responses the participants gave indicating that their participation may have been affected. Participants whom had injured themselves and were still training (either limited participation or continuing despite injury) may not necessarily have considered that their participation had been affected as they were still able to train. The majority of participants' participation was affected by between 1 and 6 weeks. Participation is a vital component to occupational identity as without it, the ability to fulfil roles and routines is limited, hence indicating that the presence of an injury may influence the development of a positive occupational identity and occupational competence (Kielhofner, 2008). The importance of the balance between

*doing* in an occupation and the identity related to *being* is also highlighted in literature as a crucial part of well-being, personal growth and internalisation of who one is or occupational identity and who by adapting one wishes to become in the future (Wilcock, 1999; Kielhofner, 2008), again highlighting the importance of participation.

### **5.3 Occupational identity**

Occupational identity was scored on 11 components by assigning the answers to the questions to scores from 1-4 according to the OPHI II. The questions specified that they should be answered in relation to participation in artistic gymnastics, so that the findings of the questionnaire would reflect occupational identity specifically in this occupation.

The components where the highest percentage of participants scored 4 - exceptionally competent occupational functioning were: *Appraises abilities and limitations*, *Has commitments and values* and *Recognises identity and obligations* (see Table 4.12). This indicates the participants had a strong positive identity as gymnasts and confirms the commitment shown by long hours of training and number of years they had been involved in the sport. As adolescents they are no longer exploring options in relation to their occupational identity in this activity and appear to have become more realistic about their abilities and what is expected for continued participation (Lemke, 2000).

The majority of participants (n=14) also indicated exceptionally competent occupational functioning for - *Found meaning and satisfaction in lifestyle (past)* and *Made occupational choices (past)*. A third of participants (n=7) reported adequate functioning for these components with only one participant reporting this as a problem. This confirms for two thirds of the participants that their identity in relation to gymnastics in terms of meaning and satisfaction has been consolidated in the past by their engagement in the sport while acquiring skills leading to successful participation by being part of competitions. It appears that all the participants agreed their participation in gymnastics was in line with their occupational choices with no participants indicating other influences such as family or peer pressure had been a problem in the past (Callahan et al., 2019).

The components where the highest percentage of participants scored 3 -appropriate, satisfactory occupational functioning were - *Has personal goals and projects*, *Identifies*

*a desired occupational lifestyle, Expects success, Accepts responsibility, Has interests and Felt effective (past)*. According to Kielhofner (2008) change during adolescence must be considered in relation to developing occupational identity. In the later part of childhood children begin to develop personal goals and projects and this was consistent with the findings in this study as the majority of participants (72.72%) were reported to have appropriate, satisfactory occupational functioning for this component. Kielhofner (2008) also explains that during adolescence, occupational and activity choices are directed towards bringing about meaningful participation which was reflected in the high percentage of participants who scored appropriate satisfactory occupational functioning for identifying a desired occupational lifestyle expects success, as well as for having interests. Thus, it appears that the participants have a strong identity with gymnastics and already find their participation meaningful. They are also aware of and accept the responsibilities which are associated with their participation in the sport which was built on feedback from past experience where they felt effective (Kielhofner, 2008).

It would appear that occupational identity problems that do exist in this sample of participants are mastery and performance based. The small percentage of participants who scored some occupational functioning problems indicated *Felt effective (past)* and *Recognises identity and obligations* were an issue. Not achieving and having experienced success in gymnastics appears to have affected their occupational identity and impacted their recognition of their obligations in achieving in the sport (Kielhofner, 2008).

The occupational identity of the participants in this study was positive and seems to be associated with meaning of the sport to the participants based on their own choice and volition to participate was well as their habituation in complying with and understanding their obligations and commitments. This appears to be based on their past experience of success and achievement in the sport. This indicates that the participants have a positive view of who they are and who they wish to become (Kielhofner, 2008).

Both the older and younger adolescents scored positively for occupational identity in this study. The older adolescents scored higher in most components of occupational identity except for feeling effective in the past. As a result, the overall occupational

identity of older adolescents was stronger in relation to gymnastics. This supports the work of Callahan et al. (2019) who found that older adolescents have stronger, more mature occupational identities with a narrowing of interests. Kielhofner (2008) explained that during adolescence, a variety of roles and activities are explored which assist with the consolidation of their identities. Younger children/adolescents consider multiple options before committing to participation in a smaller number of selected activities at which point uncertainty and anxiety about identity decreases (Becht et al., 2017). This would explain why the overall occupational identity of the older adolescents (90%) would be higher than the overall identity of younger adolescents (83%). This may also be associated with body attractiveness (Morin et al., 2011) and body image which improves during adolescence (Baldwin & Hoffmann, 2002) which reflects self-concept which guides behaviour and identity (Callahan et al., 2019).

The only component in which older adolescents had a lower score than the younger adolescents for occupational identity was *Felt effective (past)*. It should be considered that during adolescence cognitive, emotional and intellectual capacities develop which allow for a deeper awareness of the world and their abilities. This may therefore have allowed for more accurate reflection of current and previous abilities by the older adolescents, and as a result they may feel that they felt less effective in the past (Kielhofner, 2008).

There was a significant difference between the scores of the older and younger adolescents in the components *Has personal goals and projects* and *Identifies a desired occupational lifestyle*. The older adolescents scored significantly higher in both of these areas. This supports the later adolescence focus on internal values with a shift toward specific occupations required when entering adulthood (Kielhofner, 2008). This is reflective of what Kielhofner (2008) reports for older adolescents who consolidate their occupational choices which relate to their interests, and begin to consider their abilities which allows for creating a lifestyle which is satisfactory and more goal directed in line with their capabilities and future.

When the level of gymnastics at which the participants perform was considered a statistically significant difference ( $p=0.047$ ) in occupational identity related to *Has personal goals and projects* and *Identifies a desired occupational lifestyle* was also found with participants participating in level 8-9 in gymnastics having the highest

scores. Level 8-9 are considered to be of the higher levels in gymnastics as they are the levels just before Olympic Entry and Junior Olympic level, the latter of which allows for participation in international competitions. Gymnasts competing in these levels are considered to be more advanced and more serious competitors due to the level of difficulty and increased demands (such as increased training hours) involved in participating in these levels (South African Gymnastics Federation, 2019a). It is thus crucial for gymnasts in these levels to have personal goals and projects due to the intensity of their participation and if they are to continue to succeed since goals are strongly associated with sport (Pierce & Burton, 1998). In gymnastics this appears to apply to setting performance goals for standards of performance and process goals for particular skills rather than set outcome goals in relation to winning (Burton et al., 2010). The success has also resulted in these participants being positive about gymnastics fitting in with their desired lifestyle which was congruent with the significantly higher scores for participants in level 8-9 for *Has commitments and values*. As suggested by Amiot, Vallerand & Blanchard (2006), the highly competitive environment of gymnastics at level 8-9 may require over-involvement in the sport with persistence related to the value placed on the activity resulting in more commitment and between 15-18 hours of training a week.

The only factor related to involvement in gymnastics which had significance when analysed according to the components of occupational identity was the impact that level achieved in competition had on *Expects success* (. This indicated that the more successful a participant had been in competition the more likely they were to expect future success which is an important factor in the development occupational identity (Christiansen, 1999, 2000, 2004; Kielhofner, 2008). As a result, achieving personal success would therefore contribute to the development of a positive occupational identity.

#### **5.4 Occupational competence**

According to Kielhofner (2008) in later childhood, children tend to pursue activities which they are both interested in and which match their abilities (Kielhofner, 2008). This would therefore mean that they are driven towards maintaining a lifestyle which is satisfying to them. This indicates why the highest percentage of participants scored

4- exceptionally competent occupational functioning for *Maintains a satisfying lifestyle* and *Participates in interests* (see Table 4.14).

A score of 3 -appropriate, satisfactory occupational functioning was indicated for *Fulfills role expectations*, *Works toward goals*, *Meets personal performance standards* and *Achieved satisfaction (past)* by 41% to 77% of participants. This indicates they felt they had adequate occupational competence in gymnastics which has been associated with higher task achievement and intrinsic motivation (Stuntz & Weiss, 2009).

In terms of the habituation subsystem described by Kielhofner (2001) appropriate, satisfactory occupational functioning was also achieved for more than half the participants for *Organizes time for responsibilities*, *Fulfilled roles (past)*, *Maintained habits (past)*. Time use studies have indicated that adolescents' time is less structured by parents and that due to increasing autonomy they can decide whether to maintain the time needed for training in gymnastics. The flexibility of these habits do allow change as adolescence develops but continuing with what was established in the past has been found to support efficiency and performance (Holahan, 2014). It appears that previous behaviour in maintain roles and habits supported the participants management of time (Kielhofner, 2008) and allowed them to change if necessary so they could continue with engagement in gymnastics supporting their competence.

The percentage of participants who scored 1- Extreme occupational functioning problems and 2- Some occupational functioning problems was higher for occupational competence than for occupational identity. A small percentage (13.64%) of participants had some difficulty with *Maintains a satisfying lifestyle* which could be due to the increased demands which are placed on adolescence (both social and environmental) which may influence their ability to maintain a satisfying lifestyle (Kielhofner, 2008), however, a higher percentage of participants (27.77%) had problems with *Fulfills role expectations* and *Participates in interests*. This may indicate that a number of the participants were feeling that their role in gymnastics was no longer in line with their interests. This may be related to the many changes in adolescence when individuals start making choices related to their values and interests they participate in as a result of other people's values (such as their parents). There may be a change in interests to reflect those of their peers and their level of

responsibilities (Kielhofner, 2008). Dubuc et al. (2010) also found that adolescent gymnasts reported that their disappointment in their performances was not always recognised resulting in more feelings of incompetence (Dahl & Forbes, 2010).

One participant indicated an extreme problem with *Meets personal performance standards* while four participants indicated some problem with this component. These participants were performing at different levels in gymnastics and reported being placed 1<sup>st</sup> or 2<sup>nd</sup> in competitions at some stage. It is possible that they had not maintained their competition placing which was making them doubt their ability and occupational competence. This is in line with occupational competence being based on outcomes in gymnastics (Stuntz & Weiss, 2009) and the fact that competence is both experienced and anticipated and these participants anticipate a lack of future success based on their experience (Garrison, 2001). Other components where problems were identified were *Works toward goals* and *Maintained habits (past)*. This indicates that these participants may not have maintained a training schedule for gymnastics in the past and thus have not worked towards the performance goals set for them resulting in low occupational competence in the sport.

Both the younger and older adolescents had a positive overall occupational competence indicating that both the older and younger adolescents in this study have appropriate occupational competence within the occupation of artistic gymnastics. When considering the components of occupational competence between age groups, the younger adolescents scored higher for six of the nine components including *Works towards goals*, *Meeting personal performance standards*, *Organises time for responsibilities*, *Participates in interests*, *Fulfilled roles (past)*, and *Maintained habits (past)*. The increased competence of the younger adolescents in these components may be influenced by the less stressful time of change as described by Kielhofner (Kielhofner, 2008) for older adolescents. These changes include the increase in academic demands which limit time available for participation in other occupations such as gymnastics, the increased need for peer interactions and wanting to explore other interests (Kielhofner, 2008; Dahl & Forbes, 2010; Smits, Jacobs & Knoppers, 2017). These results may also reflect the unrealistic view of the participants about their abilities which improves as they move through adolescence (Callahan et al., 2019).

There was a significant difference between the scores younger and older adolescents in the component of *Meeting personal performance standards* and although most competence is based on performance in the aesthetic sport of gymnastics there are expectations in terms of self-presentation (Duffy, 2008). Therefore both the higher expectations in terms of the difficulty of the skills in gymnastics as well as the expectations related to physical appearance may have played a role in this finding (Duffy, 2008). This supports the decline in physical self-perception reported in females from age 14 to 17 years in terms of sport competence (Lindwall, Asci & Crocker, 2014). There was also a significant difference for the component of *Participating in interests* in which the younger adolescents also scored higher. This may be due to older adolescents wanting to focus on interests other than gymnastics as they reduce the number of activities they participate in in their later adolescence (Kielhofner, 2008; Dahl & Forbes, 2010; Smits, Jacobs & Knoppers, 2017).

Scores were equal for older and younger adolescents for one component *Fulfils role expectations*, and lower for young adolescents in two components *Maintains satisfying lifestyle* and *Achieved satisfaction (past)*. Thus, it appears that the older adolescents, even though they scored their occupational competence as lower on other components, were more satisfied with the occupation of gymnastics. Possibly because they have more autonomy, so although they are not as structured in terms of goals and time use by parents and coaches, they are able to decide on some aspects of the routines and music (South African Gymnastics Federation, 2019a) allowing the gymnasts to be more personally invested in their participation in this sport. They would therefore be satisfied with their lifestyle, including participating in gymnastics as a daily occupation. They may also have more established friendships within the gymnastics group which may provide more social satisfaction as they have acceptance in a group (Stuntz & Weiss, 2009). It is also possible that they achieved in completions in the past which motivated them to continue with the sport and that they were satisfied with their competence at that stage (Nunomura, Okade & Tsukamoto, 2009)(Pierce & Burton, 1998).

The levels at which the participants perform were analysed to determine differences for components related to occupational competence. There was a statistically significant difference in the scores of the component *Fulfils role expectations* where participants at level 8-9 had a higher score than participants in other levels. These

participants were more advanced gymnasts, and more commitment and increased training hours are required to attain this level of competence which precede Olympic Entry level and Junior Olympic level (South African Gymnastics Federation, 2019a). Although the demands are higher in these levels, and thus for gymnasts competing in these levels, the individualisation (South African Gymnastics Federation, 2019b) may also result in better role clarity and allow them to understand and fulfil the expectations of these roles more easily after years of practice and engagement in the sport. They are also fully aware of what these expectations are and are accountable enough to fulfil them. (South African Gymnastics Federation, 2019a)

This was confirmed by the highest scores for participating at level 9 had for *Works towards goals* and *Maintains habits* which indicates that these gymnasts are more committed in terms of their participation and to achieving their goals. They maintain their habits in relation to training in order to sustain this level of performance required. The importance of these components in achieving competence is supported by Pierce & Burton (1998), who found that performance-oriented goals set by gymnasts significantly improved performance over time. Habits were also found to be essential to competence supported by continued practice and repeated exposure to situations resulting individuals maintaining the habits that best support their performance (Holahan, 2014). However, for these participants this appears to limit time available for participating in other interests and they had the lowest score for *Participates in interests* (Kielhofner, 2008).

It was noted that participants in level 5 had higher scores for *Maintains a satisfying lifestyle*, *Participates in interests*, *Fulfilled roles (past)* and *Organised time for responsibilities*. They also had the highest score for total occupational competence. This may indicate that the gymnasts competing in the lower levels are able to maintain a more satisfying lifestyle due to their training regime being less intensive and with them training fewer hours per week (Malina et al., 2013; Swift, 2016). Training fewer hours per week may also allow for participating in all interests (within and outside of gymnastics) as well as organising time for all responsibilities.

When the factors related to involvement in gymnastics were analysed according to the components of occupational competence, the only factors which had significance was the impact that hours of gymnastics practiced per week had on *Maintaining a*

*satisfying lifestyle*. This finding is supported by literature where gymnasts participating in competitive gymnastics report that they find balancing the number of hours they are required to train, and to remain competent with school, friends and other activities challenging which ultimately impacts on their ability to maintain a satisfying lifestyle (Dubuc et al., 2010).

Most participants had positive scores for occupation competence in artistic gymnastics indicating the ability to successfully maintain participation which reflects and satisfies one's occupational identity (Kielhofner et al., 2001; Kielhofner, 2008)

## **5.5 Occupational adaptation**

The overall high positive occupational adaptation score for the participants was found (84.60%) based on the overall positive scores for occupational identity and occupational competence (see Table 4.16). Participants had positive identities of themselves within the occupation of artistic gymnastics, as well as the ability to participate successfully in the sport (Kielhofner et al., 2001; Kielhofner, 2008). These factors indicate that these participants had adapted despite internal and external changes faced (Schkade & Schultz, 1992). It appears that the majority of participants had overcome challenges associated with changes in adolescence and adapted to achieve mastery in the sport.

It is possible since the training is not as arduous for the participants in the current study as it is in some other countries and gymnasts in higher levels (such as in the Olympic levels) that some of the negative side effects of intense training did not impact their occupational adaptation compared to that reported in the literature (Malina et al., 2013). As reported by the gymnasts in the current study, time-use and role balance between family, school, leisure, relaxation and gymnastics (Kielhofner, 2008), while a problem for a few allows adequate to exception occupational function. Rest and sleep were not specified as problems by the participants in the current study.

Unlike gymnasts in other countries most participants also reported their participation in the sport due to personal choice rather being pushed by coaches or parents (Léglise, 1998). The participants early entry into the sport as children also allowed for easier assimilation of the psycho motor skill required (Léglise, 1998), although it can be assumed that this sample of participants showed exceptional ability in achieving

these skills as they all compete at a provincial level. These factors appear to have facilitated their occupational identity, competence and adaptation.

The small number of participants that indicated problems with occupational identity and competence and therefore adaptation appeared to have issues mostly with meeting performance standards and thus fulfilling their role in gymnastics. They no longer felt effective or that they had an interest in the sport. This lack of adaptation appears to be performance based. It is important that these participants are supported and have their programme adapted to their ability and that they are aware of choices in their lives (Léglise, 1998).

Older adolescents had a higher percentage of overall adaptation (85.73%). This is congruent with the suggestion by Kielhofner (2008) that occupational adaptation and occupational competence increase from childhood into adolescence and continue to increase throughout adolescence. This also explains why the younger adolescents still had a high overall positive adaptation score.

When occupational adaptation was compared for the levels of gymnastics at which the participants perform, participants at all the levels had a high overall positive adaptation score. Gymnasts in level 8-9 had the highest adaptation score (86.48%) and participants of level 7 had the lowest adaptation score (78.41%). Level 7 is the first level where gymnasts can be responsible for their own choreography and the introduction of higher level skills which may make adaptation more difficult in terms of competence. The higher level gymnasts having a higher occupational identity score, it may be indicative that they have internalised their participation and identify themselves as artistic gymnastics since they have achieved an exceptional level of competence and therefore continue to experience satisfaction within the sport, adapting to the requirements of high level sport as a way of life (Léglise, 1998).

When considering the factors related to involvement in gymnastics, the presence of injury was the only factor which showed a significance related to occupational adaptation and occupational identity. The presence of injury influences participation which impacts on how artistic gymnasts are able to identify with their role in the sport as well as adapt within the occupation of gymnastics. It also influences having commitments and values due to the impact that injuries have on the gymnasts' certainty of their goals, purpose and direction and attaining success in the future. The

high number of participants who reported injury in the current study is of concerns since younger gymnasts in particular are not always fully aware of the risks involved and coaches may need to adjust training to avoid effects on occupational adaptation (Léglise, 1998).

## **5.6 Strengths and limitations of the study**

The findings of this study allow for an understanding of the adaptation of adolescent female artistic gymnasts. It also highlights differences between the occupational identity, occupational competence and occupational adaptation of the participants according to age (younger and older adolescents) as well as between the different levels of gymnastics in which they compete. The findings of this study also highlight specific factors such as the presence of injury which may influence the development of a positive occupational identity as well as the overall adaptation.

The findings of this study may be used to identify factors which may be used to assist with the overall level of adaptation of adolescent female artistic gymnasts, especially during this time of significant change. This can assist coaches and parents in understanding what factors will facilitate and limit participation and adaptation in the sport of artistic gymnastics.

Although the findings of this study provided information about the level of adaptation of the participants of this study, it should be noted that due to the small sample size (22 participants), these results cannot be generalised to the population of adolescent female artistic gymnasts as this number is not representative of all the gymnasts which are part of the inclusion criteria of the study.

The sample also did not include every level of gymnastics which adolescent female artistic gymnasts compete in. There were no gymnasts in level 10, Olympic entry level, junior Olympic level or senior Olympic level. As a result, other factors which may be associated with competing in these higher levels may not have been highlighted in this study. The sample consisted of 14 participants who were 13 years of age. This made up 63.64% of the sample, which would influence the results and should be considered when reading the results.

Although the participants were assured that their information was anonymous and that what they answered in the questionnaires would not be shared, they may still have

been hesitant to answer completely honestly as they may have been concerned that answers would be shared with their parents or coaches (especially relating to questions about motivation levels and satisfaction).

Participants of the study may have met the researcher who conducted the research previously or may have had some contact with her in the past in the sport of gymnastics. As a result, this may have influenced their responses to the questions.

Lastly, the questionnaire was structured with many closed ended questions which may have limited the emergence of certain factors and themes which could be useful in determining occupational adaptation. This included the fact that the role of parents and coaches was not addressed in the study, which may influence the occupational; adaptation of adolescent female artistic gymnasts. The use of structured questions such as asking about pain specifically may have limited responses and excluded valuable information about having pain which may not be related to a diagnosed injury.

This could be overcome through the use of semi-structured questions in an interview which would allow for more discussion around these topics as opposed to sticking to structured questions.

# CHAPTER 6: CONCLUSION

## 6.1 Introduction

This chapter provides a summary of the previous chapters and highlights the main findings and conclusions of the study. Recommendations are also provided to coaches and gymnasts as well as for future research.

## 6.2 Conclusion

Occupations are all the activities which people participate in on a daily basis, and includes survival skills, sleep and rest, self-care tasks, work, play, leisure, education and social participation (Kielhofner, 2008; American Occupational Therapy Association, 2014). Each person participates in a unique set of occupations which together make up a person's unique occupational profile (American Occupational Therapy Association, 2014). A person's occupational identity (one's definition of themselves in relation to the occupations they participate in) as well as their occupational competence (one's ability to maintain participation in an occupation which reflects and satisfies one's occupational identity) together indicate their occupational adaptation (Kielhofner et al., 2001; Kielhofner, 2008). Understanding an individual's occupational adaptation within a specific occupation at a specific time allows for the understanding of how participation is influenced by internal and external factors. This, in turn, allows for identifying how participation may be supported when changes occur. With occupation and participation becoming a growing interest in research to gain a deeper understanding of individuals as occupational beings, it becomes important to study specific occupations in greater detail. One such occupation is that of artistic gymnastics, due to the increase in participation as seen over time. There is currently no research on this topic in South Africa or abroad.

The current study considered adaptation participation in artistic gymnastics from childhood into adolescence. The participants were all female adolescents (aged 13 to 17), who have been participating in artistic gymnastics since childhood and currently participate at a provincial level. Participants were all participating in levels 5 to 9 in artistic gymnastics with the majority of them being in level 6, all of which are part of the competitive program (South African Gymnastics Federation, 2019a). The participants of the study train between two and six days per week and a total of three

to 30 hours per week. The majority of gymnasts (81.82%) have experienced injuries (both minor and major) with the majority of them (54.54%) having their injuries affect their participation in gymnastics.

All of the participants had an overall positive occupational identity, occupational competence and therefore occupational adaptation score, despite the changes associated with adolescents including the reported time constraints as brought on by the increased academic demands that accompany the transition to high school. The most significant factor highlighted in relation to occupational identity is the level of achievement in competitions as related to expecting success. When considering age, older adolescents were also found to have scored higher than younger adolescents when it came to occupational identity, whereas when level of gymnastics was studied, gymnasts in level 8-9 had the highest occupational identity score.

When analysing occupational competence according to age, younger adolescents had the higher occupational competence score, whereas analysing according to level indicates that participants in level 5 have the highest occupational competence score. The most significant factor highlighted in relation to occupational competence was hours of practice per week as related to maintaining a satisfying lifestyle.

Older adolescents had the highest occupational adaptation score despite older and younger adolescents having an overall positive score. When considering occupational adaptation according to level of gymnastics, level 8-9 gymnasts had the highest percentage of adaptation. The significant contributing factor to participation was the presence of injuries. This had a significant impact on overall occupational identity and occupational adaptation.

In conclusion, the study found that despite the number of changes faced by adolescents (both internal and external), their occupational identity, occupational competence and overall occupational adaptation in relation to artistic is positive, particularly for the participants in this study. It is further highlighted that the presence of injuries was highlighted as the most significant factor in occupational identity and overall occupational adaptation.

Although the overall occupational identity was positive for all participants, there were some who indicated that they had some occupational functioning problems within the components of occupational identity, although there were none who had severe

occupational functioning problems. There were between one and three participants who had difficulty with some of the factors in occupational identity. These participants could be supported through assisting them with developing appropriate goals in order to expect and attain success, realistically evaluating their strengths and limitations and identifying their values and obligations.

With regard to occupational competence there was one participant who reported extreme occupational functioning problems with *Meets personal performance standards*. This can be assisted through assisting them with realistically evaluating their performance standards so that they are able to meet them more effectively. Between one and six participants reported some occupational functioning problems with some of the other factors related to occupational competence. These participants could be assisted with these difficulties through assisting them with concrete ways to maintain a lifestyle which is satisfying to them, identifying their role expectations and way to meet these effectively, assisting them with ways to work towards realistic goals, how to organise their schedules in order to ensure they have time for their responsibilities and are able to participate in their interests.

Addressing the above mentioned difficulties would assist participants with their overall level of adaptation within the sport of artistic gymnastics during adolescence.

## **6.3 Recommendations**

### **6.3.1 The sport of gymnastics**

It is recommended that coaches acknowledge the impact that certain factors may have on the participation of gymnasts in the occupation of gymnastics. Emphasis should be placed on the importance of injury prevention in order to maintain participation and thus a positive occupational identity, occupational competence and therefore occupational adaptation.

It should also be remembered that gymnasts in lower levels (level 5) may have a lower occupational identity score and therefore factors contributing to this, such as having personal goals and projects, expecting success (related to performance in competitions), accepting responsibility, appraising abilities and limitations, having values and commitments, and having interests, should be supported and facilitated. It should also be highlighted that gymnasts in higher levels (level 8 to 9) may have a

lower occupational competence score and therefore factors contributing this such as maintaining a satisfying lifestyle (related to hours of training per week), fulfilling role expectations, working towards goals, organizing time for responsibilities and participating in interests should be supported and facilitated during this time. As mentioned previously, adolescents who have difficulties with these components should be provided with extra support with these specific factors in order to assist them with the overall level of adaptation during this time. This may include assisting them with formulating goals, organising time schedules, identifying their strengths and limitations and ways to continue working towards their goals and desired lifestyles.

It is important for gymnasts to understand the importance of participation in interests and pursuing these interests in order to build and maintain a satisfying lifestyle, to work towards goals in order to expect and attain success in order to establish a positive occupational adaptation despite changes which may occur internally or externally during a certain time period.

### **6.3.2 Future research**

- It is recommended that this study be repeated with a bigger sample size in order to compare findings and allow for a better representation of the population involved in artistic gymnastics which will allow us to analyse results which may be representative of the total population.
- It is recommended that a qualitative research study be conducted in response to this study in order to further explore barriers and facilitators of participation which have been identified in this study.
- It is suggested that future studies focus not only on the presence of injury, but include the presence of pain as there may be gymnasts with underlying and undiagnosed injuries whose participation may still be influenced by the presence of pain.
- It will also be valuable to identify environmental factors which may be barriers or supporters of a positive occupational adaptation.

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## Appendix A – Demographic and General Information Questionnaire

Thank you for agreeing to participate.

You will be required to answer various questions. You will either type in the answer or tick the most relevant block. If you can choose more than one block it will be specified in the question.

What is your age:

\_\_\_\_\_

What grade are you in at school?

\_\_\_\_\_

How old were you when you started artistic gymnastics?

\_\_\_\_\_

Why did you choose to do gymnastics?

\_\_\_\_\_

How many days per week do you practice artistic gymnastics?

\_\_\_\_\_

How many hours per week do you spend doing artistic gymnastics?

\_\_\_\_\_

What level of artistic gymnastics do you compete in?

- Level 1
- Level 2
- Level 3
- Level 4
- Level 5
- Level 6
- Level 7
- Level 8
- Level 9
- Level 10
- Junior Olympic
- Senior Olympic

What competitions have you competed in?

- Internal club competitions
- Friendly inter-club competitions
- Provincial competitions (Eastern Gauteng, Central Gauteng etc.)
- Regional competitions (Gauteng championships)
- National competitions (SA championships)
- International competitions (Commonwealth, World championships, Rosebowl etc.)
- Other  
(You can select more than one.)

Please specify the other competitions:

\_\_\_\_\_

How have you done in competitions? (Please specify if you have placed, etc.)

\_\_\_\_\_

What is your best achievement in artistic gymnastics?

\_\_\_\_\_

---

Have you had any injuries? If so, please specify what injuries and when?

---

---

Did your injury affect your participation in gymnastics?

- Yes  
 No

---

How long were you not able to take part in gymnastics? Please specify how many days, weeks, or months.

---

## Appendix B – Questionnaire based on the Occupational Performance History Interview

### Occupational Performance Questionnaire

What goals do you currently have?

- To achieve a specific skill
  - To compete at a higher level than the previous year
  - To get provincial colours
  - To compete at Nationals
  - To win a medal at Nationals
  - To make an international team
  - To be the same as last year
  - I have no current goals
  - Other
- (You can select more than one.)

Please specify what other goals:

Do you think your goals will be attainable?

- Yes, they make me very excited
- Yes I am motivated to achieve my goals
- I think I am going to struggle to overcome obstacles
- I am not completely committed to achieving these goals
- I am not motivated because my goals are excessive

How will you achieve these goals?

- Putting more effort into training sessions
- Training extra hours and putting in extra sessions
- Working on specific problems
- Continuing my current program
- I am unsure how I will achieve these goals
- I don't think I will achieve these goals

What are some of your current obstacles or challenges?

- Lack of time
  - Lack of energy
  - Lack of specific skills
  - Fear of specific skills
  - Fear of a specific apparatus
  - Difficulty keeping up with the pace
  - Fear of competitions
  - I am not sure what obstacles I have
  - I have no obstacles
- (You can select more than one.)

How will you be able to overcome these obstacles?

- Prioritise on how I spend my available time so that gymnastics takes preference
- Put in extra effort with specific skills/apparatus
- Spend more time on difficult areas
- I am unsure how I will overcome these obstacles
- I do not think I will be able to overcome these obstacles

When you experience an obstacle or failure in gymnastics:

- It is always due to my personal actions
- It is usually due to my personal actions
- It is never due to my personal actions
- I can use feedback to help me improve
- I look for feedback and corrections so that I can make improvements
- I usually feel that the feedback and corrections I receive are overwhelming

---

How do you feel about challenges in gymnastics?

- I look forward to challenges
- I hope for success when I face challenges
- I am not sure if I am able to overcome challenges
- I am discouraged and demotivated when faced with a challenge

---

What are some of your strengths as a gymnast?

- I am a strong gymnast
  - I am a flexible gymnast
  - I learn skills quickly
  - I am not scared to attempt new skills
  - I do well as competitions
  - I work hard on a daily basis
  - I can overcome distractions
  - I am able to balance my lifestyle between gymnastics, school, etc
  - Other
  - I am unsure of my strengths
  - I do not have any strengths
- (You can select more than one.)

---

Please state what other strengths you have:

.....

---

What are some of your limitations as a gymnast?

- I am not a strong gymnast
  - I am not a flexible gymnast
  - I take longer to learn new skills
  - I am a fearful gymnast
  - I do badly in competitions
  - I struggle to maintain focussed
  - I have difficulty balancing my lifestyle
  - Other
  - I am unsure of my limitations
  - I do not have any limitations
- (You can select more than one.)

---

Please state what other limitations you have as a gymnast

.....

---

How do you feel about these limitations?

- I work on improving my limitations so that they can add to my strengths
- I could work on my limitations to help me succeed
- I am unsure if I am able to use my strengths to overcome my limitations
- I am unable to use my strengths to overcome my limitations

---

How do you feel about your current lifestyle?

- I have some difficulties but will overcome them with hard work
  - I need to be very disciplined to maintain this lifestyle
  - I enjoy how structured my lifestyle is
  - I lack motivation to continue this lifestyle
  - I lack structure
  - I don't think I am able continue with the structure of this lifestyle
- (Your lifestyle refers to what activities you spend your day doing and how much time you spend doing them. This is how much time you spend at school, gymnastics, with friends, etc.)

---

What are some important areas in your life?

- Being a gymnast
  - Being a scholar/student
  - Being a friend
  - Being a daughter/sister
  - Other
  - I don't have important areas in my life
  - I am unsure of the important areas of my life
  - Other hobbies
  - Religious roles
- (You can select more than one.)

---

Please state what other important areas there are in your life?

-----

---

Do these areas influence the activities you choose to do?

- Yes, I use these areas to shape my choices and they drive me direction
- Some of these areas help direct my life choices
- These important areas often confuse me about what choices I should make
- I am unsure of the direction of my life and don't have many commitments to activities

---

What are some values which you have as a gymnast?

- I am hard working
- I am committed
- I am certain about my current direction in life
- I tend to be lazy at times
- I have difficulty committing
- I am uncertain about my current direction

---

As a gymnast I am a:

- Friend
  - Receiver of instructions
  - Receiver of feedback
  - Competitor
  - Motivator
  - Team player
  - Leader
  - Other
  - I have limited roles/ I am unsure of my roles
  - I do not have any roles
- (You can select more than one.)

---

If you answered other, please specify what other roles you have as a gymnast:

-----

Are you committed to these roles mentioned above?	<input type="radio"/> I am very committed to my roles <input type="radio"/> I have difficulty to committing to some roles <input type="radio"/> I am not committed to these roles
Do you take responsibility for these roles?	<input type="radio"/> I accept responsibility of the roles mentioned above <input type="radio"/> I accept some responsibility for the roles mentioned above <input type="radio"/> I do not accept responsibility for the roles mentioned above
What are some of the responsibilities involved in your roles	<input type="checkbox"/> Working hard <input type="checkbox"/> Being on time for training <input type="checkbox"/> Ensuring that I am competition ready <input type="checkbox"/> Accepting feedback from my coach <input type="checkbox"/> Giving feedback to other gymnasts <input type="checkbox"/> Motivating other gymnasts and team mates <input type="checkbox"/> Displaying good sportsmanship at all times <input type="checkbox"/> I am unsure of my responsibilities <input type="checkbox"/> I do not have any responsibilities <input type="checkbox"/> Supporting others (You can select more than one.)
What are some of your interests in gymnastics?	<input type="checkbox"/> I enjoy vault <input type="checkbox"/> I enjoy bar <input type="checkbox"/> I enjoy beam <input type="checkbox"/> I enjoy floor <input type="checkbox"/> I enjoy the dance and leap aspects of gymnastics <input type="checkbox"/> I enjoy dynamic aspects of gymnastics <input type="checkbox"/> I enjoy competing <input type="checkbox"/> I enjoy learning new skills <input type="checkbox"/> I enjoy working on specific goals <input type="checkbox"/> I am unsure of my interests <input type="checkbox"/> I do not have any interests (You can select more than one.)
In the past (before you turned 13) did you take responsibility for your roles as a gymnast?	<input type="radio"/> Yes, I took responsibility when it was given to me <input type="radio"/> I took some responsibility when it was given to me <input type="radio"/> I was unable to take responsibility when it was given to me <input type="radio"/> I had no responsibilities
In the past (before you turned 13) how did you feel when you faced difficult situations?	<input type="radio"/> I expected success to come from challenging situations <input type="radio"/> I was hopeful that success would come from challenging situations <input type="radio"/> Challenging situations would discourage me <input type="radio"/> I would be completely overwhelmed
In the past (before you turned 13) how did you feel about your lifestyle as a gymnast?	<input type="radio"/> I was extremely happy with my lifestyle as a gymnast <input type="radio"/> I was happy with my lifestyle as a gymnast but there were some things I wanted to change <input type="radio"/> I was slightly unhappy with my lifestyle as a gymnast <input type="radio"/> I was very unhappy with my lifestyle as a gymnast

---

In the past (before you turned 13) how did you feel about your life as a gymnast

- I was very satisfied with my life (interests) as a gymnast
- I had a few satisfying aspects of my life as a gymnast
- I had difficulty finding satisfaction in my life as a gymnast
- I was extremely unhappy with my life as a gymnast

---

In the past (before you turned 13) how did you feel about your choice of being a gymnast?

- I was very satisfied with my choice to be a gymnast
- I was slightly satisfied with my choice to be a gymnast
- My choice of being a gymnast was not satisfying
- My choice of being a gymnast made me very unhappy

---

In the past (before you were 13) how do you feel your choice of being a gymnast contributed to your life?

- It added to my life story in a positive manner and I was very motivated and committed
- I was motivated and committed to it
- It interfered with what I enjoyed doing
- I was very demotivated and did not enjoy participating

---

**Occupational Competence Questionnaire**

---

What are some of the other ways you spend your time?

- With my friends
- With my family
- At school
- Other sports
- Other activities
- I do not spend time doing other things  
(You can select more than one.)

---

Can you please specify which other sports you spend your time doing?

.....

---

Can you please specify what other activities you spend your time doing?

.....

---

Do you give enough time to these other activities you enjoy?

- Yes I spread my time across all my activities that are important to me
- I give time to some of the other things that are important to me but not all of them
- I don't have enough time to spend on all the things I enjoy
- Giving time to other areas in my life causes me stress
- I want to spend more time on other things as I often have extra time

---

Do you meet the expectations set by these other roles?

- I meet all the expectations set by all my roles
- I generally meet the expectations set out for my roles
- I have difficulty meeting all the expectations because there are too many demands and I am restricted with time
- I don't have many expectations set for me to achieve
- I can't meet all the demands for all my roles
- I have no role demands  
(Your roles include being a friend, family member, gymnast or anything else you participate in)

---

Are you happy with the roles you have?

- Yes, they give me direction and meaning
- They give me satisfaction
- I struggle to fill my time with meaningful roles and activities
- I experience failure in my roles

---

How focussed are you at working towards and achieving your goals?

- I consistently achieve and exceed my goals
- I achieve nearly all my goals
- I occasionally lose focus of my goals
- I cannot stay focussed on my goals over time

---

Do you ever change your goals?

- I reformulate my goals so that they remain achievable
- I change my goals when circumstances change
- I sometimes continue towards unattainable goals
- I abandon goals at times

Do you believe you meet your own expectations when you perform?	<input type="radio"/> I perform at a high level which meets my expectations <input type="radio"/> Due to a high level of expectations, I generally perform at a level that meets my expectations <input type="radio"/> Due to my excessively high standards, there is normally a gap between my expectations and my performance <input type="radio"/> I have difficulty meeting my unrealistic expectations
How do you ensure that you achieve your goals?	<input type="radio"/> I constantly maintain focus and put in a lot of effort <input type="radio"/> I regularly put in a lot of effort <input type="radio"/> I sometimes work towards unrealistic goals <input type="radio"/> I am unable to keep putting in effort to reach my goals
Which statement best describes your daily routine?	<input type="radio"/> I have a well organised routine focusing on my goals <input type="radio"/> I have a consistent routine for accomplishing most goals <input type="radio"/> I have difficulty organising my routine to meet my multiple responsibilities <input type="radio"/> I have a very disorganised routine (Your daily routine refers to all the activities you do on a daily basis)
Do you change your daily routine?	<input type="radio"/> I change my routine to adapt to my responsibilities and circumstance <input type="radio"/> I am generally able to modify my routine to adapt to responsibilities and circumstances <input type="radio"/> I do not need to change my routine as I have few responsibilities <input type="radio"/> I am unable to adapt my routine to new circumstances
Do you participate in any of your activities which you find interesting?	<input type="radio"/> I pursue one or more of my interests with great passion <input type="radio"/> I consistently participate in my interests with satisfaction <input type="radio"/> I have some difficulty finding time/energy to participate in my top interests <input type="radio"/> I have little/no energy to participate in my interests
In the past (before you turned 13) how did you manage your roles?	<input type="radio"/> I was able to balance all the demands set by all my roles <input type="radio"/> I was generally able to balance all the demands set by all my roles <input type="radio"/> I had difficulty balancing the demands set by all my roles <input type="radio"/> I had major difficulty in several or all my roles
In the past (before you turned 13) how would you describe your routine?	<input type="radio"/> I kept a very organised and productive routine for achieving my goals <input type="radio"/> Generally kept an organised routine for achieving my goals <input type="radio"/> I had an inconsistent daily schedule <input type="radio"/> Had difficulty maintaining a routine

---

In the past (before you turned 13) how did you feel you achieved your goals?

- I achieved goals which gave me high levels of satisfaction
- I mostly met important life goals
- I lost a major goal and did not replace it
- Injury prevented me from achieving my goals

---

In the past (before you turned 13) how did you feel about the balance between school, rest, play and gymnastics?

- I had a good balance of school, rest, play and gymnastics
- I generally balanced school, rest, play and gymnastics
- I had some imbalance between school, rest, play and gymnastics
- I had poor balance of school, rest, play and gymnastics

---

In the past (before you turned 13), how satisfied were you with your lifestyle as a gymnast?

- I was very satisfied with my lifestyle
- I was generally happy with my lifestyle
- I was dissatisfied (unhappy) with my lifestyle
- I was very dissatisfied (unhappy) with my lifestyle

## Appendix C – Occupational Performance History Interview II – Interview Questions

100

Expanded List Format

### Occupational Roles

The Occupational Roles section is made up of questions that explore the occupational roles that make up the person's lifestyle.

#### Worker, student, caretaker roles

- Tell me a little about yourself.

Do you currently work?

Are you currently in school?

Are you responsible for the care of children, a partner, or \_\_\_\_\_?

*[Or]*

I understand that you are a worker/student/responsible for your \_\_\_\_\_?

*[pursue line of questioning for all current student/worker/caretaker roles]*

- How did you come to [have this job/choose this line of work or study/have responsibilities for your \_\_\_\_\_]?
- What do(es) your work/studies/caretaking involve?

*[Or]*

- What kind of [responsibilities do you have/things do you have to do] as a \_\_\_\_\_?

How well do you handle these responsibilities/tasks?

Do you like doing them?

- What would you say is the main thing you get out of your work/studies?

*[Or]*

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OPHI-II Manual

**What is the main reason that you do this?**

- **What kind of worker/student/caretaker would you say you are?**

- Can you give me an example of something that shows how this is so?

*[Or]*

Tell me something that happened recently that would show what kind of worker/parent/partner/son/daughter you are.

*[Or]*

Tell me something that you did recently as a worker/parent/partner/son/ daughter that you are really proud of.

*[If not currently a student or worker]*

- **Have you worked in the past?**

[If Yes]

**How did you come to [have this job/choose this line of work or study]?**

*[And/or]*

What kind of worker would you say your were?

How much of your time/energy did your work take?

Was work difficult for you?

What would you say is the main thing you got out of your work?

Why did you quit [working/this line of work/this job]?

How has your illness/injury/disability affected your work?

[If No]

**Why do you think it is that you have not worked?**

- **What about your past student experiences?**

What kind of a student would you say you were?

How much of your time/energy did your studies take?

Was school difficult for you?

What would you say is the main thing you got out of your studies?

How far did you go in school?

How has your illness/injury/disability affected your studies?

### **Friend, volunteer, amateur, hobbyist and other roles**

- **In addition to your work/studies/other responsibilities is there anything else that takes up a lot of your time and energy that is really important to you?**

[Or]

**Is there any special thing that you do a lot?**

[Or]

- **It seems like your role at \_\_\_\_\_ (referring to the setting or the group) is to \_\_\_\_\_ (referring to some special informal role such as being a leader, helping others, being the one who cheers everyone up, and so on).**

**Home-maintenance role (if not currently a student or worker)**

- Do you live in an apartment/home/dormitory/nursing home/other?

Who else do you live with?

What kind of responsibilities do you have to keep up your home/apartment/room?

*[Or]*

How do you divide up the responsibilities to keep up your home/apartment/room?

**Religious/organization participation**

- Do you actively participate in any organizations or in church/temple groups?

Tell me about it.

What kinds of things do you do?

How did you get started?

- Why do you do this?

Is it just for fun or more serious?

## Daily Routine

The Daily Routine section includes questions about how the person organizes and uses time, his or her satisfaction with daily routine, and typical occupations that fill his or her time.

- **Describe a typical day during the week.**

- Can you tell me about something that happened recently that typifies what this routine is really like for you?

- **Is the weekend any different?**

[If Yes] Describe it.

- **Are you satisfied with this routine?**

[If Yes] What do you like about it?

[If No] What do you dislike about it?

- **If you were having a really good or really bad day, what would that day be like?**

- **What are the most important things in your routine?**

Does your routine allow you to get done the things that are most important?

[If No] What important things are you not able to do?

- **Was your daily routine ever different?**

*[Or, referring to a specific previous period]*

How was your routine different when \_\_\_\_\_?

How would you compare these routines?

Which was better for you?

Did you have any hobbies or projects that were part of your routine in the past?

- **What is the most important thing to keep the same about your routine?**
- **What would you most like to change about your routine?**
- **Do you have any ongoing hobbies/projects that are part of your current routine?**

Tell me about \_\_\_\_\_.

How often do you do it?

How did you get started?

What do you like about it?

How long has this been a part of your routine?

- **Do you have any hobbies or projects that were part of your routines in the past?**

## Occupational Settings (Environment)

The Occupational Settings (Environment) section includes questions aimed at the person's occupational environments, including people, and their influence on occupation.

### Home

- Tell me about where you live.

[Or]

I understand you live \_\_\_\_\_.

[Or]

Give me a little tour of/Tell me about your home/apartment/room/dorm.  
What is it like?

Is your home/apartment/room/dorm comfortable?

Do you have enough privacy?

Can you get around in your home/apartment/room/dorm?

Is it adequate for that?

Do you have the things there that you need in order to do what you want?

Are you ever bored there?

Do you like your surroundings?

Are they stimulating for you?

[The following overlaps with the caretaker role questions in the role section and may not need to be repeated if that section is done first]

- **What do you have to do to keep up your home/apartment/room/dorm?**

Do you like doing this?

Are you able to do it okay?

- **Who do you live with?**

[Or]

**Who are the important people in your life?**

[Or]

**I understand you live with \_\_\_\_\_?**

How do you get along?

What kind of things do you do together?

- **How would you describe things where you live? (For instance, which of the following describes your home/living situation: loving, fighting, stressful, calm, chaotic, busy, boring?)**

[Or]

**Tell me about something that happened at home recently that would show me what things are like where you live.**

- **Is there anyone at home/in your family who makes life stressful or difficult for you?**

- **If you need help with something, can you expect your family/spouse/ roommate/etc. to give you a hand?**

Can you give me an example?

- **If you were feeling depressed or upset, could you expect your family/spouse/ roommate/etc.]to give you support?**

Can you give me an example?

### **Major Productive Role**

- **Tell me about the place where you work/go to school.**

*[Or]*

- **[Give me a little tour of/Tell me about] your workplace/school. What is it like?**

Is it well suited for you to get your studies/work done?

Do you have enough privacy?

Can you get around okay?

What are the main things you do at work/school?

Is it adequate for that?

Do you have the things there that you need in order to do what you want?

Are you ever bored there?

Are you ever stressed there?

Do you like your work surroundings?

- **How would you describe things where you work? (For instance, which of the following describes your work situation: loving, fighting, stressful, calm, chaotic, busy, boring?)**

*[Or]*

**Tell me about something that happened at work recently that would show me what things are like where you work.**

- **Who are the people you interact with most [on the job/as a student]?**
- **How do you get along with your colleagues/coworkers/boss/fellow students/ teachers?**
- **Is there anyone at work who makes work difficult or stressful for you?**
- **If you need help with something can you expect your colleagues/coworker/ boss to give you a hand?**

Can you give me an example?

- **If you were feeling depressed or upset, could you expect your boss or coworkers to give you advice or support?**

Can you give me an example?

**Leisure**

- **What are the main things you do to recreate and relax?**

Where do you go for that?

Is it a good place to be?

Do you like the facilities/atmosphere?

Do they suite you well?

Do you really have the places you want for relaxation or recreation?

- **Who are the people you relax/recreate with most?**

How do you get along with them?

- **Tell me about something you did recently that would show me what kind of atmosphere you are in when you relax or recreate.**

## Activity/Occupational Choices

The Activity/Occupational Choices section includes questions that aim to understand how a person makes choices relevant to occupations and the values, interests, and personal causation behind these choices.

- **How did you come to [have this job/choose this line of work or study/have responsibilities for your parents]?**
- **Do you get to do the things that you think are really important?**

[If Yes]      **What are some of the things that are really important to you?**

[If No]      **Can you tell me about those things you don't get to do, and why?**

**[Or]**  
**What are the things you can't do?**

Can you give me an example?

Can you tell me about a recent situation in which you weren't able to do something you really value?

- **Have you been able to choose the things in your life that are important to you?**
- **Is there anything that routinely interferes with what you want to do?**
- **Do you feel you have enough time to do the things you enjoy?**

[If Yes]      **Do you have free time?**

What are you likely to spend it doing?

What do you do for fun?

Can you tell me about the most recent time when you really had a lot of fun?

[If No] **Why do you think you don't have the time?**

Can you give an example of a time when you felt you did not have enough time to do the things you enjoy?

[If Can't Answer] **Why don't you think you have fun anymore?**

- **Do you ever [set goals for yourself/plan for the future]?**

[If Yes] **Are you able to follow through?**

[If Yes] Can you give me an example of a time when you had a goal and followed through with it?

[If No] Can you give me an example of a time when you had a goal and were not able to follow through with it?

[If No] **Haven't you ever had something you looked forward to or really wanted to accomplish?**

*[Or]*

**So how do you make decisions to get things done?**

- **When you run into obstacles or difficulties, how do you handle it?**

Can you give me an example?

- **What do you think is the biggest challenge you are facing now?**

*[Or, referring to a known circumstances, trauma, etc.]*

- **How do you think you will [adjust to/handle] \_\_\_\_\_?**

Can you give me an example of some decisions you've already made that illustrate this?

## Critical Life Events

The Critical Life Events section includes questions that ask about turning points, good times, bad times, successes, and failures in a person's life.

- **What were the events or experiences that most shaped or changed your life?**

*[Or, if a change is apparent/known]*

When did things really change for you?

*[Or, if a specific event is known]*

How have things changed since \_\_\_\_\_?

*[Ask for each event]*

- **Tell me about \_\_\_\_\_.**

What happened?

What changes did it bring about?

- **If you think about your life, what do you consider the time when you were doing best?**

Tell me about this period.

What made it so good?

*[Or]*

Why? What was it about your behavior and circumstances that made this the best period?

- **What do you consider your biggest success in life?**

*[Or]*

Tell me about something that happened at school or work (or within a major occupational role) where you felt especially successful.

- What do you consider the worst period in your life?

Tell me about this period.

What made it so bad?

*[Or]*

Why? What was it about your behavior and circumstances that made this the worst period?

- What do you consider your biggest failure in life?

*[Or]*

Tell me about something that happened at school or work (or within a major occupational role) where you felt especially unsuccessful.

- If you could make your future turn out as you wanted, what would you be doing?

What do you think you will be doing in the future?

*[Or]*

What do you see yourself doing in the future? Is that how you'd like it to be?

# Appendix D – Occupational Performance History Interview II Rating Scales

Ratings Scales

11

## Occupational Identity Scale

Item	Rating	Criteria	Additional Rater Notes
Has personal goals and projects	4	<input type="checkbox"/> Goals/personal projects challenge/extend/require effort. <input type="checkbox"/> Feels energized/excited about future goals/personal projects.	
	3	<input type="checkbox"/> Goals/personal projects fit strengths/limitations. <input type="checkbox"/> Enough desire for future to overcome doubt/ challenges. <input type="checkbox"/> Motivated to work on goals/personal projects.	
	2	<input type="checkbox"/> Goals/anticipated projects under/over estimate abilities. <input type="checkbox"/> Not very motivated to work on goals/personal projects. <input type="checkbox"/> Difficulty thinking about goals/personal projects/future. <input type="checkbox"/> Limited commitment/ excitement/motivation.	
	1	<input type="checkbox"/> Cannot identify goals/personal projects. <input type="checkbox"/> Personal goals/desired projects are unattainable given abilities. <input type="checkbox"/> Goals bear little/no relationship to strengths/limitations. <input type="checkbox"/> Lacks commitment or motivation to the future. <input type="checkbox"/> Unmotivated due to conflicting/excessive goals/ personal projects.	
Identifies a desired occupational lifestyle	4	<input type="checkbox"/> Extremely committed to a particular lifestyle. <input type="checkbox"/> Strong feelings about how to live life. <input type="checkbox"/> Identifies a strongly preferred lifestyle. <input type="checkbox"/> Identifies one or more very meaningful occupations. <input type="checkbox"/> Clear idea of priorities for structuring/filling time.	
	3	<input type="checkbox"/> Identifies a desired lifestyle with some misgivings/dissatisfaction. <input type="checkbox"/> Adequate idea of priorities for structuring/filling time. <input type="checkbox"/> Identifies one or more occupations which are somewhat important/ meaningful. <input type="checkbox"/> Basically happy with current occupational lifestyle.	
	2	<input type="checkbox"/> Trouble identifying desired occupational lifestyle. <input type="checkbox"/> Major misgivings/dissatisfaction with chosen occupational lifestyle. <input type="checkbox"/> Difficulty identifying how to structure/ fill time. <input type="checkbox"/> Trouble identifying/lost enthusiasm for meaningful occupations.	
	1	<input type="checkbox"/> Extremely unhappy with lifestyle/routines. <input type="checkbox"/> Cannot identify a future meaningful lifestyle. <input type="checkbox"/> Cannot identify occupations that excite/fulfill. <input type="checkbox"/> Cannot envision how to structure/fill time.	
Expects success	4	<input type="checkbox"/> Extremely confident about overcoming obstacles/limitations/failures. <input type="checkbox"/> Looks forward to challenges. <input type="checkbox"/> Strong belief in personal effectiveness. <input type="checkbox"/> Feels in control of where life is headed. <input type="checkbox"/> Accepts circumstances beyond control without discouragement.	
	3	<input type="checkbox"/> Maintains adequate confidence about overcoming obstacles/limitations/ failures. <input type="checkbox"/> Faces challenges with hope for success. <input type="checkbox"/> Expects success in a number of areas. <input type="checkbox"/> Adequate belief in personal effectiveness.	
	2	<input type="checkbox"/> Doubts ability to control self/ face obstacles/limitations/failures. <input type="checkbox"/> Feels uncertain about prospects for success. <input type="checkbox"/> Difficulty sustaining confidence about overcoming obstacles/limitations/ failures. <input type="checkbox"/> Easily discouraged when faced with challenges.	
	1	<input type="checkbox"/> Pessimistic view of own potential to perform. <input type="checkbox"/> Feels helpless. <input type="checkbox"/> Feels unable to control self. <input type="checkbox"/> Feels helpless in the ability to influence outcomes. <input type="checkbox"/> Gives up in the face of obstacles/limitations/failures.	

Key: 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2= Some occupational functioning problems, 1= Extreme occupational functioning problems

OPHI-II Manual

Version 2.1

### Occupational Identity Scale (continued)

Item	Rating	Criteria	Additional Rater Notes
Accepts responsibility	4	<input type="checkbox"/> Accepts reasonable responsibility for personal actions. <input type="checkbox"/> Seeks/uses feedback for self-improvement.	
	3	<input type="checkbox"/> Accepts responsibility for most personal actions. <input type="checkbox"/> Not overly self-blaming or critical. <input type="checkbox"/> Can use feedback to modify strategies.	
	2	<input type="checkbox"/> Tends to avoid taking responsibility for personal actions. <input type="checkbox"/> Blames others/circumstances for personal failures. <input type="checkbox"/> Overly self-critical. <input type="checkbox"/> Tends to deny/get overwhelmed by feedback.	
	1	<input type="checkbox"/> Takes little/no responsibility for personal failure. <input type="checkbox"/> Chronically self-deprecating. <input type="checkbox"/> Avoids/cannot use feedback effectively. <input type="checkbox"/> Chronically uses others/circumstances to avoid responsibilities.	
Appraises abilities and limitations	4	<input type="checkbox"/> Readily recognizes/accepts limitations while emphasizing assets. <input type="checkbox"/> Readily acknowledges how abilities can compensate for limitations. <input type="checkbox"/> Realistically assesses own abilities in choosing occupational/applying efforts.	
	3	<input type="checkbox"/> Recognizes some limitations. <input type="checkbox"/> Reasonable tendency to over/under estimate abilities. <input type="checkbox"/> Adequate knowledge of abilities/limitations for choosing appropriate occupation/applying effort.	
	2	<input type="checkbox"/> Over/under estimates own abilities leading to inappropriate occupations. <input type="checkbox"/> Difficulty recognizing/compensating for limitations with abilities.	
	1	<input type="checkbox"/> Fails to realistically estimate own abilities. <input type="checkbox"/> Difficulty recognizing/compensating for limitations with abilities.	
Has commitments and values	4	<input type="checkbox"/> Strong sense of what is important in life shapes/directs choices. <input type="checkbox"/> Commitments give strong sense of purpose/direction. <input type="checkbox"/> Clear personal standards for living life result in positive self-regard.	
	3	<input type="checkbox"/> Identifies some values which influence occupational choices. <input type="checkbox"/> Adequate commitment to a direction and purpose in life. <input type="checkbox"/> Personal standards/principles result in adequate self regard.	
	2	<input type="checkbox"/> Conflicting values limit occupational choices. <input type="checkbox"/> Uncertain about life's purpose and direction. <input type="checkbox"/> Holds values not shared by one's social group(s)/society.	
	1	<input type="checkbox"/> Alienated/lacks commitments and occupational choices. <input type="checkbox"/> Cannot find investment/sense of purpose and direction in life. <input type="checkbox"/> Cannot identify with social group(s)/societal values. <input type="checkbox"/> Holds values that are deviant/at odds with social group(s)/society.	
Recognizes identity and obligations	4	<input type="checkbox"/> Sees self in a range of roles. <input type="checkbox"/> Has strong sense of identity emanating from roles. <input type="checkbox"/> Strongly committed to roles.	
	3	<input type="checkbox"/> Sees self in one or more roles. <input type="checkbox"/> Draws adequate identity from roles. <input type="checkbox"/> Committed to roles.	
	2	<input type="checkbox"/> Difficulty seeing self in one or more roles. <input type="checkbox"/> Marginally committed to roles. <input type="checkbox"/> Difficulty identifying responsibilities of role(s) despite wanting the roles. <input type="checkbox"/> Weak role identity.	
	1	<input type="checkbox"/> Does not identify with any occupational role. <input type="checkbox"/> Identifies with deviant role. <input type="checkbox"/> Lacks role commitment.	

Key: 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2 = Some occupational functioning problems, 1 = Extreme occupational functioning problems

Version 2.1

OPHI-II Manual

**Occupational Identity Scale (continued)**

Item	Rating	Criteria	Additional Rater Notes
Has interests	4	<input type="checkbox"/> Strongly attracted to one or more occupational activity(ies) that motivate(s) choices. <input type="checkbox"/> Interests enhance abilities/opportunities.	
	3	<input type="checkbox"/> Adequate interest to guide choices. <input type="checkbox"/> Attracted to occupations that correspond to abilities/opportunities.	
	2	<input type="checkbox"/> Difficulty identifying interests. <input type="checkbox"/> Limited attraction to any occupation that correspond to abilities. <input type="checkbox"/> Interests do not correspond well with skills/opportunities.	
	1	<input type="checkbox"/> Unable to identify interests. <input type="checkbox"/> Interests have no relationship to skills/opportunities for involvement in interests.	
Felt effective (past)	4	<input type="checkbox"/> Strong sense of personal responsibility. <input type="checkbox"/> Expected success in challenging situations.	
	3	<input type="checkbox"/> Felt adequate with responsibility when it was given. <input type="checkbox"/> Was hopeful of success in challenging situations.	
	2	<input type="checkbox"/> Felt inadequate with responsibility when it was given. <input type="checkbox"/> Became discouraged when facing challenging situations.	
	1	<input type="checkbox"/> Lacked a sense of responsibility. <input type="checkbox"/> Felt hopeless.	
Found meaning and satisfaction in lifestyle (past)	4	<input type="checkbox"/> Was extremely happy with past lifestyles. <input type="checkbox"/> Found strong satisfaction/meaning in life. <input type="checkbox"/> Had a strong occupational identity.	
	3	<input type="checkbox"/> Was generally happy with life roles but had things s/he wanted to change. <input type="checkbox"/> Had a number of meaningful/satisfying occupational experiences.	
	2	<input type="checkbox"/> Was somewhat unhappy with life roles. <input type="checkbox"/> Had some difficulty identifying interests. <input type="checkbox"/> Had difficulty finding satisfaction/meaning in life.	
	1	<input type="checkbox"/> Was extremely unhappy with lifestyle/ life roles. <input type="checkbox"/> Was unable to identify interests. <input type="checkbox"/> Was unable to find meaning in life.	
Made occupational choices (past)	4	<input type="checkbox"/> Has been very committed to/ energized by a meaningful life story. <input type="checkbox"/> Made excellent occupational choices for pursuing own life story. <input type="checkbox"/> Past occupational choices were realistically achievable.	
	3	<input type="checkbox"/> Was adequately motivated by a meaningful life story. <input type="checkbox"/> Made adequate occupational choices pursuing own life story.	
	2	<input type="checkbox"/> Had difficulty identifying/ committing to a life story. <input type="checkbox"/> Made occupational choices that interfered with pursuit of life story. <input type="checkbox"/> Life story led to negative occupational choices.	
	1	<input type="checkbox"/> Life story was not motivating (e.g. tragic, portrayed self as a victim). <input type="checkbox"/> Was unable to envision a life story. <input type="checkbox"/> Avoided/ made very poor occupational choices.	

Key: 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2= Some occupational functioning problems, 1= Extreme occupational functioning problems

### Occupational Competence Scale

Item	Rating	Criteria	Additional Rater Notes
Maintains satisfying lifestyle	4	<input type="checkbox"/> Involvement in a full compliment of roles/personal projects/habits that give highly beneficial identity/experience. <input type="checkbox"/> Lifestyle directly linked to important values/goals. <input type="checkbox"/> Full life with a range of roles/personal projects. <input type="checkbox"/> Lifestyle shows strong sense of direction/meaning.	
	3	<input type="checkbox"/> Involvement in variety of roles/ personal projects providing identity/ satisfaction. <input type="checkbox"/> Lifestyle allows expression of some important values/goals. <input type="checkbox"/> Generally good balance of roles/personal projects to fill life space. <input type="checkbox"/> Lifestyle generally expresses a sense of direction/meaning.	
	2	<input type="checkbox"/> Difficulty in maintaining/ completing range of roles/personal projects/ activities. <input type="checkbox"/> Difficulty filling life space with adequate roles/personal projects/activities. <input type="checkbox"/> Stressful lifestyle with too many demands/priorities. <input type="checkbox"/> Lifestyle lacks clear sense of direction/meaning. <input type="checkbox"/> Inconsistency/conflict between roles/personal projects/responsibilities.	
	1	<input type="checkbox"/> Overwhelmed with responsibilities related to roles/personal projects. <input type="checkbox"/> Consistent failure in roles/personal projects. <input type="checkbox"/> Major lack of roles/personal projects/responsibilities to fill lifestyle. <input type="checkbox"/> Lifestyle shows no direction/meaning.	
Fulfills role expectations	4	<input type="checkbox"/> Excels in meeting role obligations across all roles. <input type="checkbox"/> Role obligations/demands consistent with a highly productive lifestyle.	
	3	<input type="checkbox"/> Generally meets obligations of several roles. <input type="checkbox"/> Role obligations/demands generally sufficient to maintain a consistent pattern of achievement.	
	2	<input type="checkbox"/> Occasional/increasing difficulty meeting role expectations (due to excessive role demands/diminished capacity). <input type="checkbox"/> Too few obligations to maintain a consistent pattern of achievement.	
	1	<input type="checkbox"/> Unable to meet demands of major life roles. <input type="checkbox"/> Completely lost major life roles due to disability. <input type="checkbox"/> Negligible/no role demands with little opportunity for achievement.	
Works toward goals	4	<input type="checkbox"/> Maintains focused/highly successful efforts toward goal attainment. <input type="checkbox"/> Consistently achieves/exceeds goals. <input type="checkbox"/> Anticipates how and when to reformulate goals for optimal productivity/ satisfaction.	
	3	<input type="checkbox"/> Regularly sustains effort towards goals. <input type="checkbox"/> Achieves/nearly achieves most goals. <input type="checkbox"/> Able to redirect goals/efforts when circumstances dictate.	
	2	<input type="checkbox"/> Illness created intermittent/partial disruption of goal achievement. <input type="checkbox"/> Occasionally loses focus on/commitment to goals. <input type="checkbox"/> Goals significantly impacted by illness. <input type="checkbox"/> Makes unsteady progress toward goals. <input type="checkbox"/> Sometimes persists toward unattainable goals.	
	1	<input type="checkbox"/> Illness/trauma invalidated goals. <input type="checkbox"/> Cannot stay focussed on goals/sustain effort toward goals over time. <input type="checkbox"/> Abandons goals. <input type="checkbox"/> Struggles toward unattainable goals resulting in chronic failure.	

Key: 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2= Some occupational functioning problems, 1= Extreme occupational functioning problems

Occupational Competence Scale (continued)

Item	Rating	Criteria	Additional Rater Notes
Meets personal performance standards	4	<input type="checkbox"/> Achieves a level of performance consistent with high personal aspirations/expectations.	
	3	<input type="checkbox"/> Due to some excess in standards... <input type="checkbox"/> Due to some limitation in ability... } ...achieves a level of performance that generally meets expectations.	
		2	<input type="checkbox"/> Due to excessive personal expectations... <input type="checkbox"/> Due to significant limitations/diminished capacity... } ...ongoing gap between accomplishments and standards results in self doubt.
	1		<input type="checkbox"/> Chronic difficulty meeting completely unrealistic personal expectations. <input type="checkbox"/> Major loss of capacity preventing achievement of performance standards.
Organizes time for responsibilities	4	<input type="checkbox"/> Well organized routine which keeps apace responsibilities/goals. <input type="checkbox"/> Readily flexes routine to creatively address changing responsibilities/circumstances. <input type="checkbox"/> Routine expresses highly adaptive coping strategies.	
	3	<input type="checkbox"/> Consistent routine for accomplishing most responsibilities/goals. <input type="checkbox"/> Generally able to modify routine when required by responsibility/circumstantial changes. <input type="checkbox"/> Routine generally expresses adaptive coping strategies.	
	2	<input type="checkbox"/> Major difficulty organizing routines to meet multiple responsibilities/changed circumstances. <input type="checkbox"/> Goals/responsibilities too few to require an adaptive routine. <input type="checkbox"/> Elements of routine involve maladaptive behaviors/coping strategies.	
	1	<input type="checkbox"/> Totally disorganized/chaotic routine. <input type="checkbox"/> Unable to organize routine for basic self care tasks. <input type="checkbox"/> Unable to adapt routine to new circumstances. <input type="checkbox"/> Routine expresses highly maladaptive behavior such as substance abuse/negative coping strategies.	
Participates in interests	4	<input type="checkbox"/> Pursues passionately/with satisfaction one or more interests. <input type="checkbox"/> Readily tries out/finds pleasure in new interests.	
	3	<input type="checkbox"/> Consistently participates in interests with reasonable satisfaction. <input type="checkbox"/> Generally able to try out/enjoy new interests.	
	2	<input type="checkbox"/> Inconsistent participation in interests. <input type="checkbox"/> Some difficulty finding time/energy to participate in strong interests. <input type="checkbox"/> Illness interrupts/ reduces involvement in past interests. <input type="checkbox"/> Difficulty trying new interests/adapting interests/finding satisfaction in new/adapted interests.	
	1	<input type="checkbox"/> Minimal/no pursuit of interests. <input type="checkbox"/> Little/no energy/time to participate in interests. <input type="checkbox"/> Illness/trauma strongly interferes/prevents involvement in past interests. <input type="checkbox"/> Completely unable to try/adapt new interests.	

Key: 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2 = Some occupational functioning problems, 1 = Extreme occupational functioning problems

## Occupational Competence Scale (continued)

Ratings Scales

Item	Rating	Criteria	Additional Rater Notes
Fulfilled roles (past)	4	<input type="checkbox"/> Competently managed developmentally appropriate roles. <input type="checkbox"/> Was able to balance multiple role demands.	
	3	<input type="checkbox"/> Generally maintained developmentally appropriate roles. <input type="checkbox"/> Was generally able to balance multiple role demands.	
	2	<input type="checkbox"/> Had difficulty balancing role demands. <input type="checkbox"/> Had periods of role difficulty. <input type="checkbox"/> Had variable/inconsistent role performance. <input type="checkbox"/> Had role conflict.	
	1	<input type="checkbox"/> Had significant failure in one or more major life roles. <input type="checkbox"/> Had absence of roles. <input type="checkbox"/> Had major difficulty in several/ all roles.	
Maintained habits (past)	4	<input type="checkbox"/> Kept a highly organized routine for developmental stage/goals. <input type="checkbox"/> Maintained a highly satisfactory/productive daily schedule.	
	3	<input type="checkbox"/> Generally maintained an organized/productive daily schedule. <input type="checkbox"/> Generally kept a routine appropriate to developmental stage/goals.	
	2	<input type="checkbox"/> Daily schedule was inconsistent. <input type="checkbox"/> Routine was insufficiently organized for developmental stage/goals. <input type="checkbox"/> Had periods of significant disorganization in daily life.	
	1	<input type="checkbox"/> Had significant problems maintaining routine. <input type="checkbox"/> Routine pattern failed to match developmental stage/goals. <input type="checkbox"/> Had chaotic life pattern in relation to appropriate developmental stage/goals. <input type="checkbox"/> Had an inactive routine. <input type="checkbox"/> Had markedly deviant life pattern.	
Achieved satisfaction (past)	4	<input type="checkbox"/> Accomplishments/goals attained/past lifestyle provided a high level of satisfaction. <input type="checkbox"/> Had a good balance of work, rest, and play.	
	3	<input type="checkbox"/> Mostly met important life goals. <input type="checkbox"/> Generally balanced work, rest, and play. <input type="checkbox"/> Lifestyle was generally enjoyable. <input type="checkbox"/> Generally maintained/ followed through on goals.	
	2	<input type="checkbox"/> Had significant dissatisfaction with lifestyle. <input type="checkbox"/> Had some imbalance of work, rest, and play. <input type="checkbox"/> Major failures detracted from/overshadowed accomplishments. <input type="checkbox"/> Lost a major interest or goal and did not replace. <input type="checkbox"/> Had difficulty following through on goals.	
	1	<input type="checkbox"/> Illness/trauma significantly hindered/ prevented the pursuit/achievement of goals/interests. <input type="checkbox"/> Had strong sense of failure/ dissatisfaction with lifestyle. <input type="checkbox"/> Had significant failure leading to dissatisfaction. <input type="checkbox"/> Had poor balance of work, rest, and play.	

**Key:** 4 = Exceptionally competent occupational functioning, 3 = Appropriate, satisfactory occupational functioning, 2 = Some occupational functioning problems, 1 = Extreme occupational functioning problems

## Appendix E- Ethics clearance



R14/49 Miss Stacey Joy Smith

### HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

#### CLEARANCE CERTIFICATE NO. M160947

**NAME:** Miss Stacey Joy Smith  
**(Principal Investigator)**  
**DEPARTMENT:** Occupational Therapy  
Johannesburg Gymnastic Club, TUKS Gymnastics,  
Gymagic Gymanastics Club  
(SAGF Associated Artistic Gymnastics Clubs)


**PROJECT TITLE:** Occupational Adaptation in Adolescent Female  
Artistic Gymnasts

**DATE CONSIDERED:** 30/09/2016

**DECISION:** Approved unconditionally

**CONDITIONS:**

**SUPERVISOR:** Denise Franzsen

**APPROVED BY:**   
\_\_\_\_\_  
Professor P Cleaton-Jones, Chairperson, HREC (Medical)

**DATE OF APPROVAL:** 21/11/2016

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

#### DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in September and will therefore be due in the month of September each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

\_\_\_\_\_  
Principal Investigator Signature

\_\_\_\_\_  
Date

**PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES**

## Appendix F- Permission letter South African Gymnastics Federation



School of Therapeutic Sciences, Faculty of Health Sciences, 7 York Road, Parktown, 2193, South Africa  
Tel: +27 11 717 3701 | Fax: +27 717 3709 | Email: leilane.bogoshi@wits.ac.za | [www.wits.ac.za](http://www.wits.ac.za)

Date

Mr/Mrs

Dear Sir/Madam

My name is Stacey Smith, and I am an occupational therapy Master's student at the University of the Witwatersrand. I am currently doing research on the occupational adaptation of female adolescent artistic gymnasts in Johannesburg and Pretoria regions.

The aim of this research is to learn what adaptation females need to make in adolescence in order to continue to take part in artistic gymnasts successfully. Individuals adapt in different ways to changes in their lives and this study aims to determine the occupational identity and competence or how the participation of adolescent females in artistic gymnastics has changed from childhood to adolescence and factors have influenced this change. I would also like to establish the specific barriers or facilitators in their environment in relation to this.

I am asking for your permission conduct this research with clubs in the Johannesburg and Pretoria regions, belonging to the South African Gymnastics Federation. Participation in this study is completely voluntary, and participants may withdraw from this study at any stage during this process.

This study will gymnasts completing a background questionnaire for general information which will include aspects such as age, school grade, time spent doing gymnastics on a daily basis, how many years gymnastics has been done, achievements, injuries, activities outside gymnastics and daily routine.

The children (if they agree) will then be asked to complete a self-report questionnaire which will look at aspects of occupational identity and occupational competence (i.e. what changes they have made as adolescents to manage with the routine they follow, roles they play in this activity and obligations to be met and their satisfaction with the activities carried out as part of artistic gymnastics). The information obtained from these questionnaires will be used to score the children on a set of rating scales.

This process will take approximately 30 minutes, and will take place at the specific gymnastics clubs on a specific date.

There are no direct risks of being involved in this study. There are also no direct benefits of being in the study. This study will simply aid in providing information about the occupational adaptation of adolescent female artistic gymnasts as described above.

Results of the study will be used for research purposes, but will be made available to you on request. All information obtained will be kept confidential and anonymous and no names will be recorded on any forms.

If you have any further questions, please feel free to contact me on 0823556223 or email me at [stace.j.smith@gmail.com](mailto:stace.j.smith@gmail.com).

If you have any concerns about ethical issues, please contact the Human Research Ethics Committee (HREC) chairperson Prof P Cleaton-Jones at peter.cleaton-jones1@wits.ac.za or administrators - Ms Zanele Ndlovu/ Mr Rhulani Mkansi/ Mr Lebo Moeng Tel 011 717 2700/2656/1234 Email: HREC-Medical.ResearchOffice@wits.ac.za

Regards

Stacey Smith

**PERMISSION TO DO RESEARCH**

I, \_\_\_\_\_, in the capacity of \_\_\_\_\_ have read the information given above, and hereby give permission for this research to be conducted at clubs affiliated with the SAGF.

\_\_\_\_\_

Name

\_\_\_\_\_

Signature

\_\_\_\_\_

Date and time

26 October 2016

Attn : Ms Stacey Smith  
University of Witwatersrand

Dear Ms Smith,

**Re : Permission to conduct research study**  
**Occupational Adaptation of Female Adolescent Artistic Gymnasts**

The letter addressed to the South African Gymnastics Federation dated 26 October 2016 refers.

The South African Gymnastics Federation hereby grants permission for you, Ms Stacey Smith (Masters Candidate at University of Witwatersrand), to conduct studies and data collection from members of the gymnastics fraternity.

Please note, however, you will need to approach the clubs you wish to include in your studies, as well as the parents of the gymnasts you wish to work with, for their consent.

We wish you all the best for your research study and look forward to you sharing the results of the studies with us.

Yours sincerely



Karen Hochfelden  
Operations Manager  
SAGF  
021 671-4818



39 Boshof Avenue  
Newlands, 7700  
South Africa

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## Appendix G - Permission Letter Gymnastics clubs



Department of Occupational Therapy  
Wits Education Campus

School of Therapeutic Sciences, Faculty of Health Sciences, 7 York Road, Parktown, 2193, South Africa  
Tel: +27 11 717 3701 | Fax: +27 717 3709 | Email: leilane.bogoshi@wits.ac.za | [www.wits.ac.za](http://www.wits.ac.za)

### Permission letter

Date

Mr/Mrs

Dear Sir/Madam

My name is Stacey Smith, and I am an occupational therapy Master's student at the University of the Witwatersrand. I am currently doing research on the occupational adaptation of female adolescent artistic gymnasts in Johannesburg and Pretoria regions.

The aim of this research is to learn what adaptation females need to make in adolescence in order to continue to take part in artistic gymnasts successfully. Individuals adapt in different ways to changes in their lives and this study aims to determine the occupational identity and competence or how the participation of adolescent females in artistic gymnastics has changed from childhood to adolescence and factors have influenced this change. I would also like to establish the specific barriers or facilitators in their environment in relation to this.

I am asking for your permission conduct this research with gymnasts at your club. Participation in this study is completely voluntary, and participants may withdraw from this study at any stage during this process.

This study will gymnasts completing a background questionnaire for general information which will include aspects such as age, school grade, time spent doing

gymnastics on a daily basis, how many years gymnastics has been done, achievements, injuries, activities outside gymnastics and daily routine.

The children (if they agree) will then be asked to complete a self-report questionnaire which will look at aspects of occupational identity and occupational competence (i.e. what changes they have made as adolescents to manage with the routine they follow, roles they play in this activity and obligations to be met and their satisfaction with the activities carried out as part of artistic gymnastics). The information obtained from these questionnaires will be used to score the children on a set of rating scales.

This process will take approximately 30 minutes, and will take place at the specific gymnastics clubs on a specific date.

There are no direct risks of being involved in this study. There are also no direct benefits of being in the study. This study will simply aid in providing information about the occupational adaptation of adolescent female artistic gymnasts as described above.

Results of the study will be used for research purposes, but will be made available to you on request. All information obtained will be kept confidential and anonymous and no names will be recorded on any forms.

If you have any further questions, please feel free to contact me on 0823556223 or email me at [stace.j.smith@gmail.com](mailto:stace.j.smith@gmail.com).

If you have any concerns about ethical issues, please contact the Human Research Ethics Committee (HREC) chairperson Prof P Cleaton-Jones at peter.cleaton-jones1@wits.ac.za or administrators - Ms Zanele Ndlovu/ Mr Rhulani Mkansi/ Mr Lebo Moeng Tel 011 717 2700/2656/1234 Email: HREC-Medical.ResearchOffice@wits.ac.za

Regards

Stacey Smith



**PERMISSION TO DO RESEARCH**

I, Riaan Kruger, in the capacity of owner & head coach have read the information given above, and hereby give permission for this research to be conducted at my club, Gymagic Gymnastics.

Riaan

Name



Signature

26/10/2016

Date and time

**PERMISSION TO DO RESEARCH**

I, Ise Luig in the capacity of Owner have read the information given above, and hereby give permission for this research to be conducted at my club

JGC

Ise Luig

Name



Signature

2016-10-26

Date and time

## **Appendix H - Information Sheet for Parents**

*Study title: Occupational adaptation in adolescent female artistic gymnasts*

Good day,

My name is Stacey Smith, and I am an occupational therapy Master's student at the University of the Witwatersrand. I am currently doing research on the occupational adaptation of female adolescent artistic gymnasts in Johannesburg and Pretoria regions.

The aim of this research is to learn what adaptation females need to make in adolescence in order to continue to take part in artistic gymnasts successfully. Individuals adapt in different ways to changes in their lives and this study aims to determine the occupational identity and competence or how the participation of adolescent females in artistic gymnastics has changed from childhood to adolescence and factors have influenced this change. I would also like to establish the specific barriers or facilitators in their environment in relation to this.

I am asking for your permission to include your child in this study. Participation in this study is completely voluntary, and you may withdraw your child from this study at any stage during this process. I require your permission to allow me to approach your child in order to ask them if they would like to participate in the study. It ultimately remains your child's decision as to whether they want to participate in the study or not. Your child may decline and may also withdraw at any stage without penalty.

This study will entail your child completing a background questionnaire for general information which will include aspects such as age, school grade, time spent doing gymnastics on a daily basis, how many years gymnastics has been done, achievements, injuries, activities outside gymnastics, daily routine as well as coach and family support.

Your child, if they agree, will then be asked to complete a self-report questionnaire which will look at aspects of occupational identity and occupational competence (i.e. what changes they have made as adolescents to manage with the routine they follow,

roles they play in this activity and obligations to be met and their satisfaction with the activities carried out as part of artistic gymnastics). The information obtained from these questionnaires will be used to score the children on a set of rating scales.

This process will take approximately 30 minutes, and will take place at your child's gymnastics club on a specific date at your convenience.

There are no direct risks of being involved in this study. There are also no direct benefits of being in the study. This study will simply aid in providing information about the occupational adaptation of adolescent female artistic gymnasts as described above. If your child should be come upset by any of the questions I will provide you with contact details of professionals that they may consult to discuss their concerns, if you and your child wish to do so.

Results of the study will be used for research purposes, but will be made available to you on request. All information obtained will be kept confidential and anonymous and no names will be recorded on any forms. Please keep in mind that participation in this study is completely voluntary, and that you may withdraw your child from this study at any stage without penalties.

If you have any further questions, please feel free to contact me on 0823556223 or email me at [stace.j.smith@gmail.com](mailto:stace.j.smith@gmail.com).

If you have any concerns about ethical issues, please contact the Human Research Ethics Committee (HREC) chairperson Prof P Cleaton-Jones at [peter.cleaton-jones1@wits.ac.za](mailto:peter.cleaton-jones1@wits.ac.za) or administrators - Ms Zanele Ndlovu/ Mr Rhulani Mkansi/ Mr Lebo Moeng Tel 011 717 2700/2656/1234 Email: HREC-Medical.ResearchOffice@wits.ac.za

Regards

Stacey Smith

## Appendix I - Informed consent

I, \_\_\_\_\_, give permission for my child, \_\_\_\_\_, to be included in the research study being conducted by Stacey Smith from the University of the Witwatersrand. I understand that the research aims to gain information about the occupational identity, occupational competence and occupational adaptation of female adolescent artistic gymnasts.

- I am aware that my child's participation of this study is voluntary and that I may withdraw my child from participating at any stage without penalties. I understand that there will be no remuneration for participation.
- I understand the research process and that it entails the completion of a demographic questionnaire as well as the completion of another questionnaire by my child related occupational identity, competence and adaptation within the sport of artistic gymnastics.
- I am aware that the study has received ethical approval from the ethics committee of the University of the Witwatersrand.
- I understand what the research entails and all my questions have been answered sufficiently.
- I understand that all child's information will be kept confidential and that she will not be identified by name.

_____	_____	_____
Name	Signature	Date and time

_____	_____	_____
Name of Witness	Signature	Date and time

_____	_____	_____
Researcher name	Signature	Date and time

## **Appendix J - Information Sheet for Gymnasts**

*Study title: Occupational adaptation in adolescent female artistic gymnasts*

Hello,

My name is Stacey and I am doing research on the changes that you have had to adapt to in gymnastics since you were a child. I would like you to answer some questions about taking part in gymnastics and how you are managing with gymnastics in your life at the moment as compared to when you were a child (aged 12 and younger). As part of this study you will need to complete a background information sheet so that we can get some information about you. You will also need to complete a questionnaire which looks at your roles, responsibilities, goals, achievements, lifestyle and routine as a gymnast. The questionnaire will take about 20 minutes to complete.

Your name will be kept confidential and when the results are recorded you will be kept anonymous, so no one will be able to identify you.

Participation in this study is completely voluntary, so you can choose whether you want to participate or not. You will not be punished or disadvantaged in any way if you do not participate or if you pull out of this study. If you are upset by some of the questions and would like to discuss them with someone I will provide your parents with the names of a suitable person you can consult if you wish.

If you agree to this, please sign your name below.

## Appendix K - Informed Assent

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Date

Witness:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Appendix L – Turn it in report

### SJ Smith Research Report Chapter 1-6

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