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An exploratory study of the development of perceived body image in elite female artistic gymnasts in one central programme

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**AN EXPLORATORY STUDY OF THE DEVELOPMENT OF
PERCEIVED BODY IMAGE IN ELITE FEMALE ARTISTIC GYMNASTS
IN ONE CENTRAL PROGRAMME**

By

Michelle A. Saliba

**Thesis Submitted in Partial Fulfilment of the Requirements
for the Award of**

Bachelor of Applied Science (Sports Science) Honours

at the Faculty of Science and Technology

Edith Cowan University

December 1993

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

ABSTRACT

Women's elite gymnastics is characterised by subjective and aesthetic judgement and together with increasing technical requirements imposes strict body composition and body image requirements throughout the international gymnastic community. Limited research has been conducted on the younger, smaller, leaner and almost prepubescent gymnasts who now dominate the International arena. The purpose of this study is to provide an understanding of the way in which current and retired elite, female artistic gymnasts perceive their own and the "ideal" gymnast's body image, and to identify factors influencing the development of these perceptions.

Nineteen subjects were drawn from one Australian women's artistic gymnastics training programme. They included: (a) current gymnasts in the sub-junior level aged eight to 10 years and junior level aged 11 to 14 years; (b) retired gymnasts aged 16 to 19 years who had trained and competed in the senior level of the programme, and (c) the coaches of the gymnasts in the programme.

Data was collected using open-ended interviews to expose thoughts, feelings, knowledge and experiences relating to the gymnasts' perceptions of body image and the factors contributing to these perceptions. Content analysis of the interview transcripts allowed categories to emerge and identified common perceptions of the gymnasts toward their body image.

The retired and junior gymnasts described varying degrees of pressure to achieve their desired body image. The gymnasts generally expressed total body satisfaction and a positive body image, however several gymnasts were dissatisfied with some aspects of their body image as to its appropriateness to elite gymnastics. The gymnasts and coaches indicated that several factors contributed to the gymnasts' perceived body image with the underlying factor being the requirement to conform to a certain skinfold level set by the national governing body. All gymnasts participating in this study, including the sub-junior gymnasts, were aware of their weight and skinfold levels. The sub-junior gymnasts presented unclear opinions of their body image, with the gymnasts' perceived body image becoming clearer with age. Responses from the junior and retired gymnasts and coaches indicated that understanding of the importance of body image in gymnastics became clearer as the gymnasts passed through adolescence and experienced the demands of elite gymnastics at the senior level.

DECLARATION

"I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text".

ACKNOWLEDGEMENTS

I wish to extend my sincere appreciation to the following people for their contributions toward this research:

Dr Lynn Embrey for her constant patience, support, understanding and guidance she has given me throughout the duration of this research.

The director of the selected centralised elite gymnastics training programme for allowing the gymnasts and coaches of this programme to participate in this study. For reasons of confidentiality this programme will remain anonymous.

Each of the retired gymnasts, junior gymnasts, sub-junior gymnasts and coaches who for reasons of confidentiality must also remain anonymous, their contributions to this study were invaluable. Appreciation is also extended to the parents of the gymnasts for their support of this study.

Peggy Browne and Peter Sharpe from the Australian Gymnastics Federation as well as the Director of the State Gymnastics Association with which the study took place for their support of this research.

My fiancé, Ross, Mum and Dad and my sisters and brother for their love, support and understanding which made this research possible.

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CHAPTER 1

Introduction

Competitive gymnastics consist of three disciplines: a) Women's Artistic Gymnastics in which female gymnasts perform on four pieces of fixed apparatus, namely the vault, asymmetric bars, balance beam and floor exercise to music; b) Men's Artistic Gymnastics in which male gymnasts perform on fixed equipment comprising six apparatus; and c) Rhythmic Sportive Gymnastics in which female gymnasts perform floor exercises to music with hand-held equipment comprising five apparatus. The focus of this study is Women's Artistic Gymnastics.

Artistic gymnastics has been described as "a discipline of supple beauty and strength melded with breathtaking excitement - an exploration of the ultimate limits of the body" (Olympic Gold 84, 1984 p. 32). The nature of gymnastics is to enhance physical abilities such as flexibility, strength and muscular endurance, and basic motor abilities such as balance, general co-ordination, agility and spatial orientation (A guide to our gymnastic programs, 1992) as well as aesthetics and beauty (P. Browne, personal communication, 10 August, 1993).

Background to the Study

Since the early 1970's Women's Artistic Gymnastics has seen a trend away from the older, mature gymnast to the younger, smaller, leaner and almost prepubescent athlete (Bernardot & Czerwinski, 1991; Calabrese, 1985; Salmela, 1979). The increasing technical requirements of the sport, together with the aesthetic nature and subjectivity of the judging of women's gymnastics, have led to an emphasis on body composition, particularly favouring low body weight and minimal body fat. The resultant small, lean body image is now accepted throughout the International gymnastic community as the norm.

Each Olympic cycle brings changes in technical requirements forcing new and more difficult skills and routines to be performed. It appears that the rapidly increasing demands and standards of Women's Artistic Gymnastics make it essential for a more intense training regime at a younger age (Cantelon, 1981) when the gymnasts' bodies are smaller and lighter. Generally, the older, heavier gymnasts have difficulty in coping with the physical demands of these increased standards (Harris & Greco, 1990). Often the physiological changes that occur during puberty may be significant enough to be detrimental to performance at the elite level. To be successful at the elite level, female artistic gymnasts require a relatively high power/body weight ratio

(Bernardot & Czerwinski, 1991, Kirkendall, 1985). This power/body weight ratio decreases with increases in body weight, therefore, necessitating low body weights and low body fat levels. It appears, then, that Women's Artistic Gymnastics at the elite level is best suited to young gymnasts with naturally small, lean bodies.

The structure of gymnastics in Australia has undergone several changes in the last decade in an attempt to increase the standard and profile of Australian gymnastics internationally at the highly competitive level, while also encouraging participation at a recreational level. Australian gymnastics now comprises two streams of competitive gymnastics, one accommodating those gymnasts participating in the highly competitive, "Elite Stream" and those participating in the less competitive "Levels Stream" (Women's Artistic Gymnastics: Levels 5-7, 1988). A model of these two streams is presented in Appendix A, Figure A2.

This study focuses on sub-junior, junior and senior gymnasts in the Elite stream who aspire towards International competition. Prior to reaching the competitive junior level gymnasts are prepared in the Sub-junior Development Scheme which caters for gymnasts from 6 to 12 years of age and is designed to facilitate the rapid development of young gymnasts from beginner to International standard (Women's Artistic Gymnastics (Sub-junior Development Scheme) n.d.). The four stages of development prepare select, talented gymnasts for International performance of the Olympic compulsory and optional routines (Women's Artistic Gymnastics: Levels 1-10 1993).

Many states in Australia have recently established centralised gymnastic training programmes either at state or regional Institutes or Academies of Sport which prepare gymnasts for performance in the Elite stream from the sub-junior to senior levels.

As a result of the changes in the structure of Australian gymnastics and the development of centralised training programmes throughout the nation, Australia has raised its world ranking in Women's Artistic Gymnastics from 16th in 1989 to 6th at the 1991 World Gymnastic Championships (Normile, 1992 p. 18), thus qualifying a full Australian women's team for the first time under the International qualification requirements for the 1992 Olympic Games. Since the 1968 Olympic Games only teams placing in the top 12 at the World Championships in the year preceding the Olympic Games were eligible to send a full team of six competitors to the Olympic Games (P. Browne, P. Sharpe, personal communication, 10 August, 1993). At the 1991 World Championships the Australian women's team was also voted the "most improved team" and as having the "best body line" (Normile, 1991 p. 41).

Significance of the Study

Following every Olympic Games there is an upsurge of interest in gymnastics after little girls all over the world see the beauty and skill of the world's best gymnasts on the television and aspire to be like them.

With the elite female artistic gymnast becoming younger, smaller, leaner and almost prepubescent, it appears necessary to identify the body perceptions held by these gymnasts and the attitudes they have towards the strict weight requirements within which they must comply. Gymnastics is a sport in which training continues throughout the whole year, therefore, these requirements become a way of life for elite gymnasts rather than seasonal demands. For many of these gymnasts, their competitive career and therefore compliance with these requirements, may extend over 12 or more years, or three Olympic cycles.

Previous studies have identified that female gymnasts and other female athletes, are concerned about, and many preoccupied with their weight and body image (Bernardot, & Czerwinski, 1991; Davis, 1992; Garden, 1992; Rucinski, 1989). Authors including Drinkwater (1993) and Johns (1993) have indicated that to compete at the elite level many gymnasts must comply to extreme ideals of leanness which go beyond the normal expectations of society and cite extreme dietary practices and conditions of gymnasts. Several studies have focused on the nutritional concerns of "at risk" athletes who are involved in sports such as gymnastics where leanness is of significant importance. Many also focus on the prevalence of eating disorders.

The majority of studies have been conducted using standardised rating scales and questionnaires which limit the possible answers from the subjects and do not allow true and complete feelings and opinions to emerge. Many studies investigating body image have done so in conjunction with total self-concept and self-esteem, rather than body image as a separate component of the self-concept. It appears, however, that the majority of these studies fail to identify the athletes' attitudes and feelings toward their body images in sufficient depth to fully understand them.

The majority of studies on female body image in gymnastics and sport in general have been conducted with college gymnasts and athletes, aged 18-30 years. In gymnastics a younger population dominate World and Olympic competition, with gymnasts competing internationally as young as 13 years and the current World and Olympic champions being 16 years. With many more sports developing child athletes, there appears to be a void in the literature focussing on body image.

Body perception is not restricted to elite female gymnasts, however, one of the basic tenants of qualitative research is that findings are specific to the study group, therefore, great caution must be taken when generalising to other populations (Guba & Lincoln, 1988).

Purpose of the Study

The purpose of this study is to provide an understanding of the way in which current and retired elite, female, artistic gymnasts from one Australian central training programme perceive their body image as elite gymnast and the "ideal" gymnast's body image. The study aims to identify factors which contribute to these perceptions of body image and the way in which these perceptions develop throughout the gymnastics career from the sub-junior level through to retirement. In studying both current and retired gymnasts at this period of time any effects of the change in the structure of gymnastics in Australia may be identified.

Research Questions

- i) How do elite female gymnasts from the central programme perceive their body image?
- ii) What factors contribute to the gymnasts' perceived body image?
- iii) How does perceived body image develop throughout the gymnastic career?

Limitations

The following factors were identified as possible limitations to this study:

- i) The sample was drawn from one centralised programme which is the only one in the state to cater for gymnasts at the elite level. It is believed to be representative of all other Australian centralised elite gymnastics programmes since National competition results in recent years indicate that the programme produces gymnasts of equivalent calibre to elite gymnasts throughout Australia.
- ii) This study was limited to athletes from the sport of gymnastics. Results from this study, therefore, cannot be easily generalised to elite athletes in other sports, nor to the general population. The very young age of these predominantly preadolescent elite female gymnasts also places these athletes in a completely different category to elite athletes of most other sports who are adults, or minimally, adolescents.

iii) This study investigated elite female artistic gymnasts only. It is possible that female gymnasts participating in general stream gymnastics may have different perceptions of body image due to a lesser emphasis on leanness. Male gymnasts may also have different perceptions of body image due to the nature of their discipline which places a greater emphasis on strength and a lesser emphasis on aesthetics. Elite female rhythmic gymnasts may also hold varying perceptions of their body image

iv) The researcher's previous associations with the selected centralised programme and the subjects may have had the potential to bias interpretations of results, however, it was anticipated that this association and the researcher's understanding of the sport have resulted in more complete and truthful responses from the subjects with less room for biased interpretations.

v) Only current gymnasts and coaching staff who had been members of the selected centralised programme for a minimum of six months and 12 months respectively were eligible to participate in the study. Retired gymnasts must have trained at the selected centralised programme and competed at the senior level. All subjects must have been residing in the state at the time of the study.

CHAPTER 2

Literature Review

The Female Body Image

The literature indicates that body image is of significant importance and concern to females of all ages. It is generally agreed in the literature that many women and girls, both sports participants and non-participants, feel immense pressure to attain society's idealised female image. It is also agreed that many women and girls are dissatisfied with their body, often even if they already have low body weight and low body fat.

The Self-Concept

Body image may be expressed as the subarea, physical appearance, in the physical self-concept as suggested by Shavelson, Hubner, and Stanton (1976). In expressing their concern for the imprecise and varying definitions of self-concept, Shavelson et al. provided a very broad definition of self-concept based on the then-existing definitions, as follows:

a person's perception of himself [or herself]. These perceptions are formed through his [or her] experience with his [or her] environment ... and are influenced by environmental reinforcements and significant others.

(Shavelson et al., 1976, p. 411)

The self-concept theory presented by Shavelson et al. (1976) is widely accepted and has been the benchmark from which subsequent researchers have based their models (Marsh 1985; Leung & Leung, 1992). A number of features have been identified by Shavelson et al. (1976) as being crucial to the formation of the self-concept definition. They expressed self-concept as being structured, multifaceted, and hierarchical (refer Figure 2.1).

General:

**Academic and
Non-Academic
Self-Concept:**

**Subareas of
Self-Concept:**

**Evaluation of
Behaviour in
Specific
Situations:**

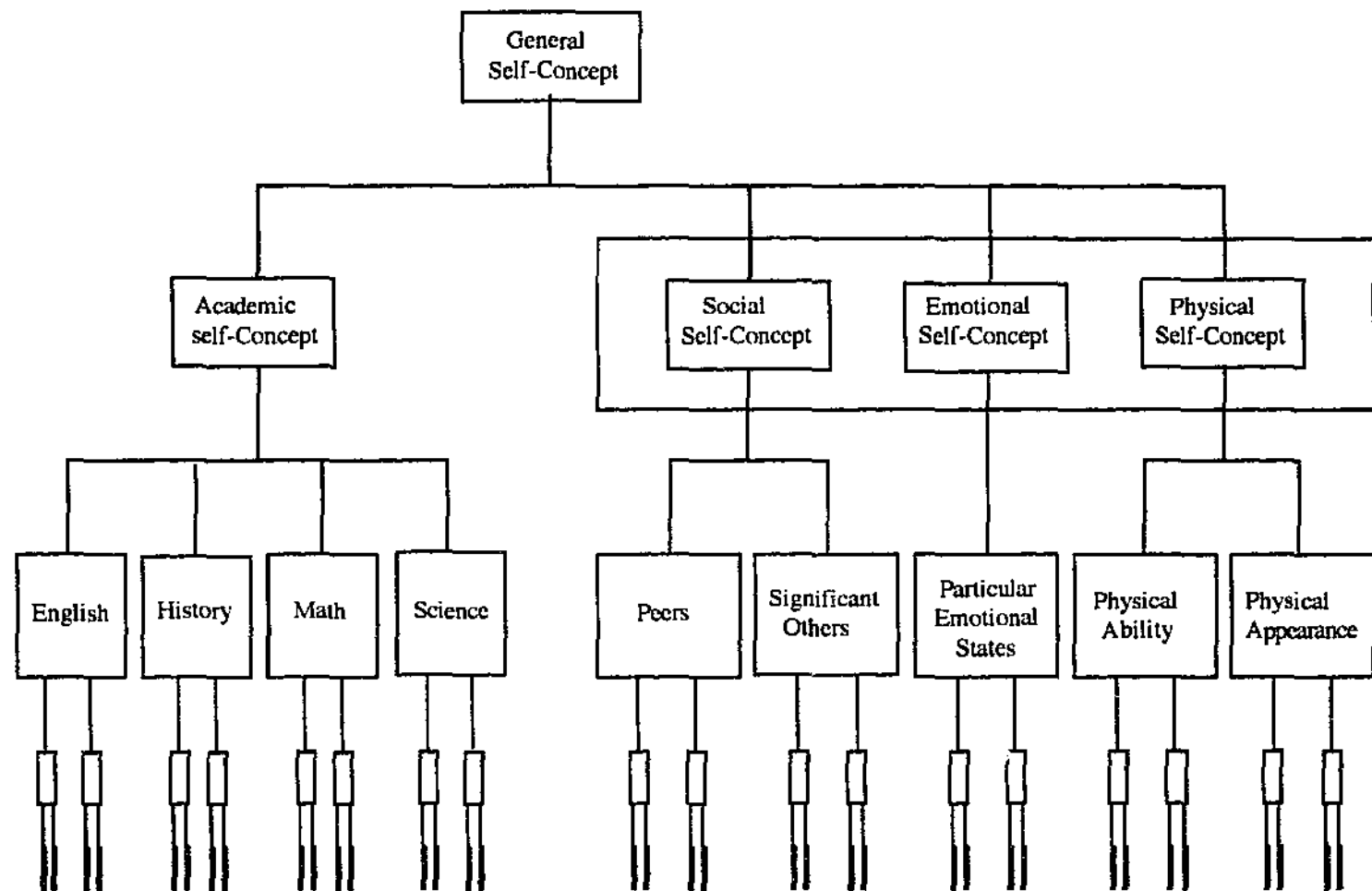


Figure 2.1 One possible representation of the hierarchic organization of self-concept.
(Shavelson, Hubner, and Stanton, 1976, p. 413)

In this representation a general self-concept represented an overall estimation of the self (Leung & Leung, 1992) and was divided into academic and non-academic self-concepts. The non-academic self-concept included social, emotional and physical self-concepts. Academic and non-academic self-concept were further divided into subareas of the self-concept, which were divided further still into evaluations of behaviour in specific situations indicating individual experiences (Shavelson et al., 1976). The general self-concept was also believed to be stable, with this stability decreasing as the hierarchy decreased towards specific situations. Marsh (1985) showed strong support for the multidimensionality of the self-concept in his study of Australian pre-adolescent school children from grades 2 to 6.

Hattie (1992) cited Song and Hattie's Model which is a modification of the model presented by Shavelson et al. (1976). In this model the academic self-concept is subdivided into ability, achievement, and classroom self-concepts. Ability self-concept refers to the individual's belief that he or she is capable of achieving, achievement self-concept refers to the individual's perceptions of actually achieving, and classroom self-concept relates to confidence in classroom activities (Hattie, 1992). In Song and Hattie's model, the non-academic self-concept presented by Shavelson et al. (1976) has been reformulated into two second-order factors. The first, social self-concept, is further divided into family and peer self-concepts which relate to the "the most important significant others in a person's life", and the second, self-regard or presentation self-concept is further divided into confidence and physical self-concept which relate to the presentation of individuals to others (Hattie, 1992, p. 83). Song and Hattie's model is presented in Figure 2.2.

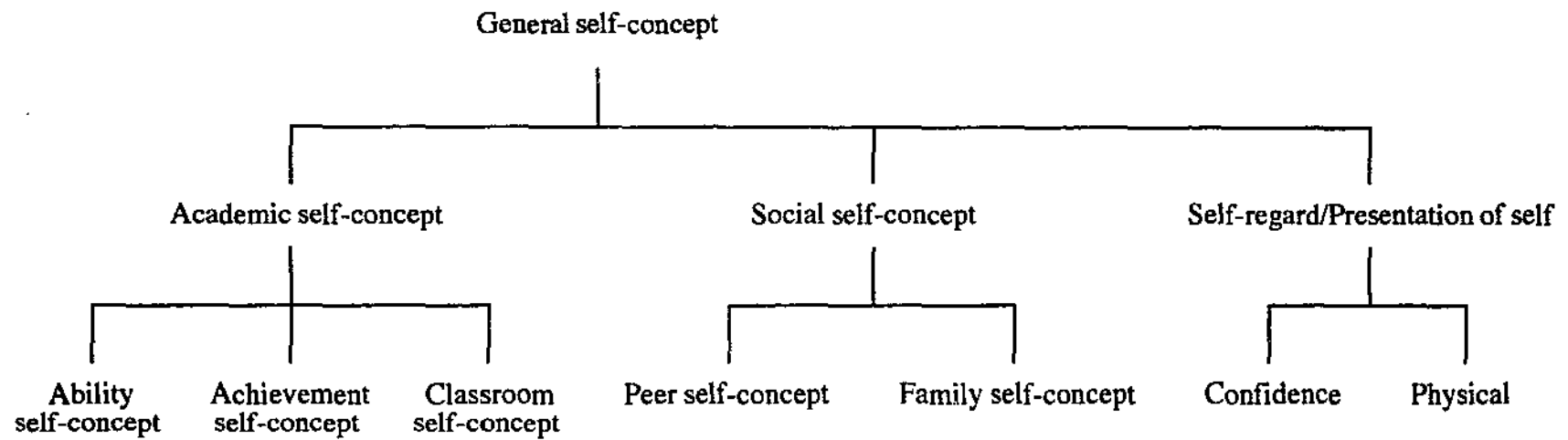


Figure 2.2 Song and Hattie's model of self-concept.
(Hattie, 1992, p. 84)

Like Shavelson et al. (1976), Hattie (1992) also supported self-concept to be multifaceted, hierarchical and stable. Hattie explained self-concept in the following way.

The self-concept includes physical attributes, elevations and definitions, and persons and objects outside the physical self. Yet the core is made up of the most important and enduring perceptions developed by the individuals to symbolize or to generalize him or herself. Their preservation and enhancement of this self is a basic human need.

(Hattie, 1992, p. 41)

Another definition of the self-concept was cited by Smith and Marsh (1981).

Self-concept is an individual's perceptions of self, and is formed through experience with the environment, interactions with significant others, and attributions of his/her own behaviour.

(Smith & Marsh, 1981, p. 193)

Harter (1982) suggested that judgements of overall self-worth are not inferred from responses to items tapping various specific abilities and attributes, rather, by items which directly explore how much an individual likes himself or herself as a person. In her Perceived Competence Scale for Children, Harter (1982) referred to four sub-scales of self-worth, including cognitive competence in school, social competence with peers, physical competence in sports, and general self-worth.

Development of the Body Image

According to Harris (1973, p. 140), perceptions of the self are formed unconsciously from past experience and success or failure, and generally, the way others have responded in the past especially during early childhood. Shavelson et al. (1976, p. 414) suggested that self-concept is a developmental process, indicating that the self-concepts of young children are "global, undifferentiated and situation specific". As children's concepts are built, so are their concepts for categorising events and situations, and therefore, the integration within the conceptual self-framework.

Shavelson et al. cited Gordon (1968) in noting changes in a child's self-concept during development:

as the child grows, different parts of him [her] will become more important to him [her] and different parts of his [her] world will assume changing significance.

(Gordon, 1968 cited in Shavelson et al., 1976, p. 414)

In addition to developing descriptions of oneself, an individual will also form self evaluations in varying situations (Shavelson et al., 1976). They suggested that such evaluations may be made both from absolute standards such as "ideals", as well as relative standards such as "peers" or the perceived evaluations of "significant others".

Harris (1973, p. 138) suggested that one's perception and evaluation of his or her own body is indicated through the concept of body image, which is "based on a broad foundation of neurological and psychological observations". According to Harris (1973, p. 140), body image has several characteristics, these being "psychic or somatic, or both", and "both conscious and unconscious in nature". The body image is also "both cognitive and emotional in content and structure as well as in process" with the emotional aspects generally arising in a social context (Harris, 1973, p. 140). Schilder (1950, p. 201) previously suggested that individuals are always with the knowledge of their body, and that the body image is one of the basic experiences of everybody's life.

Schilder defined body image as a picture.

The image of the human body means the picture of our own body which we form in our mind, that is to say the way in which the body appears to ourselves.
(Schilder, 1950, p. 11)

Relationship of Body Image to Self-Concept

Body image may be expressed, then, as the subarea, physical appearance, in the physical self-concept as suggested in the self-concept hierarchy presented by Shavelson et al. (1976) and presented in Figure 2, where physical ability and physical appearance are subareas of the physical self-concept.

Another term often associated with body image, is self-esteem, which is the result of the valuation and judgement of the self (Dyer, 1986, p. 5) and "implies self-acceptance, self-respect and feelings of worth".

As with the self-concept, there are no clearly defined stages in the development of the body image (Hunt 1964; cited in Harris, 1973, p. 141). There are indications, however, that body perceptions, as a part of the total self-concept, are organised very early in life and continue throughout life (Dyer, 1986; Harris, 1973; Sage &

Loudermilk, 1979; Shavelson et al., 1976). Schilder (1950, p. 106) suggested that evidence of children's knowledge and perceptions of the body may be expressed in their drawings, especially as they are generally completely satisfied with their drawings. Sage and Loudermilk (1979, p. 89) cited authors who have concluded that sex-role differentiation is generally established by the age of 3, and the acquisition of such sex-appropriate practices, including behaviours and attitudes usually commence at about age 5 years. Numerous authors (Davies and Furnham, 1986a; Koff, Rierdan, & Stubbs, 1990; Richards, Casper, & Larson, 1990) suggest that there is a heightened awareness and concern of the body occurring at adolescence when the body is undergoing physical and psychological changes.

Due to body image being a perception, it is very subjective among individuals and is subject to change. Harris (1973, p. 143) suggested that an individual's body image may alter drastically with changes in physical condition. Such changes are likely to include rapid weight loss or weight gain, or injuries to an athlete. Harris further suggests that body image may be affected by difficulties in learning new skills, or in performing skills that the individual has performed with ease in the past. The physical makeup and ability of each individual will also influence his or her perceptual image to a great extent (Harris, 1973).

Social Role and the Female Body Image

Several authors have suggested that society greatly influences the development of the body image through the sex roles it promotes (Butt, 1987; Harris, 1973). It is evident that the images women and girls hold of their bodies are greatly influenced by a society which promotes an idealised, lean female body type. Harris (1973, p. 145) and Kelly and Gall (1987) suggested that females have a more clearly defined body image than do males and experience much more societal pressure with regard to body image. They give evidence that the perceived difference females have between their bodies and the ideal female body that is promoted by society may be a possible cause for the dissatisfaction many females feel towards their bodies. Wichmann and Martin (1993) cite Lionel Rosen, a professor of psychiatry at Michigan State University who says

Unfortunately prevention [of eating disorders] is virtually impossible in today's society, where there's inordinate pressure for people to be thin. We've got a society that's stacked to hate obesity, which is seen as a personal failing rather than a genetic consequence. And it's getting worse.

(Lionel Rosen, cited in Wichmann & Martin, 1993)

Dyer (1986) stated that participation in physical activity and sport is likely to increase and improve an individual's self-concept, self-esteem and body image. Harris (1973, p. 146) in comparison suggested that distortions in the body image created body insecurity and as a result decreased the desire to participate in physical activity. With sport being stereotyped by members of our society as "masculine" it is difficult for many females to be accepted as participants and to also maintain their femininity and "female" roles as expected by society (Dyer, 1986; Kelly & Gall, 1987). It appears that many influences of socialisation in our society such as the family, peer group, school, and the media, tend to discourage participation by girls in sport and physical activity (Dyer, 1986). Society seems to equate the vigorous activity associated with most sports with a "masculine" image which may damage a woman's femininity, and either discourage, belittle, or ignore women who do participate (Dyer, 1986). The fact that such stereotypes are embedded as young children (Sage and Loudermilk, 1979; Dyer, 1986) makes it difficult for girls and women to be encouraged to participate in sport in the first place unless they have the support of their families and peers. Dyer (1986, p. 16) and Kelly and Gall (1987) also suggested that girls are generally encouraged to be less physically active than boys. Sports such as swimming, tennis, and gymnastics, however, which emphasise aesthetic qualities have been stereotyped as "feminine" sports and are more acceptable in society for female participation (Snyder, Kivlin, & Spreitzer, 1975; cited in Dyer, 1986, p. 25).

The Body Image of Children and Adolescents

It appears that the majority of research on body image in children and adolescents has focused on the adolescent body image. Related research on children has primarily focused on the total self-concept with limited reference to the physical self-concept, and in particular, the body image as a separate entity. Many of these studies have also made comparisons between the body images and self-concepts of boys and girls.

According to Dyer (1986) the self-concept, self-esteem and body image of girls are generally inferior to those of boys at all ages and these perceptions become more evident as age increases. Harris (1973, p. 151) suggested that by the age of 10 years girls were already becoming aware that girls were to be smaller than boys. In studies where boys and girls were compared boys possessed more positive values for self-esteem and body image than girls (Davies and Furnham, 1986a; Lintunen, Rähkila, Silvennoinen, & Österback, 1985; Richards, et al., 1990; Williams, 1984). Koff et al., (1990) suggested that results have demonstrated significant gender differences in the structure and valuation of the body image.

A study conducted by Caskey and Felker (1971) concluded that definitive stereotyping in girls emerged by the second grade thus indicating the young age at which body images are formed. This study also concluded that even at this young age elementary girls favourably stereotype the ectomorph figure and unfavourably stereotype the endomorph. Davies and Furnham (1986a) found that a sample of British school children from 7 years of age generally showed clear preferences for the mesomorphic figure, however, the ectomorphic figure was more positively favoured by females than the endomorph figure. Similar results were obtained by Brenner and Hinsdale (1978) in their study of body build stereotypes in three age groups of females. These examples, among others, indicate that slim body shapes are preferred by women and girls at all ages, particularly in Western societies (Brenner & Hinsdale, 1978; Caskey & Felker, 1971; Davies & Furnham, 1986a, 1986b; Furnham & Alibhai, 1983, cited in Davies & Furnham, 1986b).

In their study Brenner and Hinsdale (1978) revealed that the mesomorphic figure was predominantly favourably stereotyped by adolescents and the endomorphic figure unfavourably stereotyped. They also revealed that the youngest group (5 to 6 years) had stereotyped the ectomorph and endomorph figures more favourably than the two older, adolescent groups studied (14 to 15 years and 18 to 20 years), thus, indicating that the youngest group appeared to be less concerned about their weight and body shape. These results, however, did not imply that girls of this age group were not concerned about their weight and body image. The literature suggests that research has resulted in older adolescent girls having a lower perceived body image than the younger girls (Brenner & Hinsdale, 1978; Davies & Furnham, 1986a, 1986b; Marsh, 1985; Richards et al., 1990; Williams, 1984)

Davies and Furnham (1986a) found that adolescent girls, especially at approximately 15 years, become more self-conscious about their bodies and show greater self-image instability and dissatisfaction with their bodies. They cited Rosenberg and Simons (1975) in suggesting that adolescent girls often appeared extremely concerned with the impressions that others have of them and tended to evaluate themselves and their bodies through the eyes of others.

Prior research cited in Richards et al. (1990) suggested that the natural increase in subcutaneous fat during puberty is negative to young adolescent girls in a society where a lean, prepubertal body is desired. These associated physical and psychological changes experienced during puberty may lead to the increased self-consciousness of the body weight and a more negative distortion of the perceived body image as they move away from the ideal (Koff et al., 1990). Richards et al. (1990) also suggested that signs of emotional stress in young adolescents are sometimes most apparent in their body perceptions and concerns.

Consistent with their body shapes, Richards et al. (1990) revealed that eating concerns also become significantly more frequent as girls move into adolescence. They also found that the older girls who reported concerns about weight and eating did not necessarily report being overweight. Bunnell, Cooper, Hertz and Shenker (1990) suggested that concerns about body shape and weight generally appear to be important components of developing a sense of the self in female adolescents. In their study of eating disorder patients and non-clinical female adolescents they found that the non-clinical females also experienced marked levels of body dissatisfaction.

Body Image and the Adolescent Female Athlete

The literature on body image in females and female athletes appears to focus on the adolescent and college-aged female. The body images of children as a separate component of the total self-concept and especially in the sporting arena are an emerging field of study. Dyer (in Kelly & Gall, 1987) stated that most of the scientific research in sport and physical activity has been done on men and men's achievements.

Numerous authors have stated that the "appropriate" body images that are developed as children will strongly influence the types of activities in which individuals participate (Butt, 1987; Dyer 1986). Many young girls may be permanently turned away from committed sports training due to society's labels of "unfeminine" and "butch" being given to women participating in sports accepted as "masculine" (Dyer, 1986, p. 9). It also appears that children's peer groups will influence values on sport and that boys and girls will be more likely to participate in sport if it is highly valued by the peer group (Dyer, 1986, p. 18).

Greendorfer (1983) and Malumphy (1968) suggested that women and girls involved in sport will have a supportive environment where the family approves of female sport participation. Studies have also found that non-athletic women and girls appear to receive less family encouragement for sports participation (Greendorfer, 1983). Hendry and Gillies (1978 cited in Dyer, 1986, p. 9) suggested that girls who participate in physical activity are likely to be neither over- nor underweight, and will generally have a more positive physical self-concept than non-participants. Stark and Toulouse (1984) is consistent with Hendry and Gillies in stating that body build may be a factor determining whether a young girl participates in sport and physical activity. They suggested that girls possessing an "energetic, outdoorsy, attentive" body build at a young age may be expected to participate in sport, and she may shape her self-concept around those expectations (Stark & Toulouse, 1984).

One of the greatest pressures of a female athlete, once she has overcome the social pressures discouraging her sports participation, is maintaining her femininity as

expected by society. Stark and Toulouse (1984) indicated their concerns regarding diet and weight control in young female athletes. They stated that weight control is a "constant, almost obsessive worry" for the female athlete and the psychological pressure, together with other factors, may be a contributor for some female athlete: dropping out of competitive sport. This may be increased in sports where leanness is emphasised.

Body Images of Female Athletes where Leanness is Emphasised

In aesthetically judged sports such as gymnastics, dance, diving and figure skating where technical expertise and appearance are critically appraised, a lean body image is essential (Bernardot & Czerwinski, 1991; Calabrese, 1985; Kirkendall, 1985). Gymnastics in particular has seen a recent trend toward the younger, smaller, lighter, and almost prepubescent gymnast (Bernardot & Czerwinski, 1991; Calabrese, 1985; Kirkendall, 1985), hence, the body image of competitive, elite, female gymnasts has become increasingly important. Gymnasts require a relatively high power to body weight ratio, and the greater the body weight, the lower is the relative strength and power (Bernardot & Czerwinski, 1991; Kirkendall, 1985). Johns (1993) claimed that rhythmic gymnasts would be awarded higher scores in competition if they were thin and carrying less weight. Wichmann and Martin (1993) supported Johns in citing Mimi Johnson, a specialist in paediatric and young adult sports medicine at Washington Sports Medicine Clinic, who stated "I'm aware of judges telling women gymnasts that they could have scored a little bit higher if they had been a little bit leaner or thinner".

In addition to the cultural expectations for females to be thin, sports such as these place particular emphasis on leanness to be successful. Several authors including Drinkwater (1993) and Johns (1993) have expressed concern that many of these athletes will go beyond the normal expectations of society in complying with the extreme ideals of leanness that are demanded in their sport. In these sports it has been noted that many female athletes feel tremendous pressure to comply to these "ideal" expectations by maintaining low body weight and percent body fat and as a result are very conscious and concerned about their bodies (Calabrese, 1985; Garden, 1992; Harris & Greco, 1990; Johns, 1993; Rucinski, 1989; Scanlan, Ravizza, & Stein, 1991; Stark & Toulouse, 1984). The literature, however, has failed to specify what is perceived as the "ideal". The gymnasts in Harris and Greco's (1990) study felt that even a small weight gain would have a detrimental effect on their performance. Through open-ended questions each gymnast expressed her belief that gymnasts were more concerned about their weight than most other women of their age (17 to 23 years). Subjects also explained that the pressure for gymnasts to be little and to have

prepubescent figures made it increasingly difficult to maintain the "ideal gymnastic" shape through maturity (Harris & Greco, 1990). Kirkendall (1985) reported that female gymnasts have been shown to have a little as 13 percent body fat, which is the minimum of normal levels. McArdle, Katch, and Katch (1991, p. 627) state that it would be desirable for females to maintain body fat at 25 percent of body mass or less. They also state that a female can not reduce below the essential fat level of 12 to 15 percent and still maintain good health (McArdle et al., 1991, p. 629).

Due to the severe weight requirements of these sports many female athletes become highly preoccupied with their weight and body image and many even take extreme measures to meet those requirements (Drinkwater, 1993; Harris & Greco, 1990; Johns, 1993; Wichmann & Martin, 1993). Drinkwater (1993) referred to one of the most serious consequences of practices adopted to achieve the required body image demands as "The Female Athlete Triad: Eating disorders, amenorrhea, and osteoporosis". Drinkwater (1993) referred to newspaper articles citing the horrific case of 1989 United States World Championship team member Christy Henrich was "fighting for her life against the twin demons of anorexia and bulimia" (DeArmond, 1993a, June 13). Drinkwater (1993) also cited DeArmond in describing experiences of other American gymnasts in the following way.

Former U.S. Olympian Cathy Rigby twice went into cardiac arrest. Christy Phillips, another top gymnast, slit her wrists in a failed suicide attempt. Olympian Kathy Johnson battled an eating disorder. Erica Stokes, a former Olathe gymnast who trained in Houston with Bela Karolyi before quitting the sport, has admitted to having an eating disorder.

(DeArmond, 1993a, June 13)

Johns (1993) referred to a North American rhythmic gymnast in his study who described the condition of Bulgarian rhythmic gymnasts: "... these girls were just starving, some of them had not eaten for days ..."

According to the literature it appears that these extreme measures of controlling weight and the prevalence of eating disorders are more frequent in the more mature gymnasts as most studies have been conducted with college-aged athletes as subjects (Davis, 1992; Hallinan, Pierce, Evans, DeGrenier, & Andres, 1991; Harris & Greco, 1990; Warren, Stanton, & Blessing, 1990). Wichmann and Martin (1993) express that the average age of onset of anorexia is 16 years. It is uncertain if this same trend occurs in the elite child athlete as limited research has been conducted in this area. Wichmann and Martin (1993) cited Mimi Johnson, who explained that many athletes showed signs of disordered eating but did not meet the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R) criteria for an eating disorder such as

anorexia or bulimia. Garden (1992) suggested that athletes involved in these sports were also considered to be at high nutritional risk as the caloric intake is generally restricted in order to attain the lean body image. Wilkins, Boland, and Albinson (1991), however, found a lower prevalence of eating disorders among university athletes compared to non-athletic university students.

Benson, Allermann, Theintz and Howald (1990) suggested that nutritional problems and eating disorders were not limited to sports that emphasise leanness. Their study showed adolescent swimmers being more dissatisfied with their bodies than gymnasts. One explanation provided for this result was the possibility that gymnasts selected their sport partly because they already had small, lean bodies, and that those with naturally thin bodies may have been encouraged to continue in the sport at the elite level. Benson et al. (1990) also suggested that research has shown eating disorders to be more prevalent in less selected athletes. This is supported by USA Gymnastics president Mike Jacki who stated the following.

"For someone to say that Christy [Henrich] has this disease [anorexia and bulimia] because of gymnastics is unfair ... if that was the case, then who do you blame when a girl or boy has this sickness or disease who is not involved in a sport?"

(DeArmond, 1993b, June 13)

In a study conducted by Campbell (1986), athletes considered to be "at risk" for developing anorexia nervosa (including gymnasts, dancers, swimmers, runners, wrestlers, and track and field athletes) failed to indicate that they were significantly prone to anorexia nervosa. This may not be a true representation of this "at risk" population, however, as the athletes were volunteers and not randomly selected and athletes who may have been prone may not have volunteered. Campbell (1986) also suggested that the onset of anorexia nervosa most frequently occurs between the ages of 14 to 18 years, whereas, the age range for the study was 10 to 13 years.

Measures of Body Image

The most commonly used instruments for measuring attitudes towards the body image appear to be through self-report measures including the Eating Disorder Inventory (EDI), the Eating Attitudes Test (EAT), and questionnaires. These instruments lend themselves to adolescent and adult populations and appear to focus on identifying weight preoccupation and the prevalence of eating disorders.

The EDI, developed by Garner, Olmsted, and Polivy (1983, cited in Campbell, 1986), consists of eight subscales with the most frequently used subscales being the body dissatisfaction and drive for thinness subscales. Numerous authors have adopted the EDI to determine the extent to which individuals may be preoccupied with their weight and their risk for developing anorexia nervosa or other eating disorders (Benson et al., 1990; Davis, 1992; Harris & Greco, 1990; Warren et al., 1990). The EAT, developed by Garner and Garfinkel in 1979 (cited in Campbell, 1986), has also been adopted by many authors attempting to detect the presence of eating disorders (Bunnell et al., 1992; Harris & Greco, 1990; Rucinski, 1989; Warren et al., 1990). Both the EDI and the EAT appear to be reliable and valid in measuring attitudes to body image in females, however, they do not appear to be as widely used in children as they are in female adolescents and adults.

As previously indicated, a majority of the research on children's body image has been done in conjunction with the self-concept and self-esteem (Lintunen et al., 1985; Richards et al., 1990; Williams, 1984). Children's attitudes to body image as a separate component does not appear to be sufficiently researched, especially with regard to child athletes.

Questionnaires have been widely used in research on children and adolescents (Davis, 1992; Davies & Furnham, 1986a, 1986b; Hallinan et al., 1991; Harris & Greco, 1990; Wilkins et al. 1991). These questionnaires generally require answers based on a type of Likert scale, and therefore, may not be representative of the individual's true attitudes and feelings. The Body Shape Questionnaire (BSQ) was developed by Cooper et al. (1987, cited in Bunnell et al., 1992). Bunnell et al. (1992) adopted this questionnaire for the first time with adolescents and concluded it to be a valid measure of body dissatisfaction among adolescents.

Brenner and Hinsdale (1978) and Hallinan et al. (1991) adopted silhouette scales of images, where subjects identify the image they feel is most representative of themselves. This instrument may prove useful in identifying how the individual visually perceives their body rather than just providing a verbal description from a questionnaire.

Instruments currently being used to measure body image seem to be appropriate for identifying weight preoccupation and the prevalence of eating disorders, however, it appears that they fail to identify the true attitudes and feelings females have towards their bodies. Limited research has also been conducted on the body images of children and child athletes as a separate component of the total self-concept. As the body image is a very important issue facing women and girls, especially those participating in sports such as gymnastics where leanness is emphasised, gymnasts from one central programme have been interviewed in an attempt to more clearly understand their attitudes and feelings toward their body image.

CHAPTER 3

Conceptual Framework

The literature reviewed in Chapter 2 indicates that in sports where body image and leanness are critical factors female athletes are generally concerned, and many preoccupied, with their weight and levels of body fat (Calabrese, 1985; Drinkwater, 1993; Garden, 1992; Harris & Greco, 1990; Johns, 1993; Rucinski, 1989; Scanlan, Ravizza, & Stein, 1991; Stark & Toulouse, 1984).

With gymnastics being a sport which emphasises leanness, particularly at the elite level, it appears that there are a number of factors which are associated with the development of the perceived body images of elite female artistic gymnasts.

The conceptual framework presented in Figure 3 is derived from the personal experience of the researcher as an elite gymnast and from the literature (Bernardot & Czerwinski, 1991; Calabrese, 1985; Harris & Greco, 1990; Johns, 1993; Kirkendall, 1985). Two primary groups of factors have emanated as being associated with the development of a gymnast's perception of body image. These have been described as those factors that are directly associated with the gymnast and those that are indirectly associated the gymnast (refer Figure 3).

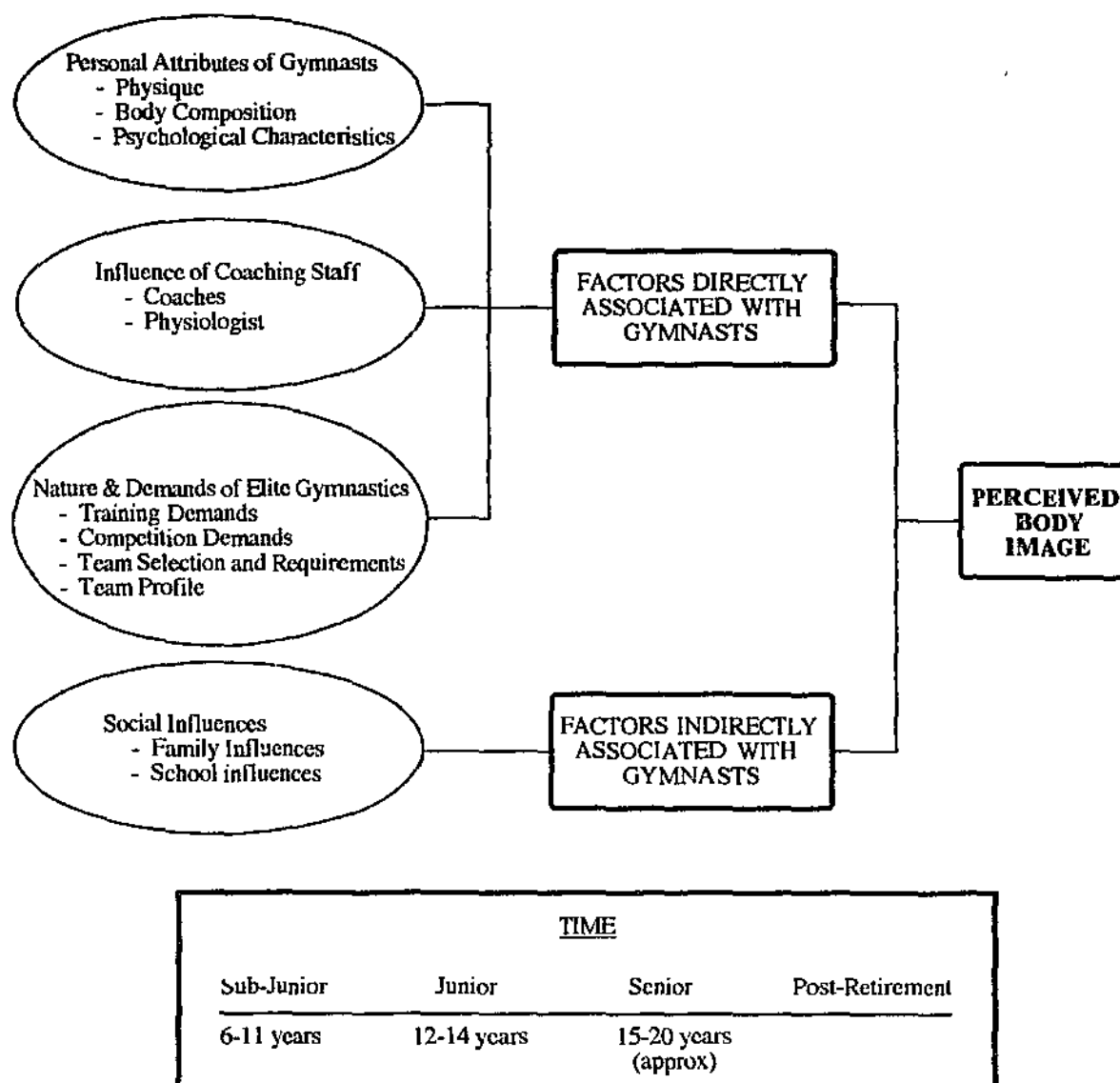


Figure 3

Conceptual framework indicating factors associated with the development of a gymnast's perceived body image.

Those factors that are directly associated with the gymnasts include the perceptions the gymnasts have of themselves and the influences of the coaching staff directly involved with their athletes' gymnastic development. The direct factors also include the physiological assessment of weight and skinfold data by the coaches and exercise physiologist. The various demands of gymnastics itself as a sport are also directly associated with the gymnasts. Within the sport of gymnastics it appears that the training and competition demands required to be successful at the elite level, as well as criteria for team selection, may be associated with the development of the body image. The literature has suggested that the development of the profile of Australian gymnastics has been determined, to an extent, from the body images portrayed by the Australian gymnasts in recent international events (Normile, 1991 p. 41).

Those factors that are indirectly associated with the gymnasts include the social influences which are beyond the control of the gymnasts in which the reactions of the gymnasts will determine their effect. Social influences may include the gymnasts' perceived expectations both within the gymnastic community as well as the spectating community.

The time frame refers to the development of body image through the gymnastic career from the sub-junior level to the senior level and post-retirement.

The purpose of the conceptual framework is to assist in the formulation of research questions, interview schedule and data analysis.

CHAPTER 4

Methodology

Research Design

This qualitative study was exploratory and descriptive in nature. Interpretive methods in the form of open-ended interviews were undertaken in an attempt to identify and understand the perceptions and attitudes of the body images of current and retired elite female artistic gymnasts. Information from coaching staff was used to gain a more complete understanding of the sport-associated factors which may contribute to the gymnasts' perceptions of body image and the development of body image throughout the gymnastic career.

Subjects

Nineteen subjects from an eligible pool of 25 participated in the study. They included five junior and seven sub-junior artistic gymnasts currently training at the elite level, three recently retired senior elite gymnasts and four coaching staff of elite female gymnasts (refer Table 4).

Table 4 Number of sub-junior, junior, retired gymnasts and coaches participating in the study from the eligible sample.

Group	Age	No. of subjects	No. of eligible subjects
Sub-Junior gymnasts	8-10 years	7	10
Junior gymnasts	11-13 years	5	6
Retired gymnasts	16-19 years	3	4
Coaching staff	-	4	5
Total Subjects		19	25

Subjects were drawn from one Australian State centralised elite women's gymnastics training programme, the only one in the State catering for elite gymnasts training at the highly competitive level. Each gymnast in the programme had been specially selected for the programme for her physical and psychological suitability for elite gymnastics. The training programme selected for the study is believed to be representative of existing centralised elite women's gymnastics training programmes throughout Australia.

To be eligible for inclusion in the study, current gymnasts must have been training in the central programme for a minimum of six months. Retired gymnasts must have been members of the central programme and must have competed at the senior elite level. All coaching staff were required to have been directly involved with women's artistic gymnastics at the elite level over an extended period of time and must have been directly involved with the central programme for a minimum of 12 months.

Gymnasts currently training at the elite level comprise two main groups. The youngest group consists of gymnasts between the ages of 6 to 10 years who are training at the sub-junior stage 1 to stage 4 level. These gymnasts are in the infancy of their careers as elite gymnasts and their training is primarily developmental. Several of the youngest sub-junior gymnasts in the programme were ineligible to participate in the study as they had not been in the programme for longer than six months.

The second, older group of gymnasts range in age from 11 to 13 years and train at the Junior level. These gymnasts compete in National and several in International competition.

At the time of the study, the selected centralised programme did not train gymnasts at the senior level.

Each of the retired elite gymnasts had previously trained and competed in International competition at the senior level. It should be noted that the sample of retired gymnasts in this study were involved in the central programme at its inception and during its development. These gymnasts also experienced the development of the current elite structure in Australian gymnastics which is outlined in Appendix A.

Coaching staff included four gymnastics coaches associated with the programme. The programme's exercise physiologist was approached for inclusion, however, was unavailable to participate.

Ethical Considerations

All subjects were informed of the purpose, procedures and duration of the study and were asked to sign a consent form prior to participating in the study. A blank copy of this form and its accompanying letter is presented in Appendix B. Informed consent was received initially from the programme in which the subjects were drawn. For gymnasts under 18 years of age informed consent was first received from the parents or guardians, followed by the gymnasts themselves prior to participation (Fine & Sandstrom, 1988). Informed consent was received directly from subjects over the age of 18 years following consent from the programme.

Each subject was given the freedom to reject participation in the research. A total of six subjects failed to respond to the letter of invitation to participate in the study. Two of these subjects left the programme, one responded too late, and of the three that failed to respond, two were out of the state at the time of data collection.

All interviews were tape recorded with permission from the subjects. This increased the accuracy of the collected data and allowed the interviewer to respond to the interviewee more attentively (Patton, 1990; Scanlan, Ravizza, & Stein, 1989a; Simons, 1978). Interviews were transcribed following the interviews, also with permission from the subjects who were be given the opportunity to review their transcription. Each subject was assured that all interviews would be conducted and all data analysed under strict confidentiality (Patton, 1990; Simons, 1978). The programme and subjects were guaranteed anonymity and the use of pseudonyms when reporting results.

Subjects were informed and agreed that cassette tapes and interview transcripts would be securely stored in a locked filing cabinet for a two year period and destroyed after this period.

Data Collection

Interview

Interview as a method of data collection appeared justified for this study as it "allows us to enter into the other person's perspective" (Patton, 1990 p. 278). Patton (1990 p. 357) stated that interviewing allows you to "walk a mile in my [the interviewee's] head" and to reach those aspects that are not directly observable. In this research, gymnasts' perceptions and attitudes toward their body image are not directly observable, therefore, interviews were the most suitable method for entering into the

minds of the subjects to expose their thoughts, feelings, knowledge and experiences relating to their perceptions of body image.

One of the problems associated with the interview technique is that once the interviewer has gained access to the interviewee there is not necessarily a mutual acceptance (Fine & Sandstrom, 1988). The interviewer must gain the trust and confidence of the interviewee so they are able to speak freely, openly and truthfully (McNeill, 1989, p. 67; Patton, 1990; Simons, 1978). Due to her previous and relatively recent involvement in gymnastics and in the selected centralised programme, the researcher had previously been able to establish good rapport with most current and retired gymnasts and coaching staff. It was anticipated that this rapport would attract a more complete and comprehensive set of data through the interview method.

On receiving consent, the researcher contacted each of the subjects by telephone to arrange a time to conduct the interview. Interviews extended over a six week time period. All interviews were conducted at a time to suit the subject and did not interfere with work, study or gymnastics training commitments. They were conducted in a quiet location free from possible interruptions and in most instances the researcher travelled to the subject's home. Each subject was interviewed once resulting in a total of 19 interviews. The length of the coachs' interviews ranged from 90 minutes to 120 minutes, the retired gymnasts ranged from 75 minutes to 120 minutes, the junior gymnasts from 35 minutes to 70 minutes and the sub-junior gymnasts from 20 minutes to 35 minutes.

Each subject was interviewed individually by the researcher. An interview schedule is presented in Appendix C. An interview guide was adopted comprising open-ended questions which also allowed for extensive probing to gain further information. Each subject was asked essentially the same questions increasing reliability of the study, with four sets of questions being framed to suit the age and level of understanding of the subjects. The interview questions for each group of subjects is presented in Appendix D. A sample interview transcript is presented in Appendix E.

Pilot study

The interview questions were piloted to assess their suitability on an elite level gymnast from another state centralised gymnastics programme as well as a former junior gymnast of the selected programme. These gymnasts were of similar ages to the junior gymnasts who participated this study and the same methods of data collection and analysis were adopted.

Journal

The researcher maintained a reflective journal to help identify methodological decisions. The journal included thoughts, feelings and reflections of the research undertaken.

Data Analysis

Data analysis was conducted inductively (Darst, Zakrajsek, & Mancini, 1989; Evertson & Green, 1986; Wessinger, 1992) and was ongoing throughout the study. Content analysis of the interview transcripts have been identified drawing on meaningful themes, words and phrases (Darst, et al., 1989; Scanlan, Ravizza, & Stein, 1989b; Wessinger, 1992). This process allowed categories to emerge, identifying common perceptions, thoughts, feelings and attitudes of the gymnasts toward their body image and expressed in descriptive form.

The gymnasts' coaches control the direction of the gymnasts' training programme and demand the standards set by the National and International gymnastic bodies. Interview data collected from the coaching staff identified the factors they believe contribute to their gymnasts' perceptions of body image and the development of these perceptions. This process of analysis also allowed for similarities and differences to emerge between the gymnasts and coaches.

CHAPTER 5

Results and Discussion

The general purpose of this study was to provide an understanding of the way in which elite, female artistic gymnasts from one central training programme perceive their body image as elite gymnasts, the factors contributing to their perceptions of body image and the development of the body image throughout the elite gymnastics career.

The literature reviewed in Chapter 2 indicates that body image is of significant importance and concern to females of all ages with many women and girls feeling immense pressure to attain society's idealised female image. Sports such as gymnastics also place particular emphasis on leanness to be successful and a small, light and almost prepubescent body image has become increasingly important for elite, female artistic gymnasts.

The changing structure of Women's Artistic Gymnastics in Australia over the last decade and the development of centralised training programmes throughout the nation has resulted in a significant increase in the standard and world ranking of Australian gymnastics (refer to Appendix A). Australia's elite female gymnasts have also become younger, smaller and leaner during this time which is consistent with the literature (Bernardot & Czerwinski, 1991; Calabrese, 1985; Kirkendall, 1985).

This chapter presents the thoughts, feelings, perceptions and attitudes of the current and retired gymnasts and coaching staff toward body image as revealed during the interviews.

Throughout the presentation and discussion of results the subjects have been divided into three groups: (a) current gymnasts, (b) retired gymnasts, and (c) the gymnasts' coaches. As a result of the interviews it became apparent that the current gymnasts were made up of two distinct subgroups: sub-juniors (aged 8 to 10 years) and juniors (aged 11 to 14 years). While it would be highly desirable and logical to present findings in response to the questions for each group of subjects in a consistent order, the nature of the information dictates that in some instances the comments of the retired gymnasts should precede the junior and sub-junior gymnasts and in other instances the sub-junior gymnasts should precede the junior and retired gymnasts. In some instances background information from the coaches precedes the gymnasts to assist the reader in understanding the gymnasts' responses, in other instances comments from the coaches followed the gymnasts to clarify information and expose their observations.

This chapter is divided into six sections. The first two sections "Subject Characteristics" and "Requirements of Gymnasts" provide background information to assist the reader in understanding the demands and requirements of elite gymnastics. In order to fully answer the research questions it was necessary in the opening stages of the interviews with both the gymnasts and coaches to learn more about the gymnasts' backgrounds, their reasons for participation, and the physical and psychological requirements for success in elite level artistic gymnastics as perceived by the interviewees. The third section "Gymnasts' Perceptions of Body Image" focuses on the perceptions and attitudes of the gymnasts forming the basis for answering the research questions. Section four "The Coaches" focuses on the coaches' opinions of the gymnasts' perceptions of their body image and their influence on the gymnasts. The social effects on the gymnasts' body image are presented in section five "Social Affects on the Gymnasts' Body Image" and the pressures felt by the elite gymnasts in section six "Pressures on Elite Gymnasts".

In planning such a study it was easy to pose three distinct questions, however, the lines between the answers are not as clearly demarcated. The analysis of results revealed that there is overlap and that it is impossible to answer each of the research questions separately. One characteristic of qualitative research is that it allows the interviewee to introduce and emphasise aspects that are important to them. This characteristic became evident in the study in the subjects' perceived importance of the relationship between body image and eating disorders.

Direct quotes from the subjects have been used throughout the results representing responses typical to the group and specific to individuals. The subjects have been identified by a combination of generic and numeric labels to guarantee their anonymity such as Coach 1, Retired 1, Junior 1 and Sub-junior 1.

The relationship between the results of this study and the conceptual framework presented in Chapter 3 (refer Figure 3) is discussed at the end of this Chapter and presented graphically in Figure 5.

Subject Characteristics

This section provides some background information on the subjects and reasons why they participate in elite gymnastics as revealed in the interviews.

Background Information

Sub-junior gymnasts.

The seven sub-junior gymnasts ranged in age from eight to 10 years. Most of these gymnasts have spent almost their entire gymnastics career, to date, in the central programme ranging from six months to three and a half years in the programme.

The sub-junior gymnasts were still in the developmental stages of their training regime and had not yet competed in National competition.

Junior gymnasts.

The five junior gymnasts who participated in this study ranged in age from 11 years to 13 years at the time of the interviews and had been participating in gymnastics for between four and seven years. These gymnasts had been members of the central programme for four or five years and were among the first intake of sub-juniors in this programme.

Each of the junior gymnasts had competed at the junior level in National competition, with four of the five also having competed Internationally.

Retired gymnasts.

The three retired gymnasts ranged in age from 16 years to 20 years and had been gymnasts in the programme from between six and eight years. Each of these gymnasts competed Nationally and Internationally at the senior level and had been retired for between eight months and three years.

Coaches.

The coaching staff participating in the study included three female coaches and one male coach, being both Australian and International coaches, each having many years of coaching experience. Several of the coaches had been gymnasts prior to coaching, thus extending their combined competitive-coaching careers, ranging from 12 years to over 34 years gymnastics background. Almost all the coaches had completed tertiary education in a sports-related field. Involvement with elite women's gymnastics ranged from 5 years to 12 years with coaching involvement in the selected programme ranging from two and a half years to 5 years. Four of the five coaches had been involved with the programme since its inception.

Reasons for Participation

Gymnasts' perceptions of reasons for participating.

All subjects recognised internal satisfaction as the primary reason for the gymnasts' reasons for participation despite slight variations.

At the younger ages, when asked what they liked most about gymnastics, the sub-junior gymnasts all expressed the internal satisfaction they received from their participation. They "just like it", and "enjoy being there".

... you achieve things ...
 ... just like doing the sport.
 (Sub-junior 3)

I just love being there. It's just so much fun.
 If I ever quit gym I [know] in a couple of years ... I'd wish I never did. And that's the only thing that really keeps me going.
 (Sub-junior 6)

While several of the junior gymnasts expressed that they were motivated by competitions and their main goals of reaching an Olympic Games and other International competitions, the thing they liked most about gymnastics was the internal satisfaction they received from their participation.

I'm doing gym, what I love ...
 (Junior 2)

I like when I achieve something. It makes you feel really good ... going away to competitions. It's exciting ... It's just fun.

(Junior 4)

[I like] learning new skills and ... being able to get them good, and then competing them and showing what you can do and how well it's done.

(Junior 5)

The retired gymnasts agreed with the junior gymnasts. In addition they rated internal motivation highly. Retired 2 used phrases such as "the friendship that you had with everybody", "being fit", "love competing", "trained for a goal".

... it changed over time ... initially I liked it because it was fun and it was ... something to do that you were good at that you know other kids that were your age could look up to you ... then when it got ... to being older ... I think I liked the idea of achieving a goal ... I think what kept me going was I liked the idea of being able to do it.

(Retired 1)

... there [were] few things at that stage [at senior level] that kept me in it except for the fact that Olympics was coming up or a World Championship.

(Retired 1)

I liked the sensation of doing it, of doing the skills.

... goals, Olympics, Worlds. Just enjoyed it generally, that kept me going ... I mean, that's motivation enough.

(Retired 3)

The gymnasts' responses have illustrated that the primary motivators for the gymnasts' participation in elite gymnastics are the internal satisfaction and the enjoyment they experience from the sport. As one coach stated

... it's a special programme for special children, not for everybody.

(Coach 4)

Perceptions of the coaches.

Although the reasons for participating in elite gymnastics may vary slightly throughout a gymnast's career the coaching staff agree that one of the primary reasons why gymnasts commit themselves to the intense training and competition demands of elite gymnastics is for the internal satisfaction they receive from their participation. With very few competitions providing external motivation the gymnasts must have a love for the sport and be internally motivated by the achievements of learning and the feeling of the movements they perform. Some of the coaching staff expressed the importance of being intrinsically motivated in the following way.

... I think they've got a talent and I think they actually enjoy ... the feeling of movement, the actual achievement of the skills, flying through the air, those sorts of things.

(Coach 3)

I think that the ones who have got the personal goals of the achievement in training too, that that's actually part of the benefits of their sport, achieving a skill is rated as highly as going to a competition, they're the ones that might enjoy training more because ... just for the sake of achieving a skill, they'll come to training.

(Coach 3)

I think if you're only in it [because] "I'm going to the 1996 Olympic Games" ... then you can get disillusioned with the whole thing and I don't think that's enough to keep you coming in the gym day after day after day ... to choose to spend your time that way you have to really love it.

(Coach 4)

The coaches also believed that the social aspect of the training and competition environments may be important variables influencing participation in elite gymnastics.

... the kids also enjoy the community that we have at the gym - peers, coaches, the friendship, the bonds ...

(Coach 4)

I think they grow very close to their training partners and I think they grow close to their coaches.

(Coach 3)

At the youngest ages when the gymnasts are at the very beginnings of their gymnastics careers, they may not understand the demands of the sport at the higher levels and are motivated by the enjoyment they find in participating in the sport. Coach 2 found the fun and enjoyment aspect very important particularly for the younger gymnasts.

They just come along and they have fun and they learn things and they get a buzz out of it so they keep coming.

(Coach 2)

... some of them will say ... I want to go to the 2000 Olympics, but ... that's just words to them ... they don't have any conceptual idea of how long away that is, what's required in order to be there, the amount of training, they years of dedication, pain, tears, disappointments on the way.

(Coach 2)

At the highest level of competition when a gymnast's training regime is extremely demanding and of very high intensity it appears that the external motivation of prestigious competitions such as a World Championship or Olympic Games may be the primary reasons for continued participation.

In some cases ... with senior athletes maybe ... there is that extrinsic motivation ... and maybe there has to be for them to keep going. Maybe it's attending an Olympic Games or a World Championship ... but there is also that intrinsic motivation there for that to happen.

(Coach 2)

... when they get to a certain point it's almost as if they've invested ... too much time into it to let it go and they're prepared to follow it through for two or three years until they reach a major goal that's actually attainable for them.

(Coach 3)

Requirements of Gymnasts

Several physical and psychological qualities were identified as crucial for success in elite level gymnastics and to endure the many training and competition demands of the sport. Some of the qualities are important from a point of performance and the mechanical and technical execution of the skills. Other qualities are determined by the aesthetic nature of the sport.

This section forms the basis to identifying the factors which contribute to the gymnasts' perceived body image (second research question). In the following section the gymnasts's perceptions of the qualities identified as being essential for elite gymnastics will be discussed.

Physical Characteristics

General body type.

When selecting gymnasts to train in the elite training programme the coaches will first look for a general body type that is conducive to elite gymnastics. While some of the coaches had their personal "ideal" physical appearance for an elite gymnast, others expressed that there was no "ideal" physical appearance for an elite gymnast.

I have no real perfect body figure, body image, because I think gymnasts come in all shapes and sizes and each gymnast has their own quality that can make them rise above ... another gymnast.

(Coach 2)

... sure you're looking for the ideal body type but you can see that there [are] kids achieving very highly with totally different physiques. And because there's different physiques there will be some children who excel in some areas more than others. ... physical types will give them different qualities.

(Coach 2)

This is evident in the many World and Olympic Champions who have had very different body types, including Shannon Miller (1993 World Champion), Tatiana Gutsu (1992 Olympic Champion), Kim Zmeskal (1991 World Champion), Svetlana Boginskaya (1989 World Champion), Elena Shushunova (1988 Olympic Champion, 1985 World Champion), Oksana Omelianchic (1985 World Champion), Mary-Lou

Retton (1984 Olympic Champion), and the list goes on. Coach 1 noted that they were "absolutely different" but shared the success of World and/or Olympic Champion.

All coaches, however, have agreed on several qualities that gymnasts must possess for both mechanical and aesthetic reasons to be successful at the elite level. It is these qualities that form the basis for the coaches' ideal gymnasts.

The gymnasts must be small with a small bone structure and light frame. The coaches look for children in the lower percentile ranks of the normal population for height and weight, generally below the 30th percentile. This means that the gymnasts in this programme, and elite gymnasts in general will generally be in the bottom 30 percent of the normal population for height and weight based on longitudinal data.

... when we do a height/weight assessment, we look for below the 30th percentile to even be considered as petite.

(Coach 4)

Assessment of height and weight data obtained from the selected elite gymnastics programme provides supporting evidence that all gymnasts in the programme at the time of the study were below the 30th percentile for height and weight, many below the 10th percentile and several below the 3rd percentile. The height and weight of the junior gymnasts plotted against the normal population is presented in Appendix F.

Elite gymnasts must also have a nice proportion about the body including suitable lever lengths, with long arms and legs and a short middle body being those sought after, or "long within the realms of petite" as described by Coach 4. The long limbs assist with swinging on the bars, but when tucked up, together with a short middle body gives fast rotation. With a longer middle body rotation will be slower.

Broader shoulders and narrower hips will generally provide the elite gymnast with a better strength to weight ratio. In most instances broad shoulders indicates a well developed upper body. Narrow hips makes it easier to spin through the longitudinal axis. This body type is also conducive to uneven bars as narrow shoulders and broad hips make it difficult to move the body.

All the coaches emphasised that elite gymnasts must be very lean, thus supporting the literature (Bernadot & Czerwinski, 1991; Calabrese, 1985; Kirkendall, 1985). This is assessed physiologically by means of skinfold tests in which skinfold calipers are used to estimate total body fat (McArdle et al., 1991 p. 616). In the selected elite gymnastics programme coaches look for girls with a naturally low skinfold level preferably below 50 mm over eight skinfold sites (triceps, subscapular, biceps, supra iliac, abdominal, thigh and calf). The presence of a low skinfold level is not only important from a mechanical and aesthetic point of view but it is also a

selection requirement for International competition as set by the National gymnastics body.

... you'll find that somebody that you select that's really top notch will naturally ... have a skinfold between 30 mm and 35 mm. Then you know that at worst case they're going to come up to 40 mm or ... another 5 mm.

(Coach 3)

If the child can't even maintain a skinfold of below 60 mm ... low 50s, then we question whether they've got a natural ability to be lean.

(Coach 4)

Yet, while they must be lean, the gymnasts also need to have muscle definition without being bulky or too thin.

... [the] really muscular, [the] mesomorph ones will tend to carry more excess weight than the more ectomorphic type athlete.

(Coach 3)

When assessing a child's size and body proportions the parents of the child will also be looked at, as far as their height, petiteness and body composition. For example, if one of the parents is very tall the child may grow to be too tall for elite gymnastics. Large growth spurts will cause decreases in strength and flexibility that can retard gymnastics development and progress. The coaches may also look at how thin the parents were and if the mother had slim hips. Gymnasts, therefore, are mostly selected from small families.

A body proportion that is conducive to elite gymnastics is also one that does not predispose toward injuries or problems. Coaches would avoid spinal conditions such as scoliosis that may cause problems. Other qualities that would be avoided for mechanical reasons would include knocked knees and hyperextended knees and elbows.

I think they have to be robust, [have] robust joints. ... a girl who has floppy joints ... may be more predisposed to injury.

(Coach 4)

Within that body type, there are also the aesthetic qualities to look for. A long neck and attractive features, an open face are all required to meet the aesthetic requirements. The gymnast also needs a certain cleanness about her body, clean lines that continue. Long arms, for example, help with grace and beauty.

... we don't do selections based on that [attractive features] but it is an aesthetic sport so they need to have a nice face if you can.

(Coach 3)

... we're looking for a purity of movement. Everything you're doing has to be exact, precise, pure, efficient ... and attractive to look at, attractive to behold.

(Coach 3)

There are intangible qualities that come from experience in coaching at the elite level such as the way the gymnasts look, the way they move, their personality, a certain spark, a certain attractiveness that they may possess. These qualities are not only important from a point of performance but also from a judging point of view, the simple qualities that may separate technically equal gymnasts.

... a lightness about them, a feeling when they move that ... they're not labouring.

(Coach 3)

... you're drawn to watch her because she's just got that pizzazz, that natural charisma which a few girls have and that's the difference between a boring very good gymnast and an outstanding very good gymnast.

(Coach 4)

... the marks from the judges, I'd say 85 percent are based on just your technical merit and the other 15 percent is based on the effect that you have on people ... the pleasure that you give somebody by moving in a certain way.

(Coach 3)

Natural physical qualities.

After identifying a general body type conducive to gymnastics, the coaches will look for natural general physical qualities. Gymnastics is "technically the most complicated sport that exists" (P. Browne, personal communication, 10 August, 1993) and the skills performed in gymnastics and especially at the elite level are not normal movements. Several physical qualities such as co-ordination, strength and flexibility, therefore, are essential. The gymnasts must have natural co-ordination, a smoothness in basic tasks such as running and jumping. This is very important for the basic skills of gymnastics which form the basis for the more complex skills, combinations or skills and routines of the sport.

They must have natural strength and the ability to hold a body line. Even though the gymnasts need to be lean and light, they must be able to carry and control their own body weight. Power is also very important on all apparatus, especially vault and floor. They must have natural flexibility in all their joints for both mechanical and aesthetic reasons.

High energy levels and natural physical ability and agility are essential to perform a wide variety of skills, including aerial skills in all planes of motion. With four very different apparatus and the performance of a wide variety of movement patterns the gymnasts are at some time utilising every part of their body and many energy systems.

... you need so many different energy systems. You need everything to be a gymnast, power, quick muscles, slow muscles, everything really ...
(Coach 4)

Psychological Characteristics

Children selected in an elite gymnastics programme must have an active mind and learn quickly. They must be able to adapt quickly to the environment of elite sport where the discipline and demands on them are much greater than in recreational sport. They must also understand what is required of them in terms of the demands of elite sport.

Elite gymnasts must have total dedication to the sport for that period of time, a lot of mental application and a lot of perseverance. They must have the discipline to set their mind on the task at hand, keep focussed and to keep in mind what they are trying to achieve at all times. They need to be quite aggressive in their goals and desires for both training and competition. Elite gymnasts are generally perfectionists and they

must also be prepared to cope with setbacks and disappointments. These qualities are supported by the gymnasts, particularly the retired and junior gymnasts.

... [being an elite gymnast] involves being a bit different, being able to be quite one-track minded ... and if you're not that way you either develop it or you quit.

(Retired 1)

... being a bit self-centred, concentrating on what you have to do to help yourself all the time ...

(Retired 1)

These athletes must be intrinsically motivated and have a love for the sport to endure the long training hours for very few external rewards in return. They have to be happy and satisfied within themselves in achieving the small steps along the way.

... if they don't have a sense of all-consuming passion to achieve something for themselves, then the job becomes difficult ... that's what an elite gymnast has to do to really fulfil their potential is to have an unquenchable thirst to achieve the best they can.

(Coach 3)

Training and Competition Demands

Gymnastics as life.

... gymnastics is not sport, gymnastics is life.

(Coach 1)

Gymnastics at the elite level goes beyond just being a sport and becomes a way of life where elite gymnasts must be conscious of their gymnastics even when they have finished their physical training. This concept is very difficult for any athlete and many gymnasts fail to understand this, perhaps due to their young age. The coaches believe, however, that this is most difficult in the first two to three years of the gymnasts' careers. It appears that the retired gymnasts understood this concept to a greater degree than the current gymnasts.

It's a life commitment [until] you're 18 or 19.

(Retired 3)

... [the sport] became like ... a daily thing ...

(Retired 2)

Elite gymnastics becomes a life experience for everybody who is directly associated with the gymnasts including their coaches and families. Vital support and understanding without pressure must be present within the family unit, with the entire family also being dedicated and committed to the sport. Retired 3 explained "everybody has to be committed to you being committed to the sport" To a certain extent the gymnasts will have an individual life within the family unit and they must be prepared to see their siblings doing things that they are not.

... there has to be that 100 percent support from everybody because if there's one bit of weakness ... when that gymnast is down they'll take advantage of that weakness and they will become weak themselves ..

(Coach 2)

As gymnastics is also one of the unique sports which primarily has children and adolescents as its highest performing athletes, they also experience a very different childhood from other children of their age. It involves a great amount of time and lifestyle commitment with many sacrifices having to be made. They must consider their gymnastics in everything they do and the effects or consequences their actions may have on their gymnastics. These children must be very efficient and organised to succeed both in their gymnastics and in their schooling and many gymnasts feel pressure to excel in the academic domain as well as in their gymnastics.

... you've got to fit your school in and your gym in. ... they [other people] only had their schooling and they would go out ... they wouldn't be able to do their homework and yet ... I've done it ...

(Retired 2)

... going to school is part of it [gymnastics training programme] because ... it's part of your life which is part of that ...

(Retired 1)

According to the coaches there should be an equal balance between the importance of gymnastics and schooling, which should be above all other activities, leaving the gymnasts very little time to do many of the things that other children do such as playing and socialising with friends and going to parties. They must give themselves enough rest that they can maintain their training schedules without getting too tired. With the requirements to be light and lean the gymnasts must also be conscious of their dietary habits.

... it involves an abnormal amount of commitment to something as far as our society perceives as normal. ... I think that it's just a different way of spending your childhood and there's nothing wrong with that.

(Coach 4)

... every day you have to think of the next day, you can ... never just live for that day [because] what you do that day has consequences that normal kids wouldn't have consequences for.

(Retired 1)

... it was just basically the discipline out of the gym ...

(Retired 2)

... you have to be an individual ... not follow the rest of the kids at school ... can't eat lollies like they do or can't go to parties, you can't have ... a social life, but it doesn't bother you [because] you know you're going to get something out of your life that maybe they're not.

(Junior 2)

Gymnastics preparation.

Gymnastics preparation includes the physical preparation of the gymnasts, the technical preparation for each of the apparatus and the competition preparation which also includes the aspect of goal setting.

According to one of the coaches, gymnasts would have to be training above 20 hours per week to be training in an elite training programme. While younger gymnasts may be training in an elite type of programme, they would not actually be in an elite training programme if training a less number of hours. An elite training programme, therefore, may include up to 10 training sessions per week totalling 35 or more hours. These training demands were supported by the retired and junior gymnasts who trained

approximately 35 hours per week. The majority of the sub-junior gymnasts participating in the study were also classified as being in an elite training programme in terms of their hours of training which amounted to approximately 30 hours per week. The youngest of the sub-junior gymnasts interviewed trained a total of 16 hours per week. In addition to these hours, the gymnasts must continue to keep in mind their gymnastics at all other times.

This training programme is one that continues throughout the year with very few breaks. At the highest level, the gymnasts would have a maximum of two weeks off per year which would be broken down to three or four days at a time and maybe the odd weekend on occasion.

... they [the gymnasts] have to commit themselves to a pretty rigorous training programme which goes over many hours per week, over many weeks per year, over many years in a row, without very much break at all.

(Coach 3)

Several gymnasts from all groups participating in the study acknowledged the training hours, the higher intensity and the discipline required at the elite level. Almost all gymnasts also acknowledged that the demands on them in terms of their gymnastics training and the expectations of the coaches were much greater.

... there's obvious extra pressures on performance and that just increases as you get older.

(Retired 1)

Even with these rigorous training demands the gymnasts must have the discipline to remain focussed on their goals and the task at hand. To assist in achieving this state of being, the gymnasts in this programme have access to several avenues of support including a psychologist, a dietitian and a sports doctor as well as their gymnastics coaches.

Control of body weight and body fat.

Since the nature of elite gymnastics demands a very lean body and low body weight, the selection of gymnasts who are predisposed to that body type is crucial. This is especially true at the junior and senior levels with the high complexity of the sport and when many of the gymnasts would be in their adolescent period.

... if it comes down to trying to decrease as much as possible the risk of body image problems ... it comes down to selecting the right physique, because of course some physiques will always be lean.

(Coach 2)

Although these elite gymnasts may be selected largely on their body type, to maintain this lean body type over a long period of time requires very strict but also very carefully monitored weight control. A knowledge in this area by the coaches and expertise from specialists in the field, therefore, is of vital importance. Weight control is not only important for aesthetic reasons, but is crucial for the prevention and management of injuries and the general well-being of the gymnast.

... the dietitian's really important because they [gymnasts] can't be too skinny and they can't be too heavy. If they're too thin they may not have the right [amount of] calcium in their bones or lacking iron if their diet's not right ... or they could develop some other ... dietary conditions like anorexia or bulimia ... if they're too heavy they're going to get stress injuries, especially through the ... period of growth ...

(Coach 4)

You've got to have a constant weight so that your body is fully equipped and knows what it's got to deal with. ... [for example] if you're doing a triple twist and you land sideways and you're just about to hurt your knee, if you're a kilo[gram] heavier than you were yesterday then chances are more that you're going to do a ligament in your knee or something.

(Coach 4)

Concern was expressed particularly from the coaches with regard to excess body weight in fat, particularly during the adolescent period. With the enormous amount of aerial work involved in gymnastics requiring movement of the body through all axis and the impact of landing, there must as little weight as possible to transport through the air.

If they're heavy while they're growing and their bones are still ossifying at the end points then they're going to get stress injuries. So it's very important that they don't put on extra fat when they're growing. Extra body weight is ok, ... you can't control when their extra body weight is going to come, that's a natural thing. But ... as far as body fat over that [growth] period ... it's a natural thing

with adolescence is that body fat increases but we try to maintain that at the lowest possible level.

(Coach 4)

... the impact of landing is basically eight times the body weight ... the less the body weight, the less the impact, the less risk there is of injury.

(Coach 2)

... I was heavy then I lost it [weight] and then ... I think I clued on to the fact that to be thin in gym is the way to be because your scores go up, you can do more skills and [you] get less injuries ...

(Retired 1)

According to the coaches, gymnastics in Australia tends to insist on a leaner body type than many other nations and this is reflected in the skinfold requirements that are set down by the National gymnastics body and the National coach. It appears that many nations do not have this requirement, however, many of the Eastern European countries would. This is supported by Johns (1993) who describes the extreme weight requirements and dietary conditions of Bulgarian rhythmic gymnasts. Some individual elite coaches and nations including China would also demand a weight requirement to be met.

Some Western countries who may have Eastern block coaches, I think you'll find [the] Eastern block coaches are the ones that ... insist on the weight requirement being met [because] they understand what the effect is on performance.

(Coach 3)

While this coach recognised that the European coaches understand the effect of excess weight on performance, the example presented by Johns (1993) suggests that these coaches often go to extreme measures.

America and Canada, for example, would tend to accept a heavier body type for elite gymnastics and Johns (1993) also expressed clear differences between "East" and "West" when comparing Bulgarian rhythmic gymnasts with North American gymnasts. One coach suggested that some Western countries including those mentioned struggle with the ethics of requiring elite gymnasts to be that light. She further explained that at the elite level where the complexity of the sport and the skills involved are great, the ethics behind the risk of serious injury caused by excess weight are just as serious.

... so either way, what's worse, risking serious injury or risking another health problem ... which health problem is worse? ... I think that the serious injury one, you just can't allow that to happen, so ... you have to manage the other one somehow to try and see if you can control things.

(Coach 3)

At the time of the study, to be eligible to compete Internationally, the Australian gymnasts were required to have a skinfold of 40 mm or less over seven skinfold sites. According to the coaches this requirement had only recently been introduced as a selection requirement in the last Olympic cycle from 1989 to 1992.

... for the '92 Olympic Games ... they [the gymnasts] had to be 40.9 mm over seven sites or less and if they were over that they couldn't stay in the Olympic squad.

(Coach 3)

While all the coaches agreed that the skinfold requirement was that the gymnasts were to be under 40 mm and that it was set through the National gymnastics body, the exact source from which the rigid level of below 40 mm was unknown. Not one of the coaches in this study knew any documentation indicating an appropriate or ideal skinfold level for elite gymnasts. The researcher has also failed to identify literature identifying skinfold levels of this nature. One coach suggested that experience has found this to be an appropriate level.

... from experience we've found that a level of high 30s ... mid 30s is the best level in which the body is covered enough or just right, so that the body looks fit, healthy and you can see muscle definition. In general, that's the guideline we go by.

(Coach 4)

Summary

This section has discussed the physical and psychological characteristics required for elite gymnastics as identified by the coaches and gymnasts during the interviews. The various training and competition demands on the gymnasts were also identified in this section.

When selecting gymnasts to train in an elite programme the coaches will first look for a general body type that is conducive to gymnastics which includes a small and light body frame that is naturally lean. While there may be varying physiques, the gymnasts will generally have relatively long limbs and shorter middle body, broad shoulders and narrow hips. The gymnasts must also possess aesthetic qualities including a certain attractiveness that draws an individual to watch them and a certain cleanness about their body lines and movement.

The gymnasts must also have certain physical qualities that include natural co-ordination, natural strength, natural flexibility and natural physical ability and agility.

Certain psychological qualities are essential including total dedication, mental application, perseverance and discipline. They must also understand what is required of them in terms of the demands of elite sport, including long training hours over an extended period of time with very little break.

At the elite level, gymnastics goes beyond being a sport and becomes a way of life for everyone directly associated with the gymnasts including their coaches and families. Even outside the actual gymnastics training times the gymnasts must always be conscious of their gymnastics in terms of their diet and social life, ensuring that they give themselves sufficient rest to be able to maintain their training schedule.

The control and maintenance of body weight and body fat was identified as very important to elite gymnasts for the prevention and management of injuries and the general well-being of the gymnasts as well as for aesthetic reasons.

Gymnasts' Perceptions of Body Image

As indicated at the beginning of this chapter, it was impossible to answer each of the research questions separately, therefore, this section addresses each of the questions.

The focus of this section is on the first research question "How do elite female gymnasts from the central programme perceive their body image?". It focuses on the perceptions the gymnasts have towards themselves as elite gymnasts, and their attitudes toward the weight and skinfold requirements and procedures within which they must comply.

As the perceptions of all the gymnasts (retired, junior and sub-junior gymnasts) are included in this section, the third research question regarding the development of body image throughout the gymnastic career is addressed.

Although discussed further in the remaining sections of this Chapter, this section also identifies some of the factors contributing to the gymnasts' perceptions of body image, consequently addressing the second research question.

Feelings about Self as an Elite Gymnast

While the current gymnasts make up a select few who are very talented in gymnastics and have the potential to reach the highest standard in their sport, most did not feel they were much different from any other girls of their age. Almost all of the gymnasts, particularly the sub-junior gymnasts felt "good" but also felt that they were normal and didn't really think of themselves as elite gymnasts. Six of the gymnasts expressed their pride in themselves for their achievements and that they were special. At times some of the gymnasts felt a little different to other girls of their age in that they left school early for training, were more active than many other girls and could do gymnastics skills that the others could not. When asked of their thoughts of themselves as elite gymnasts some of the responses included

just as a normal gymnast ...mainly I'm more active than them [girls at school].
(Sub-junior 4)

I just see a normal person [in the mirror]. I don't really see myself as any different to anybody else.
(Junior 4)

... other people can't have what you can have ... they can't really be special ...
(Junior 3)

I feel pretty proud of myself because I'm being an individual ...
(Junior 2)

Opinion of the physical appearance of other elite gymnasts.

The retired and junior gymnasts suggested that the physical appearance of elite gymnasts varied, Internationally, with many countries having their own characteristics. Several of the junior gymnasts felt that the Chinese gymnasts were always very skinny. They also suggested that the top elite gymnasts were usually small, strong and very thin. While two retired gymnasts and one junior gymnast commented on the American and Canadian gymnasts being bigger than several of the other elite gymnasts one retired gymnast observed that recent American gymnasts, including 1993 World Champion Shannon Miller, were very thin. One retired gymnast liked the Romanian gymnasts who had very "muscly" bodies. Several of the retired and junior gymnasts noted that the current Australian gymnasts were quite thin with nice lines, thus supporting Normile's (1991) description of the Australian gymnasts at the 1991 World Championships. One retired gymnast commented on the change in the Australian gymnasts' physical appearance in the last four or five years to a thinner body type which is consistent with the changing structure of Australian gymnastics.

... the more elite gymnasts from other countries are usually small and ... strong and thin ... and they're pretty much the same as here.
(Junior 4)

Usually the top International gymnasts are really skinny ...
(Junior 2)

... you look at [some] people at the top like the Americans ... some of them ... [are] not thin ... and they do ok, so I suppose there's no reason why we couldn't. But they're [certain Americans] still looked down upon in the International gymnastics eyes as being too heavy. ... But Australia has come up in world ranking's [and] one of the new properties of the Australian team was that everyone was really quite thin ...
(Retired 1)

[Prior to 1989] we [Australian gymnasts] were probably bigger, not so refined. ... [now] we're [Australian gymnasts] quite thin, the last generation [who] went to Worlds [Championships] and Olympics were relatively thin.
(Retired 3)

The junior gymnasts had differing opinions of the physical appearances of the senior gymnasts, however, most of them agreed that they were fairly thin, particularly during the competition period. One of the junior gymnasts expressed that the senior gymnasts had different bodies in that they looked older and another felt that some of them looked a bit too bulky and a bit too heavy.

Five sub-junior gymnasts did not appear to have clear thoughts of the junior and senior gymnasts. Most of them felt their physical appearance and body shape was good for gymnasts. Others felt that while some matched their perfect elite gymnast, others did not.

Gymnasts' Feelings about Own Body Image

Retired gymnasts' feelings about body image.

When they were training in elite gymnastics, the retired gymnasts had varying perceptions on body image. While the gymnasts were conscious of their physical appearance, only one expressed that she thought she was too fat. All of them, however, would at times think that they needed to lose weight even if they were at a very low weight. Even with that, dissatisfactions were generally related to individual body parts such as the bottom.

... I thought I looked fine, normal. ... I could never say I was upset with what I looked like, not at the end.
(Retired 1)

... I don't think I liked my body as a gymnast [because] I always thought I had too big a [bottom] ... I always had a fairly skinny waist so I didn't have that much [of a] problem.
(Retired 2)

I would have said it [physical appearance] was fine. Wasn't fat, wasn't skinny. I was happy ... just didn't bother me really.
(Retired 3)

At their lowest weight and skinfold the retired gymnasts were generally happy with their physical appearance and felt they looked normal. At these levels none of the gymnasts felt they were too thin except on occasion when in the company of "normal" people.

... at school ... was about the first time I actually thought I was skinny. The rest of the time I thought I was normal. ... [because] all the time I was with skinny people in leotards and suddenly I was with normal people in ... bathers and it was a big change ... suddenly I didn't feel normal.
(Retired 1)

When reflecting back to their physical appearance as gymnasts, one gymnast felt that although she was a little overweight for a gymnast, she knew now that she had retired that she wasn't fat. Another felt that she could have lost a little bit of weight but maintained that she was happy with her physical appearance as an elite gymnast. The third of the retired gymnasts felt that at the end of her gymnastics career she looked very skinny and at one stage looked sick.

Two of the retired gymnasts explained that they sometimes felt conscious of themselves wearing leotards particularly if carrying extra weight because "in leotards you see every little lump" (Retired 2). One gymnast stated that she would have preferred to wear bicycle pants and short tops. Only one retired gymnast stated that wearing leotards did not bother her.

... just imagine spending you life in a leotard. ... we're so open ... to observation ... I mean, when you look at someone in a leotard you can't help but look at what they look like body wise.
(Retired 1)

Now they're [current gymnasts] wearing bike pants and short tops ... I wish we could [have]. But I remember having to take your tights off ... and we'd all be so self-conscious. Just because all girls are at that age [adolescence] I suppose ... when I was quite thin [I] didn't mind ... if you were thin [it] didn't bother you, if you were a bit [chubby] then it did.
(Retired 1)

Junior gymnasts' feelings about body image.

Only one of the junior gymnasts explained that she had not really thought about her body image. The remaining junior gymnasts had reasonably clear opinions of their body image and physical qualities which was reflected by one of the retired gymnasts.

... when you're 12 years old you know a lot more about how you feel and your body than most people give a 12 year old credit for I think.

(Retired 1)

While the gymnasts indicated various body parts that they were not completely happy with and that they felt better about some body parts than others, they all expressed a general satisfaction with their physical appearance. Some of the gymnasts would have liked to have been a little bit taller but most were satisfied with their body shape.

The four older gymnasts in this group explained that they would like to be slimmer and were dissatisfied only when their weight or skinfold increased. It was only at these times that they sometimes felt fat, but also knew that they were not overweight. All of these gymnasts, however, felt concern of their weight and skinfold.

I wish I would be ... just a little bit taller, not as short as I am. I would like to lose some weight, I'm not sure if I am overweight, but I've been lower ... I'm the highest [skinfold] I've been for ages ...[so] I wasn't really happy ... I could just be a little bit slimmer all over ... I know I'm not fat, even though I sometimes say I am ...

(Junior 2)

I always want to look skinnier, but sometimes I think ... I look okay, I don't need to lose any weight ... my body shape's fine ... Sometimes when my weight's high or my skinfold's high I feel fat and ... I just feel like I should be skinnier, should look a bit skinnier.

(Junior 5)

Two of the junior gymnasts acknowledged that they had experienced recent growth spurts and difficulty in maintaining a steady weight. While the gymnasts understood that their weight gains were growth related they appeared to have difficulty accepting them and preferred to be at the lower weight.

... I have been growing so I have been putting on weight, but I would like to be back down there again.

(Junior 2)

... I've grown heaps in the past three years so my weight's just gone sky-high and it won't come down much. ... [Coach] said that every time you grow a centimetre your weight should go up half a kilogram ... if I did keep growing and my weight did go up, I'd keep trying to get it down further.

(Junior 5)

These results support several authors (Davies and Furnham, 1986a; Koff et al., 1990; Richards et al., 1990) who suggested a heightened awareness and concern of the body at adolescence. Although Harris and Greco (1990) found older gymnasts (17-23 years) to have difficulty in maintaining the required body shape through maturity, these results suggest that this difficulty may begin in adolescence when the children's bodies begin to change and develop.

All the junior gymnasts stated that they did not mind wearing leotards for training with Junior 2 acknowledging that she knew she was not fat. One gymnast felt conscious only when outside the gym with people around her wearing "normal" clothes. Another gymnast sometimes felt annoyed wearing a leotard but most of the time did not worry about it. She also recognised that the nature of the sport demanded wearing a leotard for safety and performance.

... I don't mind it [wearing a leotard] actually in the gym, but ... when you go outside the gym, when you're going to the toilets ... it feels like you're totally stripped down because everyone's wearing normal clothes, but I don't usually mind.

(Junior 1)

... everybody can see your body [in a leotard] ... and sometimes it annoys you but most of the time you don't really worry about it. [It] doesn't matter, that's your sport then that's what you have to wear for that sport. You can't really wear a t-shirt or anything like that because if you do you're going to get caught up in it ... you have to wear something that you can stretch ... in ... and not have to worry about getting it caught ... So I don't really mind about that [wearing a leotard].

(Junior 5)

Sub-junior gymnasts' feelings about body image.

Two of the sub-junior gymnasts had not previously thought about their body image and did not have a clear opinion of the way they looked except that they were like a normal person or 'smaller' and 'skinnier' than most other people. This supports the young age at which perceptions of the body are formed as indicated by Dyer (1986), Harris (1973) Sage and Loudermilk (1979) and Shavelson et al. (1976).

Three of the sub-junior gymnasts had clearer opinions of their physical appearance with two of them reporting their satisfaction with how "skinny" they were.

I don't [think] it's all that much ... of a difference to everybody else [physical appearance] ... Sometimes you think ... I'm glad I'm a gymnast [because] otherwise I'd be a fat person like that other one over there.

Sometimes when you're at the gym you do [think you are fat] but not when you're around normal, average people. ... You don't really think you're fat, you just think ... they're so skinny, I wish I was that skinny. ... but you know you are that skinny sometimes ... I think it's good [being that skinny] because you can do a lot more things ... and you're a lot fitter ... than most people.

(Sub-junior 6)

One of the sub-junior gymnasts expressed dissatisfaction with her physical appearance with respect to being a gymnast, however, did note that she would be thinner than the average person.

... I'm not the thinnest person you'd see there [in the gym] but if you looked at other people in the world you'd see that I'd be thinner than most of them ...

I don't really like it [normal size]. ... I just think I look fat.

(Sub-junior 2)

Gymnasts' perceptions of other gymnasts' feelings about body image.

While several of the gymnasts acknowledged that it was difficult to comment on how other gymnasts felt about their body image they generally thought that some other gymnasts felt that their physical appearance was fine, and others were very serious about it. Retired 2 commented that gymnasts' body image depended on "the way you were brought up about it" and "how confident you are with your body". The gymnasts also reported that many other gymnasts would say that they felt fat but would not

actually feel that way. One gymnast thought that most people would like to change something about themselves, which was supported by two other gymnasts who expressed that many gymnasts were conscious of their bottom's and that they would like to be thinner. Other gymnasts felt that even with the rigid body image requirements, gymnasts generally felt that they looked all right as gymnasts and this was supported by the way in which the gymnasts in this study perceived their own body image. Most of the younger gymnasts did not have an opinion on how other gymnasts felt about themselves.

I think it's basically all around ... some people are really conscious and some people ... didn't mind their body ... you [were] always conscious about your [bottom], I think everybody was.

(Retired 2)

Some of them [gymnasts] think they're fat, they look fat ... they wish they had skinnier [bottoms]. ... I guess [we would] all think we'd like to be a little bit thinner, [because] at the moment we are all a bit high [in skinfold].

(Junior 2)

... some of them [gymnasts] say "oh, I don't care" but they'd go home and ... they wouldn't eat or something.

(Retired 3)

[I] suppose nearly everyone would like to ... change something, always this sort of satisfaction ... but I think most gymnasts, if they really, really thought about it they wouldn't think [their body] was too bad, [because] you have to have a pretty good body to be in the elite programme anyway.

(Junior 1)

I know some girls at gym, they think that they're fat even though they're not ... they know they're not [fat] but they just say it.

(Junior 4)

... I think everyone just felt they looked ok as a gymnast, it's just so hard to maintain that in a normal kind of way with a sane mind ... just think everyone didn't like how they had to keep that way.

(Retired 1)

Retired 1 illustrated one gymnast's perception of body image who stated while looking at herself in the mirror "I wish I could get rid of it [fat] but ... I hate having to try to". She described another gymnast who although would never admit to being fat, would respond in a conflicting manner.

"I want to eat heaps, I want to eat this ..." and then people would say "[gymnast] please eat more, you're looking really skinny" ... she'd [say] "no, I don't want to".

(Retired 1)

The Ideal Physical Appearance of an Elite Gymnast

Ideal physical appearance.

The reasons for the way in which the gymnasts perceived their ideal physical appearance for an elite gymnast varied and most believed that their preferred qualities were those most conducive to elite gymnastics both aesthetically and mechanically.

While the gymnasts had their individual preferences, the overall physical appearance emerging as their ideal physical appearance of an elite female gymnast was a very lean girl with all but two gymnasts describing their ideal gymnast as skinny or very skinny. Several of the retired, junior and sub-junior gymnasts also acknowledged that gymnasts could be too thin, supporting Johns (1993).

... you can't be a gymnast and look fat. It's not nice.

(Junior 2)

Usually the top International gymnasts are really skinny and some are too skinny ...

(Junior 2)

... when I see them [elite gymnasts] on [television] it think, they don't look sick, they don't look too skinny ... I think they're really thin but ... I think they look nice like that.

(Retired 1)

There appeared to be conflicting opinions regarding the ideal size of the perfect elite gymnast with some gymnasts preferring a very small body type and others preferring a taller, longer body type. Seven of the gymnasts, particularly those who preferred the taller body type illustrated a "taller look", or a "longer body line". Gymnasts with this "tallness", when combined with a very lean body may influence a taller perception. This was expressed by one of the gymnasts in the following way.

... even if they were the same height ... that little bit skinnier and it makes you look sort of longer or more stretched.

(Junior 1)

The difference in height may also be due to comparisons being made among gymnasts. 1989 World Champion, Svetlana Boginskaya, for example, was considered tall for an elite gymnast.

... people would say "... who's that big Russian girl?" and you say "Oh you mean 5 ft 2 Boginskaya?" ...

(Retired 1)

The physical appearance of the ideal elite gymnast was also described as that of "a little girl". It was suggested that a "womanly" figure was not desirable on an elite gymnast, however, a slight "womanly" shape without the characteristic fat deposits was acceptable. One of the coaches explained that a womanly figure on an elite gymnast was becoming more acceptable.

... because everyone is so skinny, as soon as one gymnast has a bit of a figure, like a womanly kind of figure, she stands out a mile ... and it's commented on as if it's bad ... ["Womanly" figure on a gymnast] doesn't go. Not for elite gymnasts scoring 10.00's. ... Boginskaya had one. Womanly as in shapely ... I think if you've got a small waist and hips that's fine ...

(Retired 1)

... you're always going to get little girls but I think that we're now more receptive to a more mature girl. A taller girl like Boginskaya brought that back in a lot in the early [1990's] ... she looked more mature ... mature as far as gymnastics goes ... womanly figure but still petite ... if you saw her walking down the street you'd say she's flat chested and gee isn't she tiny. But if she's

5 ft 3[in] or something on a gymnastics floor and has a bust of some description well then you'd say she looked womanly.

(Coach 4)

Almost all sub-junior, junior and retired gymnasts stated that the ideal elite gymnast would have a muscular body with muscle definition, but would not be bulky. All gymnasts except two sub-junior gymnasts acknowledged the muscular or strength characteristic or both. Almost all the gymnasts also included the importance of flexibility in their ideal gymnast.

Importance of the physical appearance.

The importance of these qualities characterising the gymnasts' ideal physical appearance of the elite gymnast were consistent with several of those identified by the coaches as being conducive to elite gymnastics. Four main reasons emerged including a response to the training requirements and an ease of training, injury prevention, aesthetics and team selections.

All of the sub-junior gymnasts believed that being small and thin made it easier to do gymnastics and several also believed that it helped to reduce the number of injuries. For Sub-junior 6 these qualities were most important for aesthetic reasons. She explained that while gymnasts should be quite muscly they should also slim and not "bulky".

Sometimes they've [gymnasts] got really muscly and they don't look all that good ... sort of really stiff ... and people think "oh yuk, look at all her muscles bulging" ... and you just don't want to be like that. ... you just look ... a bit longer and slimmer when you're tall and it just looks better.

(Sub-junior 6)

Like the sub-junior gymnasts, most of the junior gymnasts recognised that being smaller, lighter and thinner would make gymnastics easier. While they thought that their training requirements might have an influence on the particular qualities required, they did not know what this influence was. Two of the junior gymnasts suggested that a lean body reduced stress on the body and therefore the incidence of injuries. Three junior gymnasts stated that a lean body was important for aesthetic reasons and reflect the scores given by judges in competition, thus supporting Johns

(1993) and Wichmann and Martin (1993). The importance of this physical appearance on team selections was reflected by one gymnast.

It'd help you, [make] your life easier as a better gymnast ... it causes less injuries ... you look nicer, [because] you can't have a gymnast with fat folds ...
(Junior 2)

[Judges] judge your routines and if they like what they see then that depends on the score they give. ... if they see someone who's really slim and really nice looking, ... body wise, they'd probably like that a lot more than somebody who was sort of [heavy on] the floor and not looking all that attractive ...
(Junior 5)

[For team selections] you just have to have the right figure ... strong legs and small hips.
(Junior 3)

The retired gymnasts collectively supported each of the four reasons they raised as to why they believed the qualities they identified were important for the ideal elite gymnast. This group of gymnasts clearly had a greater understanding of the influence training requirements had on the physical appearance. Retired 1 suggested that the younger gymnasts see the older gymnasts as role models and "they know what they're supposed to do now and what's required or asked for". They each recognised that the difficult skills now being performed require a small, lean and muscular body and that some skills could not be performed effectively without this body image. This body type was also said to provide a much better power to weight ratio and therefore be conducive particularly to vaulting and tumbling. This high power to body weight ratio was also illustrated by Bernadot and Czerwinski (1991) and Kirkendall (1985). One retired gymnast also suggested that performance of the skills themselves assisted in developing those characteristics, particularly in terms of the musculature and strength. Two of the retired gymnasts suggested that this body type reduced the risk of injury, particularly when landing from the apparatus and with the increased numbers of repetitions. The final reasons why these characteristics were important was for aesthetic reasons and for team selections.

... maybe it's just a little bit more competitive now so if you haven't got that leanness it's an edge you lose ...
(Retired 1)

... just the tricky stuff that they're throwing now, ... imagine landing a double layout being heavy [and] crunching your ankles, you'd be in strife. ... and training more numbers now, just doing numbers of dismounts, being heavy would cut a few centimetres off your height I think.

(Retired 1)

... because gymnastics is [a] feminine sport as well and ... if you're ... small and don't have a long ... nice line, you kind of get carried away with the ... acrobatic side of it ... [if] you've got a nice line you just seem to move nicer on the beam and the bars and ... if you're not too tall you still move okay on the floor and the vault.

(Retired 2)

... a judge's view of a gymnast when she's judging is that she has to look aesthetically a certain weight. ... you're judged on how you look, so if you're really, really tall and lanky, you're not going to look as graceful as a slightly shorter person would be.

(Retired 3)

... that seems to be what scores well and team selections were always based on one what you looked like, so to maximise your chances of making a National team I guess you had to look like that, or try to look like that.

(Retired 1)

Where perceptions of the ideal physical appearance originated.

In most instances the gymnasts' ideal physical characteristics were those of other gymnasts that appealed to them and that they would like as their own characteristics. Some of the gymnasts could not indicate exactly why they had this image of the ideal gymnast's physical appearance, however, many of the sub-junior gymnasts in particular had seen their ideal gymnast on the television coverage of the Olympic Games and in their programme. Sub-junior 3 explained that her ideal gymnast was "what I am". Several of the retired and junior gymnasts also indicated a certain amount of pressure to achieve and maintain a lean body type.

It could be just something that I like. ... every gymnast you look at ... you always look at their body.

(Retired 2)

... [because] that's what I'd like to be. ... My dream gymnast. ... you look at them and [think] ... "they've got it", but you don't know about their problems in training ...

(Junior 2)

... basically because ... all the good ones [gymnasts] look like that ... all the ones that score highly [and] every time you put on weight ... you were told that it was bad [by] coaches, by yourself because you didn't think the good gymnasts had that [extra body weight] ...

(Retired 1)

Own Physical Appearance Compared with their Ideal

Perceptions of retired gymnasts compared with their ideal.

On reflection, the retired gymnasts all expressed that they were relatively close to their ideal physical appearance, with one gymnast experiencing this state only when at her best. While each expressed individual characteristics that did not match their ideal, they generally reported satisfaction with their overall physical appearance.

... pretty average in height, bit shorter than average ... weight was ok, I suppose ... I was quite happy, it was all right.

(Retired 3)

... I was too tall, a little bit ... to my perfect, probably would have wanted, not much different, tell you the truth ... probably smaller [bottom], that's probably all ... Although I was never really happy with how I was, but now I think about [it], compared to my perfect [gymnast], I don't think I was that far from it. ... I could have had narrower hips, bigger thigh muscles, calf [muscles], then again I thought ... maybe I would be nice to be a bit more linear. ... I can't really say I was too unhappy.

(Retired 1)

... when I was at my best, I suppose I wasn't that far away, [because] ... I had the ... long line. ... [I had] muscle definition when ... I was really skinny, but most of the time I wasn't like that. ... I was always conscious of my [bottom] because it was always ... a lot bigger than what I would have liked ... I suppose I could have ... had an ideal body ... that I wanted when I was at my best.

(Retired 2)

Perceptions of junior gymnasts compared with their ideal.

While none of the junior gymnasts reported that their physical appearance equated their ideal, they all believed that they would not change some of their physical characteristics and several others were close to their ideal. Most gymnasts felt that their body size and shape were satisfactory while two felt they should lose weight and skinfold. Most of the gymnasts expressed a general satisfaction with their strength and flexibility but needed some extra work in these areas.

I'd say I'm about half way there. I'm ok for my weight and my size ... I'm kind of half flexible and half strong.

(Junior 2)

I just need to get a bit skinnier ... just [lose] a couple of [kilograms], about two. I wouldn't change how strong I am ... probably I'd change how flexible I am, [because] I'm not very flexible.

(Junior 3)

... maybe get my weight down [maintenance weight - out of competition] ... lower than it is now [about 3 kg] ... and get my skinfold down [about 5 mm].

(Junior 5)

Perceptions of sub-junior gymnasts compared with their ideal.

Most of the sub-junior gymnasts stated that their own physical appearance was very similar to that of their ideal gymnast. Three of the seven gymnasts noted differences between themselves and their ideal with respect to height, leanness and musculature.

[Because] that's what I am [ideal physical appearance].

(Sub-junior 3)

I think [my] size is quite good ... and the right type as well ... I'm quite small ... not too tall and I'm not too skinny.

(Sub-junior 7)

... I'm short and skinny ... but I need to be more muscly, I think.

(Sub-junior 4)

... I'm not as good as her [ideal] and ... I'm not as thin as her.

(Sub-junior 2)

Skinfold Requirements and Procedures

It was revealed in the interviews that all gymnasts participating in the study had skinfold tests as part of their training which also included having their height and weight measured. The frequency of skinfold testing varied with the level of the gymnasts. General procedures for skinfold tests were similar among the groups and descriptions of these procedures were consistent between the gymnasts and coaches. All gymnasts were skinfolded at eight skinfold sites by one exercise physiologist using standard skinfold calipers in a laboratory and all results were recorded. One retired gymnast explained that the physiologist took three readings at each skinfold site and took the average, which differed from another Australian elite programme which took only one reading. This other programme also tested only seven skinfold sites. The gymnasts would go to the laboratory for testing either individually or in pairs, however at the time of the interviews they were usually tested individually. On occasion the coach would be with the gymnasts while they were being tested.

Retired gymnasts.

The retired gymnasts reported that started having their skinfolds taken on a regular basis in 1987. At this time they were tested spasmodically followed by tests about every six to eight weeks, then once a month and once a fortnight. From 1991 until the end of their career the retired gymnasts had their skinfolds taken once a week. This was also supported by the skinfold records. The retired gymnasts were consistent

in expressing that their total skinfold measurement was to be under 40 mm. They agreed that this was a National selection requirement particularly for the 1992 Olympic Games. One of the retired gymnasts explained that prior to this period the skinfold level was below 45 mm. The gymnasts also agreed that they felt confusion with the actual required limit, as the lower their skinfold was, the lower they felt the requirement was. They felt that although the limit was under 40 mm, the coaches preferred it under 35 mm.

At one stage it wasn't a big deal ... then you had to be under 45 [mm] and then it got down to 40 [mm] ... and then the coaches still wanted you to be under 35 [mm], even though it wasn't made a rule ...

(Retired 2)

... so on paper we had to be under 45 [mm] but actually on ... [unofficial] rules we had to be under 35 [mm]. That's what it seemed like.

(Retired 1)

Junior gymnasts.

The junior gymnasts reported having their skinfolds tested once a fortnight. There was some inconsistency, however, in the required level for the gymnasts' skinfolds ranging from 45 mm to 35 mm. Two of the gymnasts believed that their skinfolds were to be 35 mm, one gymnast felt it was to be under 40 mm and two believed it was to be under 45 mm. One of the gymnasts who reported a level of under 45 mm also acknowledged that under 35 mm was preferred. All the gymnasts believed the skinfold levels were determined by the coaches with one gymnast expressing the skinfold as a requirement to travel for competition.

... it's supposed to be 35 [mm] ... they're [coaches] not too strict about it during the year but when it comes to competition it's 35 [mm] and those who have problems they make little allowances, but otherwise if you're usually down and you go up to 35 [mm] you're in trouble ...

(Junior 2)

... I think it's under 40 [mm] for skinfolds ... [coaches] or someone said we weren't allowed to travel if we were over 40 [mm] or something.

(Junior 3)

... we have to be under 35 [mm], or under 45 [mm] for our skinfold, but they [coaches] like it under 35 [mm] more.

(Junior 5)

Sub-junior gymnasts.

Two sub-groups emerged from the sub-junior group where the youngest gymnast differed from the remainder of the group. The older gymnasts in this group agreed that skinfold tests were usually done about once a month. Three of these gymnasts reported that sometimes the skinfold tests were every two weeks. The youngest of these gymnasts explained that her group does not have a special time and that she had a test one or two months previously. While several of the sub-junior gymnasts stated that their skinfold could not be too high, only one claimed that it had to be under 40 [mm].

Weight Requirements and Procedures

With the exception of one sub-junior gymnast, all the gymnasts participating in the study reported that they were weighed as part of their training however, as with skinfold tests the frequency varied with their level and number of training hours. General weighing procedures were similar and descriptions of these procedures were consistent between the gymnasts and coaches. A set of electronic bathroom scales were kept in the gymnasium. The gymnasts would weigh themselves before training wearing leotards only. The gymnasts would usually be in a group when they weighed themselves and would write their weights in the record sheet provided. The coaches would occasionally watch the gymnasts as they weighed in and check their weights. Several coaches reported that the youngest groups training in this programme were not weighed at all, however they did have skinfold tests every few months.

Retired gymnasts.

At the peak of their career when they were at the senior level, the retired gymnasts weighed themselves twice every day at the beginning of each training session. From recollection, this frequency of weighing was practiced from about 1991 and continued for the remainder of their gymnastics careers. One of the retired

gymnasts explained that they never weighed in before 1986 and then began weighing in only once or twice a week.

... it sort of kept the same rate up until 1991 [weighing about twice a week] and then we started getting a little bit more serious about it. ... they [the gymnasts] had to weigh in every morning and every afternoon.

(Retired 1)

While they were required to weigh themselves and record their weight twice a day, the retired gymnasts admitted that they would weigh themselves many times a day both during training and at home. Retired 1 explained that she would weigh herself about "six times a day".

So that's about 10 times [a week] that you had to weigh in [before each training session] and then you'd weigh yourself about twice a day during training ... and then you'd weigh yourself at home.

(Retired 2)

The retired gymnasts explained that the coaches determined the gymnasts' weight levels based on their individual weights.

... it was all individual ... you hit a level that they [the coaches] thought was ok ... and just told to maintain it really.

(Retired 1)

... we had a bit of flexibility with what weight each person ... needed, but then when it came down to the crunch ... everybody had to be ... below 40 [mm skinfold], so it didn't really matter in the end.

(Retired 2)

Junior gymnasts.

At the time of the interviews the junior gymnasts weighed themselves once every day usually in the morning at the beginning of their first training session for the day. Previously they had been weighing in twice a day, consistent with the retired gymnasts, however, this had been reduced to only once per day. The gymnasts

believed that their weights were determined by the coaches on each gymnast's individual weight which was to be maintained at that level.

... weight just really depends on the person, whether it's in [the] 20s to 30s, 40s or whatever.

(Junior 5)

... as long as your skinfold's under 40 [mm] I don't think it really matters what your weight is.

(Junior 3)

Sub-junior gymnasts.

As with skinfold testing, two sub-groups emerged from the sub-junior group where all but the youngest gymnast weighed in three times a week. The remaining gymnast was weighed only when she had her skinfold test. The sub-junior gymnasts did not have a weight level that they were to maintain, however, several did mention that they could not be too heavy. The gymnasts who believed that they could not be too heavy, did not know exactly what too heavy was.

... not really [certain weight]. Just can't be too heavy. ... Don't know [what too heavy is] ... it depends how much you go up.

(Sub-junior 1)

No, not really [certain weight] ... my normal [weight] would be 22.5 [kg] ... and 23 [kg] would be a bit high for me.

(Sub-junior 7)

Gymnasts' Feelings about Skinfold

Retired gymnasts' feelings about skinfold.

While two of the retired gymnasts felt that skinfold tests were essential, particularly due to the required levels, one of the gymnasts questioned the necessity of having the tests because of each individual's varying body composition. Retired 1 noted that due to the nature of the sport there had to be "some sort of measure to maintain" body fat levels.

... when it comes down to it the main reason why we had to maintain a low fatness was because [gymnastics is] an aesthetic sport. It looks good. So if you look good what's the point of having skinfold tests, really? ... There's people like [gymnast] who look really skinny and have high skinfolds ... and then someone else has, [gymnast] has a skinfold of 40 [mm] but looks heavy. ... And then you think what is the purpose of them, there doesn't really seem to be one.

(Retired 1)

While the retired gymnasts agreed that skinfold levels were to be maintained at a certain level, there were mixed views on how often they preferred to have the skinfold tests. One of the gymnasts reported that she liked knowing what she was each week.

It was quite good in a way because you didn't really change much over a week ... if you had it every two months there could be huge changes and that would be a stress ... you [were] being told what you [were once a week] and if it was good then you didn't have to worry about it.

(Retired 1)

There were mixed feelings among the retired gymnasts regarding having skinfold tests. While they all described skinfold tests as being a stressful event, the degree of stress experienced varied, with one gymnast stating that weight and skinfolds were not a great concern to her. Another gymnast reported that she was afraid of having skinfold tests. The retired gymnasts generally experienced more stress if they felt that their skinfold would be higher than previously. Retired 1 stated that she enjoyed having skinfold tests when she knew she was skinny but "stressed like hell when I thought I was going to be up ...". The retired gymnasts also explained that they would support each other to help reduce the stress of the skinfold tests.

We used to bet at the end, we used to bet what we were going to be. So [we] used to kind of make it funny. ... And it wasn't a stress at the end.

(Retired 1)

When having their skinfold tests, the retired gymnasts were not bothered by other gymnasts being with them. One gymnast reported that she was more nervous having other gymnasts with her when she started putting on more weight. All the retired gymnasts agreed that they felt a greater amount of stress when the coaches were with them while they were having the tests.

... it didn't really worry me. Depended who it was. ... you didn't like the coaches seeing ... [they were] going to see it in ... a few more minutes but you just didn't like them being there.

(Retired 2)

The gymnasts felt that the main reasons for recording skinfold results were to monitor the gymnasts' skinfold levels over time and identify any problem areas. Two of the gymnasts also suggested that the records may be useful in the future.

Junior gymnasts' feelings about skinfold.

While the junior gymnasts generally did not mind having skinfold tests, they all reported that they were nervous about them and worried that their skinfold would increase. Only one gymnast stated that she did not like having skinfold tests. Junior 4 explained that having skinfold tests was "not that bad" because "we have them quite frequently".

The junior gymnasts all preferred to have skinfold tests every second week to every week. Two gymnasts looked forward to having a week without being tested and felt that it was less stressful having skinfold tests every second week. One gymnast found it easier to control her eating patterns with frequent testing.

... every two weeks is pretty good [because] ... after skinfolds you can ... have a treat or something and then the following week you can work harder again. ... [skinfolds] every week, if you had a treat it would just show up on your next skinfold ...

(Junior 3)

Probably the skinfolds are fine having them every second week because you sort of look forward to having a week with not having them and then you sort of want to know what it is.

(Junior 5)

All of the junior gymnasts explained that they did not mind having other gymnasts with them when they were having skinfold tests and one gymnast felt more relaxed when others were with her. One gymnast suggested that some gymnasts did not like others to know their skinfold measurements, particularly when they were high, however this was not supported by any other gymnast. While some of the gymnasts did not mind the coaches being with them while they were being tested, others felt more nervous or scared with the coaches there.

... I don't mind [the other girls being there] really. It sort of relaxes you a bit more ... [because] they're talking and you sort of forget about it ... I don't really like the coach going down there, it just makes me more nervous.

(Junior 3)

[If coaches there feel] scared ... if your actual measurement goes up ... they [coaches] give you a remark or something which doesn't make you feel very good.

(Junior 5)

The junior gymnasts concurred with the retired gymnasts that the main reasons for recording skinfold results were to monitor the gymnasts' skinfold over time and identify changes. One gymnast also identified the monitoring of skinfold with growth.

Sub-junior gymnasts' feelings about skinfold.

The sub-junior gymnasts generally did not mind having skinfold tests, however, almost all the gymnasts, including the youngest gymnast, sometimes felt nervous of their skinfolds going up. Only one gymnast was not worried about having skinfold tests. The youngest gymnast felt that if she had her skinfold tested more regularly she might find it a little easier. None of the sub-junior gymnasts were bothered by other gymnasts or the coaches being with them while they were having skinfold tests.

... you don't really mind but sometimes you think "oh no", but ... you have them all the time so it doesn't really matter.

(Sub-junior 6)

Sometimes I get nervous [because] I think it's going to be really high ... if I knew I'd have it more regularly I'd probably keep as fit as I could [because] we never know when we're going to have it ...

(Sub-junior 2)

Most of the sub-junior gymnasts suggested that the reasons for recording skinfolds were to keep a record and compare with other tests. Others suggested that the coaches could see if the gymnasts skinfolds were going up or down.

Gymnasts' Feelings about Weight

Retired gymnasts' feelings about weight.

The retired gymnasts generally did not enjoy weighing in and felt that it was stressful at times because they would get into trouble with the coaches if their weight went up. The gymnasts also explained that they would weigh themselves more than the required twice a day as they were afraid of the weight that they would have to write down.

... it [weighing in] was just a way of life at that stage ... [you] did it every day and it just didn't phase you any more ... I would've preferred not to ... [but] you just got into the pattern of weighing in every day and it was just like a normal thing.

(Retired 2)

... you don't want to write down that you're weight's gone up because if you have a bad training session they [the coaches] blame it on that ... when there's a million other factors.

(Retired 1)

... sometimes it used to be pretty stressful, like Monday mornings. ... I used to weigh myself before I went to training [at home] ... if I hadn't weighed for a while ... so I'd sort of know that if I was going to be up, how much I was going to be up. ... other times I knew ... what I was going to be so I didn't really worry.

(Retired 1)

... I used to weigh myself [about] six times a day ... because I was scared about ... what I was going to have to write down on the paper.

(Retired 1)

While they acknowledged that they had to weigh in as part of their training, they felt that twice a day was too much and that once a day would have been sufficient.

... I know you have to be skinny ... and have a low weight to do [gymnastics] but I don't know if it's being done the right way ... weighing in every day, twice.

(Retired 2)

I like [weighing once a day] better only because I could drink more during the day ... [and what] you drank would be off by the next morning.

(Retired 1)

The retired gymnasts also felt that weighing in less than once a day would not be sufficient and would make it more difficult to control. Retired 2 explained that her generation of gymnasts had been "brought up weighing every day, twice a day" and that they always knew what their weight was and run their lives around their weight.

... but then you weigh them [gymnasts] in three times a [week] and I know the mind of a gymnast, they'll eat heaps one day and then starve the next when they're getting weighed ... so you can't do that [because it would] go in cycles. ... I just know that that's how I'd do it and that's how everyone else would do it too ...

(Retired 1)

None of the retired gymnasts were bothered by having other gymnasts with them while they were weighing in and two reported that they felt less stress when the

other gymnasts were there. The gymnasts also indicated that they knew that all gymnasts had the same problems.

... it didn't bother me at all. If other people saw that I was up really high we'd have a bit of a laugh ... in a way it was good because you saw that other people do exactly the same thing that happens to you ... I think if you couldn't see anyone else ... [because] you have huge fluctuations sometimes ... if you just saw everyone else write down [low weights] and you were going [up] you'd get quite stressed ...

(Retired 1)

All three of the retired gymnasts agreed that while they did not mind the other gymnasts with them, weighing in was more stressful when the coaches were watching.

... made it really stressful [with coaches watching] ... and I remember every time the coaches were there when we weighed in no-one ever said anything, it was really quiet ... it was more stressful but it was fine.

(Retired 1)

... it's a dreadful feeling [with coach watching] just waiting for your weight to flash up on the scales. ... It was okay once [your weight] had flashed up and you'd seen it first and then they could come and look then, but I used to hate it when they could see it at the exact same time as you ...

(Retired 2)

Two of the retired gymnasts felt that recording weight was important for the coaches and gymnast's to follow daily patterns and to keep it in control. One of the retired gymnasts did not believe that it was important to keep a record of the weights.

Junior gymnasts' feelings about weight.

Only one of the junior gymnasts reported that she did not like weighing in. The remaining gymnasts did not mind and three explained that they liked to know what their weight was. Some of the gymnasts stated that they were nervous of their weight going up, especially after the weekend. Only one gymnast had not given it much thought.

I don't care ... [because] I don't have a problem
(Junior 2)

... you get a bit nervous, especially after the weekend or something but usually if you know you've been good and everything it's not too bad ... it's good to know what you are.
(Junior 3)

I don't like weighing in ... unless my weight's low. ... I like knowing what my weight is but not - I don't like it going up. ... if [your weight is] high you don't want to write it down because [coach will] check it and then give you a lecture and I don't like lectures.
(Junior 5)

Three of the junior gymnasts explained that as a group, they had tried weighing in only once or twice a week for a short period of time. Two of the gymnasts stated that they found their weight harder to control when only weighing once or twice a week and they preferred to weigh in every day. Although one gymnast acknowledged the problem of her weight going up and down, she preferred weighing every second or third day because she was more relaxed and could eat more. This supports the problem raised by one of the retired gymnasts where the gymnasts would eat more on one day and then eat less or starve themselves on the day they were to be weighed.

I like it now [weighing every day] because we had a time when we were seeing if it would work ... just [weighing in] once or twice a week and because I'm worried about it now, it actually went worse and [it was] harder to control it.
(Junior 1)

I think it's pretty good to weigh in every day [because] once we did it once a week and [I] found it really hard to control what [I was] eating ...
(Junior 3)

... I don't like weighing in every day. I think maybe every second or third day would be better which is what we were doing once before and then you don't have to worry about it so much ... and you can eat something at least.

One problem with it was ... you'd think "I could eat more on this day because I don't have to weigh in" and then the next day you'd have to weigh in and you'd go up ... and I wouldn't eat as much and then it would go down the next time ... just went up and down, up and down all the time ... [but] I could relax a lot more when I was doing that which made life a bit easier.

(Junior 5)

As with the retired gymnasts, the junior gymnasts did not mind the other gymnasts being with them but the majority of them did not like the coaches watching them weigh in and felt more nervous.

... it's ok when the coaches aren't watching because when they watch you get really nervous ... if it's high they'll make a remark and then sort of rub it in a bit more as training goes along but if they just see it written down there they don't normally say much about it, just sort of tell you once ... [with] just the girls around then you feel a lot better ... because everybody's weighing in, everyone has to write down the weight and so, I don't know, it's just normal because you're around them all the time, it doesn't really matter.

(Junior 5)

The junior gymnasts believed that the primary reasons for recording their weights were to monitor changes during the week or over the weekend and to see the progress over time.

... so [the coaches have] a record when you go up and whether that's because [of] your height or it's some dramatic jump for some other reason that's related to your skinfold I really think as well.

(Junior 1)

... just so you can see your progress through a couple of weeks or months and you can see if you're going well or if you need to come down or something.

(Junior 3)

Sub-junior gymnasts' feelings about weight.

While the sub-junior gymnasts reported that they did not mind being weighed, they all hoped that their weight was low and had not gone up. One gymnast was worried when her weight went up. Another gymnast stated that weighing in three times a week was good

I don't really mind [being weighed]. Some people really mind but I don't [because] usually I don't have any troubles with my weight.

(Sub-junior 6)

Sometimes I feel a bit worried when I go up [in weight] and I feel normal when I stay the same or go down a bit.

(Sub-junior 7)

I think it's kind of good [weighing three times a week] so you can keep up to date how heavy you are, and if you should get your weight up just a little bit more if you think you're a bit too light, or get your weight down if you think you're too heavy.

(Sub-junior 5)

None of the sub-junior gymnasts were bothered by other gymnasts being with them while they were weighing in and the majority did not mind the coaches being there. Three of the gymnasts stated that they sometimes felt more nervous with the coaches there if they thought their weight was going to go up.

I don't really care [because] I know them all. Because none of the boys stand around.

(Sub-junior 3)

I don't mind [other gymnasts there]. Sometimes they just say "... I'm 5 kg more than that" ... that makes you feel good ... You don't really mind [coaches being there] because you know that you don't have any troubles most of the time ...

(Sub-junior 6)

I don't mind [others being there] ... we have to write [weights] down and they [coaches] see it anyway, so it doesn't matter.

(Sub-junior 4)

Most of the sub-junior gymnasts did not know the reasons for recording weights, however, three gymnasts thought that they were for the coaches to see if their weight was going up, down or remaining steady over time. One gymnast suggested that difficulties in training could be reflected by the gymnast's weight and growth.

... if you're having difficulties in training ... they [coaches] know by the weight, if it's because you're putting on any weight ... or if you're growing ...

(Sub-junior 6)

Cheating on Weight

All the retired gymnasts and three of the junior gymnasts explained that cheating on weight had occurred in their training groups. When cheating on their weight gymnasts would record their weight as lower than it actually was and then try to get it down to that level. It was agreed that the gymnasts sometimes cheated on their weight because they knew it was not allowed to go up and to save being reprimanded for their weight being too high.

[Cheated] because you knew that you weren't allowed to go up too much ... if your weight went up [coach] would be angry with you ... [sometimes] you knew your weight was going to be up because you ate too much, but sometimes you'd hop on the scales and you just wouldn't expect it [weight] to be that [high] and that's when you kind of think "oh, what should I do?" ... you were too scared to put anything else down ...

(Retired 2)

... I know some people were cheating about 3 kg, but if I ever cheated it would only be about point three or something at the maximum ...

(Retired 2)

I used to cheat quite often. Not a lot ... just the occasional point three [of a kilogram] ... if I write that I went up a kilogram and nothing would happen to me I wouldn't bother cheating, but because there's such consequences - [you cheat] to save the hassle of being yelled at. Because that's all it is. You're down the next day anyway, it's the same thing if you're yelled at or not, so you might as well cheat and save the anxiety.

(Retired 1)

One gymnast suggested that cheating on weight was "universal" and claimed that gymnasts in other programmes also cheated.

... it's universal, [yes], it would be universal ... it's a survival thing almost ... I think you'd find that everyone cheats. If they don't, they're lying.

(Retired 1)

Emphasis on Weight and Skinfold

The retired gymnasts explained that the emphasis on weight and skinfold increased throughout their gymnastics careers which also appeared to coincide with the changing structure of elite gymnastics in Australia over the last decade (refer Appendix A).

... the [generation] above us ... I'm sure they thought differently than how we do. They wouldn't be so obsessed about it. ... And you can see it even in that [the] body shapes [were] different, just more pressure to be that way.

(Retired 1)

... I think the group now [current juniors] probably is a bit the same as we were ... I think they were showing us that they thought the same way ... just that they were stressed about what they ate and how much they ate.

(Retired 1)

Two of the retired gymnasts felt that initially weight and skinfold was not an issue but increased over time, particularly after weight was lost the first time. One of the gymnasts explained that her attitudes also changed with her gymnastics goals.

{I} didn't know anything about skinfolds when we first had it done and {I would} just {say} "yep, I got one". [The] coaches never really told us what the scores were and never really mentioned anything about it so I didn't really worry ... later on it was like "gee, I went up 0.2 mm" ...

(Retired 1)

At one stage it [skinfold] wasn't a big deal and then you had to be under 45 [mm] and then it got down to 40 [mm] ... each year it [weight and skinfold] got lower and lower and lower ...

(Retired 2)

... maybe just when you grow up you become a little bit more aware of what your body's doing, understand it more. Your life becomes a lot less carefree and your reasons for doing the sport change. ... the reason why I lost weight is because I realised that ... if I didn't get my act together I was going to miss out on big stuff ... {I started} really worrying about it probably when I lost the weight the first time ... soon as I started to lose it and it became an issue ... I never got it out of my head.

(Retired 1)

Two of the three retired gymnasts and three of the junior gymnasts felt that maintenance of their physical appearance was one of the major issues in their training programme and that their lives were basically run around their weight and skinfold. They felt that this was due to the frequency of taking their weight and skinfold, the low levels that were required and the consequences of not maintaining those levels including being reprimanded by the coach as well as the influences on their training. Junior 4 felt that while it was not a major issue, it was a "pretty big" issue in the training programme. Although not identified as a major issue, Junior 1 stated that "if you didn't have them {weighing and skinfold tests} you wouldn't worry about them".

[Weight and skinfold are] one of the major issues. It is from the gymnast's point of view anyway ... just because it runs your life, basically. ... It's just on your mind the whole time. It's a constant conflict, I think, because it's something that you want to do but ... you have to be careful what you do [and] when you do it.

(Retired 1)

... most of the time it was [a major issue] ... but then you've got so many more problems during that day ... that major issue's gone ... but it always is there ... you could tell your coach wasn't happy with you ...

(Retired 2)

... [coach] gets a bit angry if it's high and it just affects your performance a bit.

(Junior 3)

Two of the retired gymnasts expressed their concern on the affects of the strict control of the younger sub-junior gymnasts. One of the gymnasts, however, believed that this practice could also be beneficial to the gymnasts. Concern was also expressed over the extent of the parents' involvement in controlling the gymnasts' weight with Retired 1 stating "parents can know too much, and too often they do and it spoils kids".

... sometimes I think that the little kids are going to get too carried away [with weight and skinfold] ...

(Retired 2)

... they've [coaches] got them [junior and sub-junior gymnasts] under control I think ... in the way [that] they're all pretty low now, but it's whether [they] can be kept that way in a controlled manner ... or whether they're just going to get sick of it by the time they're older ... [because] when you get older it's going to get harder and then [if] they're already sick of looking after their weight at such a young age. But then again, it could be good that they're under control now so when they're older it's not such a big deal. I don't know.

(Retired 2)

... she's [sub-junior gymnast] so aware at eight [years of age] that she's only allowed to eat this amount of food, these types of food. I don't think she should be. I don't think it should be that way at all. ... here's an eight year old who's more worried than I was [at 14 years]. I don't know if it's the eight year old or the parent [but] the eight year old was very aware of what was going on.

(Retired 1)

The retired gymnasts also reported that although weight and skinfold was a major issue, they felt that the attitudes of the coaches in this programme were less aggressive than coaches in some other programmes in Australia.

[Coaches in this programme] didn't emphasise it [weight] too much ... but it was said [about] once a week. ... some of the [other] programmes, every single day they're told about their weight ...

(Retired 3)

Three of the junior gymnasts felt that even if they did not do elite gymnastics and were not required to maintain such strict weight and skinfold requirements, they would still be concerned about them because they did not want to get fat when they finished gymnastics. They also believed that their concern may not be to the same extent.

... I don't really want to be fat when I'm older, I want to be slim ... I don't want to look fat and I don't want to over-eat [because] I want to live a healthy lifestyle and live long ... you can't be fit when you're fat.

(Junior 2)

Effect of weight and skinfold on training.

Four of the gymnasts stated that they would sometimes think about an increase in weight or skinfold during training which would consequently affect their training making it harder for them to train and more difficult to concentrate. Similarly, if their weight was lower they may feel that their training was easier. Other gymnasts stated that they did not think about their weight and skinfold while they were actually training.

... I think it's got to be evened out ... not too much emphasis on your weight because then your training's going bad, but if you don't have to right weight your training's not going to be good ... you wouldn't be able to do gym if you were big ... so it's got to stop somewhere ...

(Retired 2)

... sometimes if you think about it through training ... it's just hard to concentrate on what you're trying to do ... just [worry] about not being able to get it down ...

(Junior 3)

... if you're being yelled at and told it's [weight or skinfold] too high then it does [affect training], like feeling really depressed and that and you don't train as [well], but if it's just left at whatever you tend to forget about it during training and sort of train ok, it doesn't seem to bother you during training.

(Junior 5)

... it use to put me in a bad mood sometimes ... you'd weigh and you'd be heavy and you'd be really [annoyed] because you didn't eat ... any more than usual ...and you think ... "bar routines are going to be hard today because I weigh more" even though it probably wouldn't happen ... and you already start off on the wrong foot ... and if I kept [messing up] vaults or something I used to say "oh well, it's because I'm heavy today". when I should have been thinking [technique] ...

(Retired 1)

While the gymnasts stated that the emphasis on their weight sometimes affected their training, they also stated that if their weight and skinfold was not an issue it may be detrimental to their gymnastics and their ability to perform.

... we probably wouldn't be as good {if did not have to worry about weight and skinfold} because we'd probably be heavier and probably would feel worse and it'd be harder to do things.

(Junior 4)

... if I didn't have to worry about it then I'd probably just keep eating and just wouldn't be able to train any more.

(Junior 3)

Gymnasts' Understanding of Weight and Skinfold

While most of the retired and junior gymnasts had a greater understanding of weight and skinfold and their importance than the sub-junior gymnasts, almost all the gymnasts participating in the study had some degree of understanding.

The majority of the sub-junior gymnasts appeared to have a basic understanding of weight and skinfold in that they were both related to the type and amount of food they ate. They understood that eating too much food and eating junk food would increase their weight and skinfold. Three of the gymnasts also suggested that weight

and skinfold was related to exercise. Sub-junior 7 stated that she understood that skinfolds showed how fat or skinny a person was. Sub-junior 6 reported that the gymnasts had previously had nutrition talks, however, this was not supported by any of the other gymnasts. Only one sub-junior gymnast acknowledged the effect of growth on weight.

Just eat the same diet all the time and work as hard as you are and it just stays the same ... basically just the good foods. A lot of energy foods but not too many lollies ... you can eat some [lollies] but not as much as most people.

You just eat as much as you have to but just don't overdo it.

(Sub-junior 6)

Just try not [to] eat too [many] fatty foods and ... [not] lots of foods that have sugar in. ... if you buy a packet of something, look at the fat [content] on the side [of the packet] and see how much it is in sugar ... if it's a bit too much you might put it back on the shelf or get something for a treat ...

(Sub-junior 5)

... sometimes you just have a growth spurt and you put on a bit of weight but that doesn't really matter [because] you know it's growing, not widening.

(Sub-junior 6)

While the retired and junior gymnasts had a greater understanding of weight and skinfold than the sub-junior gymnasts, this understanding varied among individuals. All the gymnasts understood that healthy eating and the amount of food eaten were related to lower skinfold and weight and six of the retired and junior gymnasts also knew that the skinfold was actually measuring levels of fat. Retired 2 and Junior 1 also acknowledged that there were differences in skinfold between individuals. Two of the junior gymnasts appeared to have a better understanding of the effect of growth on the weight and skinfold than the other gymnasts.

... that they play a pretty important part in [gymnastics] because if you're too heavy then all your skills are going to be hard ... if your weight goes up so does your skinfold and vice-versa ...

(Junior 5)

I understand it's got to be in the limit and that it's hard to control it unless you eat the right stuff and that's about all.

(Junior 2)

... each [person] is different, some people [have a] good metabolism and eat heaps of junk and it stays down, other people ... just naturally have got a more fatty body and eat healthy food.

(Junior 1)

... skinfolds, sometimes when you get older you get more fat on you so you have to try and control it more when you get older.

(Junior 3)

Retired 2 suggested that the skinfold test was fairly accurate, however, there were differences in results with different testers. She also explained that in another Australian elite programme the gymnasts skinfolds would always be higher over seven sites than in their own programme which tested eight sites and this was supported by several of the coaches. One junior gymnast also stated that there could be errors in skinfold measurements.

... I eat the same thing every day so if it [skinfold] goes up it can be a mistake, if it goes down it can be a mistake.

(Junior 2)

One of the junior gymnasts acknowledged that weight was individual and three explained that it increased with increases in growth. Only one retired gymnast acknowledged that there were many variables that affected weight each day, however, all acknowledged the effect of fluid intake on weight.

... different for each person. Weight is sort of what your body type is like ... can't really compare ... my height and weight [with] someone else's because we've got different body types.

(Junior 1)

... drink a litre of water and there's a kilo[gram].

(Retired 1)

I just took them [weight and skinfold] as a way that the coaches had of making sure that you were maintaining what you were supposed to. ... the purpose of my weigh in was to make sure that the thing I had to write down on the piece of paper wasn't above the level I was supposed to be at. ... I didn't correlate that the number that's on the scales is how fat you are because I knew that there are so many other things like how much water I drank, how often I'd been to the toilet that day, how hot the day was, is going to make my weight change ... and your fatness doesn't change that much ... I didn't weigh in because I wanted to make sure I didn't have that much fat on me because I knew I didn't have that much fat and that I hadn't put on fat overnight. [I would] just weigh in to see how heavy I was.

(Retired 1)

Most of the retired and junior gymnasts reported that they had previously had dietitians advise them on how to eat healthily and sensibly and the correct ways to control their weight and skinfold.

It was evident that many of the retired and junior gymnasts in particular had an understanding of their own bodies and could feel the effects of their food intake as well as their levels of weight and skinfold.

Sometimes I get a little bit hungry but then I have a little bit more [to eat]

(Junior 1)

... when we're heavy we feel it ... you're always lethargic ... you're carrying around that extra weight which makes you more tired and it's just bad for you. Suppose you get more stressed.

(Junior 2)

Maintaining the required weight and skinfold levels.

While three of the sub-junior gymnasts stated that they had to be careful of their weight others stated that they did not really have to be careful of their weight. None of the sub-junior gymnasts claimed that maintaining their weight or skinfold was difficult. To achieve their perfect physical appearance three of the sub-junior gymnasts explained that they had to watch what they ate and their weight.

Responses from the junior and retired gymnasts indicated that there were considerable individual differences in the difficulty of maintaining the required weight

and skinfold levels and this difficulty increased with adolescence. While all the gymnasts stated that they were very careful with what they ate, some gymnasts found it easier to control and maintain their weight and skinfold than others.

[Because] you're doing so much training ... it's quite easy to have your muscles stick out everywhere and have no fat ... doing that much training I think you can eat quite well and be that skinny, often you can. Not everyone but most people. ... I used to eat quite normally, a bit of meat, a bit of bread, a bit of jam, a bit of milo, a bit of ice-cream occasionally ... [the way] I saw it was the parents were quite normal and used to feed you how they feed their other kids and it was up to the gymnast to say ... "I don't want it" ... or "I do want it".

(Retired 1)

I eat quite a bit, but I don't eat junk.

(Junior 2)

... it's really hard when you're at school seeing everyone [eating] and you know you're not allowed to eat it ... some of the gymnasts have a really high metabolism rate so [it's] really easy for them, but I've got a pretty slow one [metabolic rate] so it's a lot harder for me.

(Junior 3)

... it was pretty difficult for me [to maintain weight and skinfold], it wasn't easy for me ... I could never get down as low as everybody else ... no matter how long I'd been dieting ... It wasn't that I couldn't keep dieting, it's that my body just didn't want to go ... it just wouldn't let me. ... I think it was basically impossible [to have a very, very low in skinfold]. And I don't think my body ran best when I was lower.

(Retired 2)

... you feel good after you've lost [the weight] ... it's just a matter of losing that first bit of weight ... and then normally you can keep going, but it's that first part which is hard ...

(Retired 2)

... after i lost it [weight and skinfold], that was a help. Just trying to lose it was hard. Once I got it down it was not that hard to maintain. But come to think of it [I] didn't eat very much at all really, so it was quite hard ... So I can't say it was easy to maintain, [because] it wasn't. ... [for example] I could eat heaps ... on Saturday ... but I wouldn't eat Sunday. So when I say I could eat junk food and maintain my weight, but at a price ... So it was quite hard.

(Retired 1)

... it was easier to control in primary school than high school. I'm not sure why.

(Junior 3)

... at the moment because [I'm] growing [my weight and skinfold] are sort of going up and down ... [so] it's really hard for me to keep my weight and skinfold down as I grow ... at the moment it's hard for me to keep it at a steady rate but [I] guess it's different for everybody.

(Junior 5)

All the retired and junior gymnasts explained that they thought all gymnasts had the same problems with controlling their weight and skinfold levels, but to varying degrees. Retired 3 also suggested that it was also a concern to all individuals, not just gymnasts stating "Who can maintain their weight without a thought?". Three of the junior gymnasts who believed all gymnasts had problems to some degree also acknowledged the effect of growth and physical maturity on weight and skinfold and that many of the gymnasts with problems were older gymnasts. They also noted that some of the senior gymnasts had problems with their weight and skinfold when they were training. One junior gymnast also acknowledged the differences in individual body composition.

... a few did [have problems] ... you got the odd ones and I don't know whether it was what they ate or how their body is ... [but] they had problems and they all had to get [their weight and skinfold] down ... everybody has the same problem I think ... it's [just] easier for others.

(Retired 2)

... there's a couple of people [who] do [have trouble] but some people don't ... the older girls have matured a bit [makes it a bit harder].

(Junior 3)

I think everybody would [have problems] at some time in their life ... I think everybody does at some stage because as you grow it [weight and skinfold] goes up and you can't stop that ...

(Junior 5)

... some [gymnasts] do [have problems] ... some of them naturally have a little bit more [skinfold] and it's just really hard for them ...

(Junior 1)

The sub-junior gymnasts stated that all gymnasts had to be careful of their weight and skinfold and what they eat, however, most of the gymnasts did not know of any gymnasts who had problems.

No [other gymnasts do not have trouble] ... because nobody's ever had a high skinfold ... nobody out of all the gymnasts I know ... most of them are junior and on our group they're sub-junior.

(Sub-junior 1)

While these results support the literature in suggesting that there is a heightened awareness and concern in body image at adolescence (Davies & Furnham, 1986a; Koff et al., 1990; Richards et al., 1990), they did not support the literature suggesting that adolescent girls had a lower perceived body image than younger girls (Brenner & Hinsdale, 1978; Davies & Furnham, 1986a, 1986b; Marsh, 1985; Richards et al., 1990, Williams, 1984). The adolescent gymnasts did, however, show greater concern of their body weight and skinfold than the younger gymnasts.

These results also supported Harris and Greco (1990) in maintaining that female adolescent gymnasts found it increasingly difficult to maintain the ideal gymnasts' body image.

Effect of injuries on weight and skinfold levels.

Six retired and junior gymnasts explained that sometimes injuries made it more difficult to maintain their weight and skinfold. The gymnasts who found it difficult to maintain their weight and skinfold levels stated that they found it more difficult to maintain these levels when they were injured as they were not in full training. They also explained that lower limb injuries such as ankle injuries made it more difficult than upper limb injuries such as wrist injuries. The retired gymnasts reported that in most

instances they did not find it more difficult to maintain their weight and skinfold levels as they would usually train through their injuries.

... when you've got an ankle injury it's probably a bit harder because you can't run ... when you've got a wrist [injury] you can still use you legs but just not your arms ...

(Junior 3)

[when injured] you're not doing full training [so] your weight goes up because you're not burning off as much [energy] ... so it's a lot harder when you get injuries ...

(Junior 5)

... you always put on a tiny bit of weight ... the last few years of my gym career it was always full on ... you always trained through it [an injury] ... so I was never fully off training so I never really put on heaps of weight through not training ...

(Retired 2)

Eating disorders.

While all the retired gymnasts knew of cases of eating disorders in gymnasts it was explained that eating disorders occur in everyday life and not just in gymnastics. Two did, however, suggest that the weight and skinfold requirements of gymnastics may result in a higher incidence of eating disorders, thus, supporting the literature (Drinkwater, 1993; Harris & Greco, 1990; Johns, 1993; Wichmann & Martin, 1993). The retired gymnasts also acknowledged that this was a very difficult issue with which to deal.

I don't know that [eating disorders are] that avoidable to tell you the truth because it happens in everyday life too, not just gymnastics. So a certain percentage of the population is going to be affected anyway and then because of the added stresses [on gymnasts] it's going to increase that number and logically thinking there's going to be cases.

(Retired 1)

... there's such a fine line between having to maintain that weight and knowing the right way to do it. Fine line as in that it's so easy to cross a line which is ethical and unethical

(Retired 1)

One of the retired gymnasts stated that she had not actually seen a gymnast with anorexia, but had heard of an incident in another programme. Another retired gymnast knew of gymnasts in this programme who had starved themselves in previous years, however, she did not term these gymnasts as being anorexic. No other gymnasts knew of gymnasts who had starved themselves and one junior gymnast reported that there were no cases of anorexia in this programme. Another junior gymnast had heard of eating disorders but did not know of any cases. Only one retired gymnast stated that at times she felt that she was starving herself, but not to the point of anorexia. This was not supported by any other gymnasts who felt that they were eating sufficient amounts of food. Two of the retired gymnasts reported that they were also very careful with their fluid intake and one junior gymnast explained that some other gymnasts did not drink much.

... heard of them but I don't know any ... like eating a lot and making yourself throw up or just not eating. Some people don't drink because they think that fluid's more heavy or something like that, I don't know.

(Junior 1)

... I think we all know not to starve ourselves but sometimes ... if you're eating something that's fatty [you] tend to cut that out of your diet and don't put something back into it. Instead of swapping it with some other kind of food you just sort of cut it out and leave it out. ... gets less and less every time you do it.

(Junior 5)

The retired gymnasts were more familiar with cases of bulimia and bulimic behaviour in gymnasts than with anorexia and all could give examples of cases in other programmes. Retired 3 reported instances of a few girls engaging in behaviours including "throwing up", "starving themselves and bingeing", "silly diets" and "sleeping in sweats" in previous years, the other gymnasts did not know of any cases with the most recent generation of gymnasts in this programme.

... don't really know in [this programme] ... you have your idea who could and who [could not] ... I think [gymnasts from other programmes] did ... I don't really know why they end up doing it [because] they had fairly good bodies before ...

(Retired 2)

... not that I know of [bulimia in this programme]. Not in [this programme]. Everyone was pretty good, that I know of. ... [seen] bulimia [in other programmes] ... it's quite obvious. But the concept of it is what gets people I think ... suddenly being able to eat whatever you want with no short term consequences is for some people, I suppose, the way to go. ... People see how much you eat and then they see how much you weigh and if it doesn't correlate, I mean it's obvious. ... well documented cases [are] out in the open these days.

(Retired 1)

Retired 2 described an incident of a gymnast in another programme involving bulimic behaviour.

... her diet had changed so much ... [certain incident she] ate heaps and heaps and heaps and her weight went down ... you knew something was wrong because she just ate so much it was unbelievable ... you could tell she was [throwing up] in the toilets in the gym ...

(Retired 2)

While none of the retired and junior gymnasts knew of any instances of eating disorders in this programme in recent years, they did not discount that it would not happen in the future.

Both the retired and junior gymnasts reported that they discussed their weight and skinfold and food extensively amongst themselves with some describing it as obsessive. Two of the sub-junior gymnasts also reported that they talked about their skinfold and physical appearance with their team mates, however, the others did not support this. One junior gymnast and one retired gymnast reported that they talked about eating disorders amongst their group.

... from seeing [bulimia] to know how you feel and knowing how much everyone else talks about it as well and thinking about doing things like bulimia. You think like that sometimes. And other people talk about that sort of thing to you ... you talk weight, you talk food, often while you're training ... and I'm sure we don't help each other either by talking about it ... you need to talk about it a bit, but not while you're training ... we used to talk about it too much and [it was] just on an abnormal level.

(Retired 1)

... in our group we talk about it [eating disorders] ... but we never, never do anything like that.

(Junior 1)

We're all pretty obsessed with food, just talking about it ... everyone gets pretty worried about weight and skinfold.

(Junior 3)

... it seems to be that whenever we're talking the conversation always ends up in food ... we're totally food obsessed ... we can't eat it so we just talk about it ... instead of eating it we dream about it because that's the only way you can eat it without putting fat on.

(Junior 2)

Summary

This section focused on responses from all the gymnasts and addressed each of the research questions.

The gymnasts in all groups generally felt good about themselves and while some dissatisfactions emerged, all gymnasts generally presented positive body images. When comparing themselves to their ideal gymnast, most of the gymnasts believed that their body image was relatively close to their ideal.

The gymnasts' perceptions of the ideal physical appearance for elite gymnasts were based on those qualities that were perceived to be most conducive to elite gymnastics body aesthetically and mechanically. The general physical appearance emerging as the ideal was a small, very lean girl with muscle definition, but not muscle bulk. Many of the gymnasts also acknowledging that gymnasts could be too thin.

The four main reasons given for this ideal physical appearance included ease of training and performance of the required skills, injury prevention, aesthetics, and team selections.

Skinfold tests were described as being stressful to most of the gymnasts, particularly the junior and retired gymnasts, with more stress being experienced if the gymnasts felt that their skinfold measurements were going to be higher than previously. The gymnasts also felt more stressed when the coaches were watching them have their skinfold test. Although they were nervous about having skinfold tests, most of the gymnasts did not mind having the tests. Similar feelings also emerged when the gymnasts weighed themselves. The gymnasts generally agreed that being weighed and having skinfold tests more frequently made it easier for them to control their weight and skinfold. Most of the retired and junior gymnasts felt that maintaining weight and skinfold was a major issue in their training programme because of the frequency in which they were measured.

The gymnasts explained that they feared their weight and skinfolds increasing because they would be reprimanded by the coaches. The retired and junior gymnasts explained that many gymnasts cheated on their weight to save being reprimanded.

It was clear from the gymnasts that body weight and skinfolds were more difficult to control during adolescence and at the senior levels. The gymnasts also stated that some gymnasts found it easier to control their weight and skinfold than other gymnasts.

The retired gymnasts were more knowledgeable on eating disorders than the younger gymnasts. While they and two junior gymnasts acknowledged that eating disorders occurred in the general population, they expressed concern that the strict weight and skinfold requirements would influence some gymnasts to practice such behaviours. No incidences of eating disorders emerged from the programme participating in the study.

Although the sub-junior gymnasts generally did not have a clear opinion of their body image, all gymnasts were conscious of their body image, with this consciousness heightening at adolescence when the gymnasts are at the junior level and continuing through to the senior level.

The Coaches

Physical Appearance of Australian Gymnasts Compared to other Elite Gymnasts

The coaches agreed that the current Australian gymnasts have a very good physical appearance for elite gymnastics and while there are racial differences, they are very similar to elite gymnasts from other top gymnastics nations.

Pretty much the same, I would think. Obviously you've got racial differences in there ... I think we [Australia] do tend to insist on a leaner body type ...

(Coach 3)

... our average gymnast ... doesn't have a small physique like the Romanians or perhaps some of the Asian countries ...

(Coach 2)

One coach compared Australian gymnasts with the former Soviet and United States teams with regard to the variety of body types included in their National teams.

... if we look at and compare ... with [for example] the Russian teams and the American teams, they certainly don't have one type of physique, they have bulky, strong, dynamic gymnasts, all the way down to petite, fine gymnasts who all serve their purpose on the team and all have different qualities to offer ... if you look at the last Australian team [1992 Olympic team], they all varied in physique, tall and slim to ... short and strong.

(Coach 2)

Two coaches noted differences in the physical appearance of Australian gymnasts over the last two or three generations indicating the development of a physical appearance more appropriate to elite level gymnastics.

... two [or] three generations ago [Australian gymnasts' physical appearance was] suitable for just average result. This generation [and last generation] suitable for International level and higher than average [result] ...

(Coach 1)

... in the last three to four years I'd say they're [Australian gymnasts] equal to or better than many of the other International gymnasts. In the [1980's] and prior I'd say we were poorly prepared ... I think the Australians [and] the Chinese would be the best bodily prepared if you looked at the last World Championships [1991] and Olympic Games [1992]. I would think that they were equal as far as attractiveness and preparation and the correct bodies.

(Coach 4)

Comparison between generations of Australian elite gymnasts.

The coaches agreed and were supported by the retired gymnasts that the generations of high level gymnasts in Australia over the last 10 years, and particularly the last two generations, have differed greatly with regard to their physical appearance.

In the early and mid 1980s most of the high level gymnasts had problems with the appropriateness of their physical appearance for elite level gymnastics. As far as the gymnasts were concerned there was no such thing as skinfolds and although the gymnasts' weights were managed by the gymnasts themselves it was not an issue. Intense training prior to the mid 1980s began a lot later and gymnasts reached their peak later at about 17 or 18 years of age, therefore, the gymnasts had more mature looking bodies. Now elite gymnasts generally peak by the age of 15 or 16 years. By 1988 the Australian gymnasts were beginning to achieve the ideal body composition for elite competition.

... around 1984 Olympic Games the girls were struggling a lot, most of the girls had big problems with it [weight]. By the time we came through to 1988, the two girls [who] went to [the] Olympic Games looked much better in terms that they were probably the ideal body composition. ... in 1992 I think it swang the other way. The team was way too thin, I think to the detriment of their performance. It was taken to the nth degree, it was just too much.

(Coach 3)

The selection of gymnasts for elite gymnastics has also become more rigorous and girls closest to the ideal physical appearance are now selected for the sport.

... [before] it was more like you selected the sport, the sport didn't select you. Whereas now we select the kids before they even know the sport's there, type thing ... now we hand pick who we want.

(Coach 4)

... selections, this particular generation were more rigorous than the generations before them and the next generation will be even more rigorous so that you're getting closer to your ideal type of gymnast in a squad sense.

(Coach 3)

Physical Appearance of Own Gymnasts Compared to Ideal.

While the coaches reported that they generally did not have an ideal physical appearance for an elite gymnast, they felt that their gymnasts were close in terms of having ideal physical qualities. One coach stated that the current gymnasts looked good and did not seem to have any weight problems. Another coach was concerned about one or two gymnasts. A third coach believed that it is difficult to comment on gymnasts prior to adolescence.

I think they all look in good shape ... they look good. ... [they] don't seem to have any problems in terms of [their] weight but I think they're also a disciplined [group] and their preparation has been good, mentally, physically ...

(Coach 2)

Gymnasts' perceptions of coaches feelings of their physical appearance.

Only one retired gymnast felt that her coaches were not happy with her weight. The other retired gymnasts felt that the coaches were happy with their weight and skinfold when they were at their lowest. Retired 1 explained that she felt confused at times when her weight or skinfold was fine at one level, if they went down further they were fine, but if they went higher or back to the original level it was not fine.

... they [coaches] always wanted me to be lower in weight ... nobody ever really mentioned ... when I was at my peak that I looked good, really, so I don't know. ... when I was at my lowest they never really complained ... so I suppose ... they were happy ...

(Retired 2)

... at times I thought they were happy, other times they weren't. I know they weren't happy when ... I was around that 14, 15 [year age range] ... they'd make it quite obvious that they're not [happy] ... you'd be reminded at least every training session some way or another ... they do make it obvious when they're not happy, that's for sure ... [coach in this programme] is really good, she'd never not coach you because you were fat ... I remember getting this really confused [feeling], saying "hang on, I thought I was ok at [certain weight], now I'm skinnier and [weight] was not good" ... I thought they thought I was okay and all of a sudden they don't think I was okay any more ... I just thought that they thought skinny is the best and the skinnier you can go the better it is ... now looking back I probably don't think that's quite true. ... at the end [of gymnastics career] I think they thought it was ok.

(Retired 1)

Most of the junior and sub-junior gymnasts did not know what the coaches might have felt about their physical appearance. Three junior gymnasts commented on their coaches' feelings about their physical appearance. Junior 1 believed that the coaches did not mind her physical appearance while Junior 2 and Junior 5 believed that the coaches did not like it when their weight and skinfold rose higher than the level they were supposed to be maintained at.

Several retired and junior gymnasts acknowledged that their coaches did not necessarily want them to be at extremely low weights to the detriment of their health. Sub-junior 6 also explained that the coaches became concerned if the gymnasts were thinking too much about their weight and skinfold.

... I don't know what other coaches are like, but I'm just talking about [the coaches from this programme] ... I think even though the coaches want an ideal body and they expect you to be all the same ... I think deep down they realise ... that you can't be ... they accept ... what your body is then you're at your skinniest ... so they're happy with it ... they can't change it, so they're happy.

(Retired 2)

... some coaches want you too skinny and make [you] anorexic ... and some coaches want you nice and work hard and that's enough for them. My coaches are good. We were [travelling] once and ... we were all losing weight and were weren't supposed to be and they [coaches] said eat more ... they didn't say "can you get down a little bit, just a little bit" ...

(Junior 2)

... sometimes they understand [when you're growing], sometimes they don't.
(Junior 5)

... sometimes the coaches get worried if you're thinking too much about your weight and they don't tell you your skinfold ... they think if they're not telling you [your skinfold] you don't worry about it, but you do even more.
(Sub-junior 6)

Coaches Perceptions of their Gymnasts' Feelings of their Physical Appearance

Most of the gymnasts would not talk to the coaches about their physical appearance or weight and skinfold without first being approached by a coach with one or two exceptions. All the coaches felt that it was difficult to comment on how the gymnasts felt about their physical appearance and that it would vary in different situations. They also suggested that the gymnasts' physical appearance would not be an issue prior to adolescence.

It's a bit hard to gauge really and it's not always constant as to what the coach thinks about them. The coach might think that they look pretty good and have a good feeling about that gymnast but the gymnast doesn't necessarily follow with that same thing.
(Coach 3)

... I believe our training environment now has a pretty good balance of praise and criticism ... the criticism now is isolated from them as a person, it's more criticism of their gymnastics ... theoretically their self-esteem should be okay ...
(Coach 3)

... I don't think they're [junior gymnasts] too worried, I think they sort of think "well if I've made it this far I must be all right to even make it into [the central programme]". But I think they're hard on themselves and they get increasingly hard on themselves as they get older when they start thinking about it.
(Coach 4)

The coaches also agreed that the gymnasts' opinions of themselves would not be any different to any other person in the community or any other adolescent girl. The effect of adolescence on the perceptions of body image was also acknowledged by some of the junior and retired gymnasts.

... it's hard for me to say how a gymnast feels about herself but I don't know that it would necessarily be different to anybody in the community how they feel about themselves. Like you might get somebody that you think has got everything going for them and is not satisfied, or you might get somebody in the community that appears to you not to have a great deal going [for them] and they might be the happiest person in the world. ... I think by doing gymnastics it doesn't make you a different person ... you're just doing something different with your life, but I think the person's the same.

(Coach 3)

I think a lot of [the gymnasts] would go through the normal teenager, self-reflection thing ... being self-conscious because they're developing and things like that. I think that's a normal process that they will go through ... I expect that those who are going into puberty, it may be an issue for them in terms of development, they're growing and it probably at the same time is affecting their gym a little bit ... some kids go through [puberty] quite easily and it's not even an issue for them, others go through it quite traumatically. So I don't think it's any different than a normal person, but at the same time there may be the added difficulty of being in a sport where you are relying so much on your physical being.

(Coach 2)

The coaches claimed that the gymnasts, particularly the retired and junior gymnasts think about and talk amongst themselves about their weight, skinfold and eating a lot and this was supported by the gymnasts. One coach believed that not weighing the gymnasts would not solve the problem of the gymnasts thinking about their weight, but may in fact increase the gymnasts' concern and worry. This situation also occurred when the gymnasts did not weigh in for a period of time.

I'd think they talk about it a fair bit. If not their skinfolds, certainly about eating ... it's an issue, unfortunately.

(Coach 3)

... if you try and hide and say "I won't weigh them because that might make them think about it too much", I'm sure they think about it a lot anyway, but it might make them paranoic, I think it's going to be worse the other way.

(Coach 3)

Maintaining weight and skinfold requirements.

Three of the four coaches supported the retired and three of the junior gymnasts in suggesting that it was very difficult to maintain the required weight and skinfold levels, especially during adolescence and at the senior levels. Only one coach did not agree that it was difficult providing the gymnasts were eating a healthy diet and exercising. While this may be true of the younger gymnasts and was supported by the sub-junior and some junior gymnasts, it was not supported by any of the other coaches or the retired and remaining junior gymnasts. Coach 1 explained that maintaining the required weight and skinfold levels was very difficult for all gymnasts, even though some would say it was easy for them.

... a little girl it's easy to keep [skinfold] under 40 [mm], but a teenager it's not.
(Coach 3)

In suggesting that controlling and maintaining weight and skinfold was very difficult for the gymnasts, the coaches also explained that it was very individual and involved many different variables. This is consistent with the retired and junior gymnasts who stated that while it was difficult, it was more difficult for some gymnasts than others.

It's individual. I would think that [controlling weight and skinfold is] one of the most difficult things. It's as difficult as other parts of their training ... it's more difficult for some gymnasts than others ... I think that [maintaining] is one of the things which is difficult and I think bringing your weight down is extremely difficult. Because you're not looking at individuals who are fat individuals, it's just a relative thing ... for your particular sport. They'd be pretty lean compared to some of the other [sports people] but maybe too heavy for gymnastics. So I think it's very difficult. ... I would like to be able to remove that aspect of the sport, but can't.
(Coach 3)

... one of the girls in the programme at the moment is very sensitive about her skinfold, knows she has a very hard time keeping it down ... that's just her body.
(Coach 4)

It's a very individual basis really ... some girls find it really difficult to control it, some girls know exactly what they have to take out of their diet to get a result, some girls don't. It depends on their individual metabolism ... if some girls have a really sweet tooth ... it's really difficult for them to stay away from those sorts of food. ... it depends on your family atmosphere. If your family eats lots of sweet foods the girls sometimes feel denied and left out ... but if your family doesn't eat that sort of thing ... then it's just eating normal food. ... the child's perception of what is normal to eat has a lot to do with it, so you can't really generalise to say whether it's hard, easy or otherwise. It depends on the individual ... how they perceive the problem, how big they perceive the problem to be and how they decide to deal with it ...

(Coach 4)

The coaches also supported the gymnasts in suggesting that maintaining weight or skinfold requirements is difficult for all gymnasts all over the world, not only in this programme and not only in Australia.

It is the same as in other countries, other states, it's exactly the same.

(Coach 1)

[The] Eastern [European] countries are all very lean by the time they get to competition, but they do struggle the same as we struggle ... to maintain it over time.

(Coach 3)

Coaches Opinions of Skinfold Requirements

With such stringent skinfold requirements set by the National gymnastics body, there is little choice but to comply with these demands. While none of the coaches objected to the skinfold requirement of 40 mm over seven skinfold sites as set by the National body, it was the way in which this requirement had been implemented.

... I agree with this 40 [mm] skinfold, but it's the way in which it's been implemented and embraced by the [Australian] Gymnastic Federation. A lot of people are in administration and they don't see the individual effects. I'm sure if their daughter was in that situation they might think differently. It's the way it's handled. They just see the result on the paper and think that the means justifies the ends which I don't agree with.

(Coach 3)

Although the coaches agreed that it was possible for most gymnasts to reach a skinfold level of 40 mm, they also acknowledged that all gymnasts had their own individual body composition which may not allow certain gymnasts to reach that level while still maintaining good health as well as an optimal level of performance. Three of the coaches suggested that there should be a range into which the gymnasts can fall which would allow for individual differences in age and body composition. Coach 3 explained that above a skinfold level of 45 mm there would not be a high enough level of performance to be competitive at the highest level and stated "I'm not so sure that their performance is that much compromised anyway if their skinfold's 41 [mm] or 42 [mm]. It maybe for that athlete it's correct". This coach also stated that not everybody fits into the required ranges in an "absolute sense".

I can't say I disagree with it. I think that it's appropriate to be 40 [mm] or below, I think it's possible too for most of the girls. But I think that in the cases where something's higher than that you can manage things in a different way.

(Coach 3)

... I don't think you can say ... everybody has to be at this percentage body [fat] because each individual is different in terms of their body composition and so I think there should be an expectation that there should be a range in which elite gymnasts can fall into ...

(Coach 2)

I think most coaches would have agreed with it [40 mm skinfold requirement] but then deep down though, they knew ... it was going to be really hard for some kids.

(Retired 2)

The attitudes of the coaches in this study support the concerns of Drinkwater (1993) who stated

Holding all athletes within a sport to a single standard for weight or percent body fat ignores individual variability in body size and shape and can have serious repercussions.

(Drinkwater, 1993)

The coaches felt that there were problems with the skinfold requirement, with all describing an incident where one gymnast was excluded from an Australian National squad for having a skinfold level of above the required 40 mm. This incident was also cited by Hughes (1992). Coach 3 stated "... I believe there needs to be some way of handling that better than cutting kids from squads. Don't ask me exactly what it is, but I do believe there's a better way".

... there's been problems in terms of taking that [skinfold requirement] to the nth degree a little bit too far.

(Coach 3)

One girl was actually excluded from the squad because she was 41.1 [mm] or [41.2 mm] ... there was a delay of about a week while they decided what to do with her ... by the time they removed her from the squad she was below what she should've been ... one of the girls left the country with a skinfold of 42 [mm] or 43 [mm] anyway, so making an example of someone didn't help.

(Coach 3)

I think that ... it was supposed to be a guideline for girls who were already in the team that they weren't supposed to increase their skinfold over that level or they could be replaced. [Skinfold] was never supposed to be the thing ruling any child out of even trying for selection ... They used the rule in the wrong way ... It never should have occurred.

(Coach 4)

Coach 3 also expressed that when the above team was travelling their food and drink intake was restricted and reported the gymnasts would have their own ways of getting food so as to last through the day and unfortunately they were not eating good food. This coach believed that as a result the gymnasts' performances suffered "because they were all too thin".

Consistent with one of the retired gymnasts, two of the coaches observed that skinfold procedures were not standard throughout Australia and produced different results. It was also acknowledged that the skinfold test was not always 100 percent correct. Coach 1 explained that different testers and skinfold calipers as well as programmes taking measurements from either seven or eight skinfold sites would produce three different skinfold results in three different programmes.

... skinfolds [are] not completely objective and they're not standard from tester to tester enough and as far as 2 mm being enough to rule [a gymnast] out [of a team], that's tester error as far as I'm concerned.

(Coach 4)

... sometimes you see inexplicable leaps in a skinfold that you just can't work out ... I've seen a couple of crazy things where skinfold's leapt and the weight has stayed the same and sports scientists can't always explain it, but it could be to do with fluid in the body for example ... or they might have caught a piece of muscle somewhere, I don't know.

(Coach 3)

Skinfold and Weight Requirements for this Programme

While the coaches encouraged their gymnasts to be under 40 mm for skinfold, two explained that they did not encourage the gymnasts to have a skinfold of below 30 mm. The coaches also indicated that the gymnasts skinfold levels were of more concern than their weight levels due to the effect of growth, however, changes in weight were monitored very closely.

... we certainly don't encourage them to go below 30 [mm in skinfold].

(Coach 4)

... I don't like [the gymnasts' skinfolds] to go under 30 [mm]. There's one little one in our gym who sometimes at competition is 29 [mm] or something, but she's a very small girl and proportionately that might be the same as somebody else being 35 [mm] ... so I don't worry too much. When she's in very good condition sometimes she gets there, but I wouldn't want a big girl to be that low ... [her] performance is okay and she's in good health.

(Coach 3)

... we encourage them to be in the 30s [for skinfold] over eight sites ... as they get closer to competition they're encouraged to drop a little so they lose a little bit of body weight and their work will feel lighter ... but we don't encourage them to diet at all, it usually happens naturally, they train harder, more floor routines [aerobic activity], that type of thing, they're more particular about what they eat because it's all getting more important ...

(Coach 4)

... as far as weight goes, doesn't bother me too much. They need to be able to handle their own weight and ... for their age be under the 30th percentile, just as far as ... not becoming a big person ... they're not growing so tall and getting so heavy that they can't do gymnastics any more.

(Coach 4)

Management of Weight and Skinfold

While the gymnasts in this programme have their weight and skinfold monitored on a regular basis, the youngest gymnasts of six to eight years have their height, weight and skinfolds measured more for developmental reasons rather than for monitoring weight and skinfold.

... it's not really an issue with my group [six to eight year olds] ... I just monitor it ... for my interest really. I can check height and weight gains [to] see if there have been growth spurts. I suppose I look at it from a developmental point of view more than anything. You certainly don't want the sport retarding their growth, so I look for natural growth rates ... for example, typical thing is if there's suddenly been a huge drop off in their strength, there could be a reason for that, maybe it's because they've just had a huge growth spurt ... you've got to accommodate for those sorts of things ... it's for my interest but also a bit of an education for the parents so they start to understand that ... this is a part of gymnastics and we do have to consider it. [For] the kids it's just a bit of an awakening for them, they start doing it so it's not totally foreign to them when they get it done ... in another group when they progress further.

(Coach 2)

... [gymnasts] as early as nine or 10 [years of age], they're weighing themselves ... it's not at all as far as you can't put on weight, it's to monitor changes in weight. So they can tell if they've had a big lunch what it does to their body if they feel heavy and what heavy looks like on the scales, that type of thing ...

(Coach 4)

As indicated by the junior gymnasts, they experimented with weighing in once, and three times a week. One coach was supported by the junior gymnasts in concluding that for this group of gymnasts weighing in once a day was the best method of managing the gymnasts weight. The gymnasts also supported the coach in expressing preference to know their skinfold results and found it easier to monitor and manage their weight and skinfold when they knew these variables.

... we experimented earlier this year with .. [weighing in] once a week and their [gymnasts'] skinfolds weren't told to them. We did that for two months and they protested violently, they really wanted to know ... And I think it was more a point of, they know they need to control things and if they don't have a bench-mark they didn't know whether they were controlling it or not controlling it ... they actually became more paranoid by not weighing in than they did by weighing in, or not knowing their skinfold results than knowing their skinfold results.

(Coach 3)

... after we tried the weighing in once a week, we went to weighing in two or three times a week and that didn't really work because on the advice of one of the ex-gymnasts she actually said that she felt that that would have a negative effect in terms of "well, I'm not weighing in [until] Thursday, it's only Tuesday, I can have something extra now and I'll be right by Thursday" ... and we felt after going through that we were noticing those trends. So we went back to just weighing in once a day.

(Coach 3)

I think a daily basis is much better, just gives them a general idea every day.

(Coach 3)

Records were kept of the gymnasts weight and skinfolds primarily to monitor changes over time and to identify the gymnasts individual variations from week to week. Coach 3 described weight fluctuations for pubescent girls decreasing approximately half a kilogram during the week and then increasing approximately half a kilogram over the weekend. Weight records also allow the identification of trends where weight may increase a little bit every day, indicating possible growth or "bad trends".

... just to try and keep it controlled because you can't get away from the fact that you've got to control it, but I believe that early intervention's going to help you, so a little bit of control every day, my feeling, is less harmful than trying to get on top of a big problem.

(Coach 3)

I look at the [weight] chart every couple of days, certainly on a Monday and certainly on a Saturday to see where their weight's at ... you know the girls' individual variations as well from week to week ... some girls who stay the same all week, some girls who go up and down during the week, some girls who [will be] pretty lean by Saturday and then back to their level on Monday ... but you get to have a feeling for when that weight gain is too much food.

(Coach 3)

Management approach.

One of the coaches acknowledged that gymnasts from all countries have trouble controlling their weight, not only Australian gymnasts.

... it'll be interesting with slightly more numbers [of gymnasts] for 1996 ... whether in fact that issue [of weight and skinfold] will control itself. But I don't think so because I know even in the Soviet Union some of their top performers had trouble controlling their weight and that was amongst a country who would have had the most gymnasts of any country to select from in any period of history. So you're going to have those problems anyway.

(Coach 3)

The coaches have indicated that the management approach adopted by this programme has become less aggressive with the current generation of gymnasts. This was also indicated by the responses of the retired and junior gymnasts where the retired

gymnasts described a more aggressive reaction from the coaches and appeared to have a greater fear of their weight and skinfold increasing than the junior gymnasts. Where previously the coaches would have been aggressive with regards to controlling the gymnasts weight and skinfolds, they have now adopted a more counselling approach.

... I've been through the whole range ... I believe now counselling and encouragement's going to do a lot more than getting down on their [the gymnasts'] case ... there's times, it's like disciplining a child, where if you yell and scream at them all the time it becomes less effective, the odd hefty scolding ... will have more effect on them than a daily grind and the same thing with controlling weight. And so I think now that other approach is going to work better.

(Coach 3)

... if it's a small increase they [the gymnasts are] just made aware of it but if there's a huge increase then the causes behind that are looked into. So there's counselling that takes place and perhaps strategies are put into place to try and get it down again ...

(Coach 2)

I don't know if [it's] just a phase we're going through or whether ... they're different girls ... but we don't talk about it so much any more. ... but also if you look at the whole perspective, we're at the beginning of a new Olympic cycle, our kids are younger, and maybe towards the end of a cycle when they're getting more mature you'll have more problems, when the pressure's on ...

(Coach 4)

The approach now being adopted by this programme allows the gymnasts to be mostly in control of their own weight and skinfold with guidance and counselling from coaches, dietitians and psychologists when required, rather than a constant hounding. This was also reflected by several of the junior gymnasts who expressed that they knew when they had to get their weight or skinfold down.

... I think that [counselling] approach has had a less traumatic effect on the girls ... the only thing is, I've seen this particular [group of] juniors, their skinfolds have come up 8 mm or 10 mm in [approximately 10 months] and I don't know whether that can be attributed to our management which is less aggressive, or the fact that they just happen to be hitting that 13, 14 year old age and it's going to happen anyway. I'm not sure which ... but I think I'd better ... live with it

rather than get on their cases because ... with experiences from the Olympic team, I realise probably more than ever how vulnerable these girls could be to eating disorders ... and that sort of worries me a lot.

(Coach 3)

The coaches explained that this counselling approach would also be adopted if a gymnast was very low weight or skinfold and in the case of this programme, if any gymnast had a skinfold of below 30 mm.

... we talk to them about going too low, [such as] Well that's enough. I think that you shouldn't lose any more. You're just fine where you're at. Could you eat just a little bit more?

(Coach 3)

... when they go below 30 [mm in skinfold] it was the same thing as when they're above 45 [mm]. We talk to the parents and [ask] "is she eating well?" ... that type of thing.

(Coach 4)

The coaches in this programme have also adopted a more individual approach, where they treat the gymnasts individually rather than as a whole group. This was supported by the gymnasts where the retired gymnasts referred to group line-ups and the junior gymnasts referred to being individually spoken to about their weight or skinfold.

... we'll educate everybody and see what happens to everyone and on an individual basis we will then treat the individual as she should be treated.

(Coach 4)

... I don't dwell on it. I think the more I dwell on it as the coach the more obsessive they become ... if they don't have a problem with it then there's not much point bothering them about it ...

(Coach 4)

If the whole group's doing badly I'll talk to the group about it, say "look, we have to control this ... it's part of the sport and as a group you need to help each other" ... but I'm doing less group talks ... I used to sometimes talk to girls in a line-up about their skinfolds but I'm more likely now to talk to them individually rather than in groups. And that's also about doing well or not doing well because ... talking to someone about doing something well is making a point to somebody else that they're not doing well ... or if you're always on about not doing well, somebody else in the group might take from that a comment like "... I'm not going to be in that situation" and they might go overboard with their own control.

(Coach 3)

... some girls who are too high cry every time the skinfold comes out, but I don't know any other way. ... occasionally we'll do something like say to a kid, "well, you're getting distressed about this, I'll skinfold you in six weeks, but I want it to change", and you just pray that it's on the downward trend and you can get something positive from it.

(Coach 3)

It was explained by one coach that while an aggressive approach may appear to be the most effective way at a young age, it may in fact cause more problems when the gymnasts are older. This coach believed that at this point in time and with the present group of gymnasts a less aggressive approach may be a better one to adopt.

... a more balanced approach is probably going to produce a better result ... and it might appear that when they're young, hounding is the best way but when they pass that puberty point, if they've gotten into controlling it because somebody outside is helping them control it, then when that person's not around they can have problems going up and coming down because it's harder for them to control. ... you start controlling it early so that things are kept normal but you actually may over control at the beginning and produce a worse result at the end. So I think a little bit of moderation there could be the trick. I don't think anybody knows the answer ...

(Coach 3)

Education.

It was agreed among the coaches that the current junior gymnasts were more educated than the retired gymnasts in terms of their understanding of weight and skinfold. This was also indicated by the retired and junior gymnasts where the junior gymnasts acknowledged to a greater extent the input of dietitians and expressed a greater understanding of their diet and its effect on their body in terms of their weight and skinfold. Coach 4 stated that "the kids that are coming through now are more educated as to what's healthy and what's not healthy". The junior gymnasts were also educated in the relationship of height, weight and skinfold and this understanding emerged from some of the junior gymnasts in that they understood that an increase in weight could be attributed to growth and was not necessarily a bad thing.

... there's a triangle between weight, height and skinfold and we try and draw that triangle to them as often as possible, so that if their skinfold's staying constant, height's going up and weight's going up, we try and paint the picture, "look, your skinfold's fine, you must be going through a growth spurt, you're heavier". Or, [if] skinfold's going [up], height's stable and weight's going [up] ... "[you've] got to pull yourself into gear, your skinfold's going up, your weight's going up, you're not growing ... look at this picture of these three variables". So from an early age we try and educate them to look at the three variables. ... kids don't see it like that, especially when they're starting out ...
(Coach 4)

All of the coaches explained that the gymnasts' understanding of weight and skinfold was not as good as it should be, however, while they reported that many understood the basics, the coaches did acknowledge that the concepts were quite difficult to grasp. They also explained that the level of understanding varied among the gymnasts and that interpretations of the same information would be processed in a way that affects the individual, therefore, would not always be correct.

I don't think it's as good as it should be ... you can have things misinterpreted [it] doesn't matter what you say or how you say it somebody from the group is going to take it in a different way, they'll take it in a way it affects them ... from a sports science point of view the actual tests aren't 100 percent accurate [and] the girls don't always understand that ... we try and explain it to the parents so at least the parents can help them out.
(Coach 3)

... you think about what they're trying to understand, Joe Blow walking down the street wouldn't know what a skinfold is or fat compared to muscle bulk ... they're concepts that are quite adult and sometimes they're difficult to grasp. ... even parents sometimes find them difficult to get hold of.

(Coach 4)

Cheating on Weight

Two of the coaches acknowledged that gymnasts had cheated on their weight in this programme, supporting statements from the junior and retired gymnasts. They reported that cheating mainly occurred with the more competitive gymnasts who understood how difficult it was to control their weight. Consistent with the gymnasts, the coaches explained that they gymnasts cheated because they were afraid of getting into trouble if they were too heavy. The coaches also suggested that the gymnasts may not want to acknowledge how heavy they actually were or may not realise that they may be going through a growth spurt and it would be acceptable for their weight to go up slightly. One of the coaches explained that cheating is a normal reaction of adolescent girls who may not want to acknowledge that they were heavier.

... I don't know how often they cheat but they certainly cheat. Especially the older girls ... the competitive girls cheat.

(Coach 4)

... if for that fortnight [their weight and skinfold] hasn't been plotted out to them ... and they're going through a growth spurt and they don't realise ... their weight is just going up daily, point two every day ... they don't understand ... they will try and cheat at that point. So it's when it's stable daily they wouldn't cheat. It's when they're starting to spiral upwards they would think "no, this isn't happening to me, I've been really good, it's not fair", they would cheat at that point.

(Coach 4)

... I think that's normal [to cheat] and it's not gymnastics that makes them cheat. ... Any kid who did that who was 13 or 14 [years of age] which is what these kids are, any girl would have done the same, I think. ... They see that as the easy way out. I don't want to talk about it, I don't want to even think about putting on weight so they just cheat.

(Coach 4)

The coaches also acknowledged that the gymnasts may cheat if they have eaten too much and their weight goes up.

... if their weight jumps considerably just because I happen to be looking at it I will either say to them "your weight has gone up unexpectedly quickly since yesterday, or you weren't being honest yesterday, I don't know which but either is not good enough", to let them know I know there's a possibility that they cheated but also to let them off the hook so that they could say "well, I ate a lot". But either way they know I'm kind of onto it. I feel it's important they know that I don't rule out the possibility of cheating.

(Coach 3)

Eating Disorders

It is obvious from the literature and from responses of the gymnasts and coaches that eating disorders are a very real concern in elite gymnastics (Drinkwater, 1993; Harris & Greco, 1990; Johns, 1993; Richards et al., 1990; Wichmann & Martin, 1993). The coaches supported the retired gymnasts in reporting that while eating disorders are difficult to identify, they were aware of several gymnasts in other programmes who had or previously had eating disorders, in particular engaging in bulimic behaviour. Consistent with the retired gymnasts the coaches also described one particular Australian team in which there were cases of bulimia. These cases support the literature which acknowledges the occurrence of eating disorders in gymnastics and other sports emphasising leanness.

[gymnast in another programme has] been bulimic in the past and I know that a couple [in another programme] who are still there have been bulimic in the past but ... I can't really comment on whether they still are or there's anyone else.

(Coach 4)

[In a particular Australian team] some of the girls were very, very low [in skinfold] and I believe had health problems. ... one of the oldest girls on the team had a skinfold of something like 28 [mm] and I know for sure she had health problems. ... I'd say more bulimic behaviour but then it came to that she had trouble eating as well. [It] started with bulimia.

(Coach 3)

All the coaches believed that at the time of this study, none of their gymnasts had eating disorders or showed symptoms of eating disorders. Two of the coaches did report that a small number of incidences had occurred several years previously, however, it is not known if the same incidences were referred to. All coaches stated that the incidence of eating disorders was much greater in other programmes, especially at the present time when to their knowledge they had no incidences. This suggests that the current and most recent gymnasts of this programme may not be consistent with the literature and that the literature on eating disorders in sports emphasising leanness may have been minimally supported in previous years.

I can't see any problems in our gym ... but I'm sure in Australian gyms there are. It's hard to pinpoint. Of course there's higher risk at higher levels because of the pressure to maintain a controlled weight. But I don't know of any existing problems at the moment.

(Coach 2)

... to my knowledge I've only ever been involved with one girl who had an eating disorder and that was back in 1984 ... there's one other incident that I know about with a girl from my programme and that disturbed me a lot too, it was from an unexpected girl. ... To my knowledge none of my gymnasts have had eating disorders, although I know of one incident that occurred with one girl.

(Coach 3)

The coaches of this programme believed that none of their current or most recent gymnasts had eating disorders, however, they did not discount the fact that there may have been or may be in the future. While they acknowledged that there were many variables involved, they believed that their management and education approach of controlling the gymnasts' weight and skinfold may reduce the pressure on the gymnasts and minimise the possibility of developing eating disorders.

I couldn't say to you it's never happened, it's like any parent, you can only trust what your child says to you. I couldn't say it has happened and I couldn't say it hasn't happened. But I think without having blinkers on that it probably hasn't happened much in my programme or it hasn't happened.

(Coach 3)

... I think there's still a fair amount of aggression ... in a couple of programmes ... with regards to eating and what have you and [in] those programmes I know of girls who have eating disorders ... and for sure those coaches know about their gymnasts' problem, the ones who everybody else knows who's had problems ...

(Coach 3)

... it does go on [eating disorders], that's for sure, and I think unfortunately it'll probably always go on somewhere for somebody because education is never 100 percent. ... the percent of people going off the rails and doing something like that [engaging in disordered eating] is certainly decreasing, I think. As education is increasing that's decreasing but there's always going to be someone who has that psychological tendency or the situation or the lack of education or something that's going to predispose them to showing that weakness or the situation ... you'll most likely always have that individual. ... They may know better, but they still do it, and unfortunately those sorts of things are the easy way out. They're often the very highly competitive type girls, but not highly mentally strong.

(Coach 4)

I can't sort of rule out the possibility that it's happened and that things need to change, so I've got to almost treat it as if it's going to happen anyway, even if it might not and work on it so that there's less possible chance of it occurring. I think all the coaches in our programme feel the same way, especially the female coaches.

(Coach 3)

I'm trying to take more of a common sense approach. I can't tell you how successful I'm being. I might have the worse eating disorders, worse psychological problems than any other programme, I don't know. But at this point in time that's just my feeling the way things should be [managed].

(Coach 3)

Summary

This section focused on responses from the coaches who gave their opinions on how they believed the gymnasts perceived their body image. They also explained the management approach adopted by this programme and the possible effects of this approach on the gymnasts' perceptions of their body image.

The coaches agreed that the physical appearance of the Australian elite gymnasts were very similar to elite gymnasts from other leading gymnastics nations. They also noted that the physical appearance of Australian gymnasts over the last decade has varied greatly, particularly the last two generations. The physical appearance portrayed by the Australian gymnasts has changed from being heavy and inappropriate for elite gymnastics in the early to mid 1980's, to the current physical appearance which is smaller and significantly leaner with the gymnasts being younger. The coaches also explained that the selection of gymnasts for elite gymnastics has become more rigorous and girls closest to the ideal physical appearance are now selected for the sport.

The coaches explained that it was very difficult to determine how the gymnasts perceived their body image and they agreed that the gymnasts' opinions of themselves would not be any different to any other child or adolescent.

Almost all the coaches supported the gymnasts in suggesting that it was very difficult for all gymnasts to maintain the required weight and skinfold levels, especially during adolescence and at the senior levels. They also explained that this was very individual and that some gymnasts found it more difficult than others. While the coaches generally agreed with the skinfold requirements that were in place, they also strongly believed that there should be a range in which the gymnasts could fall into to allow for individual differences in body composition.

As indicated by the gymnasts, the coaches were aware that gymnasts had cheated on their weight in fear of being reprimanded for being too heavy. This was also acknowledged as being a normal reaction of adolescent girls who did not want to admit that they were heavier.

The coaches explained that they had adopted a less aggressive, more individual, counselling approach in the management of weight and skinfold than had been previously adopted. The gymnasts' weight and skinfold were monitored very closely and while a low skinfold level was required by the gymnasts, the coaches were very concerned of the gymnasts having too low a skinfold. The coaches expressed concern of eating disorders among gymnasts and while could not identify any instances in this programme at the present time did give examples of cases in other programmes. They also did not discount the possibility of eating disorders in the future and had adopted an approach they believed may minimise the possibility of developing eating disorders.

Social Affects on the Gymnasts' Body Image

The coaches clearly had a greater knowledge of the outside community's perceptions of the body image of elite gymnasts than any of the gymnasts. There was a progressive increase in the gymnasts opinions of the community's perceptions of elite gymnasts with increased age and level of gymnastics, with the retired gymnasts having the greatest understanding.

While all the sub-junior and junior gymnasts claimed that the community held positive images of gymnasts, the retired gymnasts and coaches also felt that some members of the community held negative images of gymnasts, particularly when comparing them with other children of their age. None of the subjects suggested that participation in elite gymnastics was considered unacceptable to the community which may support the literature in stereotyping gymnastics as a "feminine" sport (Dyer, 1986).

Sub-Junior Gymnasts

Most of the sub-junior gymnasts did not know what other people might have thought about the physical appearance of elite gymnasts. Four sub-junior gymnasts suggested that people thought that gymnasts were very small and very thin and thought much the same as the gymnasts did. One sub-junior gymnast suggested that some people did not favour the physical appearance of elite gymnasts because they were too skinny, while others found the gymnasts' physical appearance favourable. The sub-junior gymnasts expressed positive perceptions from the community which also indicated their positive self perceptions.

... they probably think they look really good, since they can't do [elite gymnastics] and they're [gymnasts] really thin compared to other people and them.

(Sub-junior 2)

... they might think that their [gymnasts'] shape would be good for them to train and ... when they watch them train they think they have a nice shape and size to work.

(Sub-junior 7)

Some of them think "Oh, yuk, they look horrible, they're so skinny" ... but some wish they were like that, I think.

(Sub-junior 6)

Junior Gymnasts

The junior gymnasts suggested mostly positive reactions from the community about their physical appearance being small and thin, however one gymnast suggested that some people thought gymnasts looked too skinny. The gymnasts reported that any comments they received from people about their physical appearance would generally be positive, but also that they were small and skinny. Two of the junior gymnasts stated that other people also thought the gymnasts were muscly and strong.

... to some people [gymnasts] look too skinny, but then [to] others we look really good.

(Junior 1)

... sometimes my friends [say] "you're so lucky because you're skinny" ... but they don't know what hard work it is. But I think it's worth it.

(Junior 4)

Retired Gymnasts

There were mixed views from the retired gymnasts about the outside community's perception of the physical appearance of elite gymnasts. Retired 3 believed that the community generally thought that all gymnasts were small and skinny. Retired 2 explained the perceptions were very individual with some people favouring the gymnasts' physical appearance, and would like to have it as their own, and others disavowing it. Another of the retired gymnasts believed that the community did not necessarily have a very positive image with regard to gymnasts being so small and thin especially when comparing them to other girls of their age. Retired 2 also commented on society's perceptions about body image indicating that it is not only a concern for gymnasts. Retired 3 stated that while the community generally did not approve of what was being asked of the gymnasts, she suggested that they did not understand the demands of the sport and the effect excess weight can have on injuries.

Often people say to me "they're too skinny" ... [my dad] didn't like me being that skinny and often some people would say "look, you're looking a bit sick, you're pale, you look really skinny" ... quite often people would tell me that I looked skinny though, especially at school. Teachers would often say "you look really fit" or something ... often positive things, I thought they were positive at the time, people would tell you [that] you looked really skinny and you'd [think] "oh, [good]".

(Retired 1)

I think they'd probably think they look pretty damn skinny, pretty abnormal, pretty short, just too small. ... I now get comments "gee, you're really small" and yet I think I'm really big now. I don't mean I think I'm fat, but I think I'm big compared to how the gymnasts are, and yet I'm considered small. ... I don't necessarily think it's a very positive image they see. I think people admire them but I think if they saw a girl on the street, one of the [gymnasts] dressed up ... and this kid's 15, they wouldn't [say] "oh, she looks great" ... they'd [say] "what's wrong with her?" ... positive as a gymnast, negative as a human being.

(Retired 1)

... the society's all about weight now and people are so conscious of [it] ... and I think that they think it's easy for gymnasts or sports people to have good bodies as well. They kind of don't realise ... you go through a lot more trouble than just training and doing what you want to get the body you've got ...

(Retired 2)

I think they wouldn't be happy with what [is asked for], mainly because they're not educated ... this sport is so repetitive and it's such a hard sport on the body ... if you're not overweight the body can handle everything we do but if you're overweight that added stress on ever joint ... can create a lot of different injuries on different joints.

(Retired 3)

Coaches

The coaches expressed differing opinions on the outside community's feelings of the physical appearance of elite gymnasts indicating both positive and negative perceptions.

From my observations, the comments aren't that "they're looking so gaunt and skinny" ... the comments are more like "... they look so muscly" ... "[they] look so healthy" and "look how strong they look", those sort of comments, which is good because it shows they're healthy comments ... you come across a comment "gee they're all so tiny" but hardly do I hear they're so skinny and they look terrible ... I always believe in a healthy looking gymnast ... unfortunately you do come across the real petite, skinny and gaunt gymnast ...
(Coach 2)

... somebody said they though they looked deformed ... they said "oh, their heads are too small for their bodies" ... I find them very attractive to look at, but then I know what sort of a body is a functional body for our sport, so of course you agree with that body type. I don't know what other people think. Sometimes they might think they're too muscly or too this or too that ... but all sportswomen have good muscle definition ... when you see them in a leotard against a whole lot of other kids who are small, [one] kid might look mammoth, but when you see her in normal clothes she's smaller than any teenager they've seen ... but quite often people say they think they look terrific and [have] lovely bodies.
(Coach 3)

... from an outsider looking in, they would see what the children do as abnormal ... a lot of people don't understand that kids can be healthy and look like that and it's not abnormal. People think they're freaky and all the kid's done is been healthy and looked after her body and trained and that's what she's turned out like.
(Coach 4)

A general feeling that emerged was the naivety of the outside community with respect to the nature of the sport of gymnastics, the selection and management of elite gymnasts in this particular programme and the nature of elite sport in general. The coaches generally felt that the outside community needed to be educated in the positive benefits of gymnastics and the management approaches taken, especially with regard to the gymnasts' weight and skinfold.

No [negative comments] just a lot of people questioning what's being done in the elite side of things and that's natural because it's something new to our whole society ... elite development of young children, so it's natural that they'd be questioning that ... and there'd probably be quite a few people against it too, they'd never let their children enter anything like that. So it's always a hard issue to deal with.

(Coach 2)

... if somebody says "you're doing damage, they're going to end up a couple of centimetres shorter", I say "well, what difference to their life, positive or negative?" ... in gymnastics I've seen a lot of people who otherwise would've maybe suffered from being short in a society that values height or large frame ... I've seen girls end up with much better self-esteem by being proud of being short. I'm short and I'm proud of it because I can do special things that other people can't do that are too tall. I've seen other short people in society suffer a little bit because they haven't had something to hang their hat on.

(Coach 3)

... I think [people] are too quick to jump the gun and say "she's undernourished and she's overtrained and she's this ..." and they don't know how much management ... and how much support and how much thought goes into the child's programme. ... [People say] ... "how do you make them so small?" The fact that they come from parents who are 4 ft 10[in] and 5 ft 1[in] [for example], they come from late maturing families, then we pick the [children] up and train them in gymnastics which does suppress, I think, their hormones and they grow a little later, a little slower, but they end up the same, that's how you make a little kid ... they're just small kids. They're the bottom part of the population and they're picked that way. It's not just that they happen to be all small, they're picked because they're small. And they train gymnastics and they stay small.

(Coach 4)

... the whole community's viewpoint on elite sport for young children in general, especially in the last 10 years had been very poor, but I think especially with the 2000 Olympics being in Australia, I think people's eyes will be opened to what it takes to be the best and they'll be more accepting of that, if you want to be the best that's what you've got to do.

(Coach 4)

Summary

This section focused on the gymnasts' and coaches perceptions of how the outside community viewed the physical appearance of elite gymnasts. The coaches clearly had a greater knowledge of the outside community's perceptions than did the gymnasts, with the more senior gymnasts having greater knowledge than the junior gymnasts.

Most of the gymnasts believed that the outside community felt the gymnasts were small and thin, but generally held positive images of the physical appearance of gymnasts. A small number of gymnasts believed that while some members of the community had positive images of the physical appearance of elite gymnasts, others held a negative view that they were too small and too thin, especially when compared to other girls of their age.

The coaches indicated that there were mixed views in the general community regarding the physical appearance of elite gymnasts. They also explained that many members of the outside community were naive with respect to the nature of elite gymnastics, the selection of the gymnasts and the management of elite gymnasts particularly in this programme.

Pressures on Elite Gymnasts

The gymnasts and coaches described many different pressures on elite gymnasts and it was clear that the pressures on elite gymnasts increased with age. The pressures raised by the coaches included almost all those felt by the gymnasts, however, they also raised several other variables which they felt were pressures on elite gymnasts.

The coaches and retired gymnasts explained that the way in which each gymnast would perceive those pressures was very individual and would vary greatly ranging from little or no pressure to immense pressure with each individual's different coping mechanisms causing varying reactions to different situations.

... it varies with each individual and it depends on their maturity and ... their mental capacities as to how they cope with pressure or disappointment or success even ... each person deals with that differently depending on their mental capacities.

(Coach 2)

... it's very hard to predict how each child will react to different pressures ... and what will make one kid not even think of it as an issue, it's not even a part of their life, and another kid just becomes so intense and focussed about it that it just envelopes them ...

(Coach 2)

... obviously you've got extra pressures because you're doing gym, but it's whether [they're perceived as] extra pressures ... it's hard to say what's the extra pressure.

(Retired 2)

According to Coach 1 it is because of these pressures as well as each individual's reactions to pressure, that the coach must know and understand the gymnasts very well. This coach also emphasised that each individual gymnast would need varying amounts of pressure, with some gymnasts needing a lot of pressure and others needing a little. Two coaches believed that pressure was essential to produce optimal performance, however, it must be balanced as too much pressure would be detrimental to the gymnast.

Coach 2 explained that although the gymnasts may have had additional pressures at a younger age, unless managed in the wrong way, they would not have a

negative effect on the gymnast. The coaches also explained that this programme had various strategies in place to teach coping strategies and address any problems.

... learning how to deal with pressure is not a negative thing unless it's dealt with in the wrong way ... the pressure is probably a lot earlier [for elite gymnasts] and it's a different pressure than what normal kids would experience, but I don't see it being negative or detrimental to them ... if they're prepared in the right way ... if they're prepared properly, physically developed well and mentally prepared, then they'll deal with that pressure in a positive way, not in a detrimental way.

(Coach 2)

Sub-Junior Gymnasts' Perceived Pressures

The sub-junior gymnasts all reported that they did not feel any extra pressures that other girls of their age would not feel. One sub-junior gymnast, however, did suggest that someone who was good at something would feel less pressure than someone who was not as good.

... everybody's got something that they're good at and so you've got a bit more pressure than everybody else but it doesn't really make any difference to you ... if you really are meant to be good at it you wouldn't feel the pressure as much [as] if you weren't.

(Sub-junior 6)

Junior Gymnasts' Perceived Pressures

Most of the junior gymnasts reported that they felt pressure to keep up with their school homework as well as their training. Two of the gymnasts stated that they felt pressure with their long training hours and in having late nights and early mornings with their training.

Most of the junior gymnasts also felt a pressure with having to eat the right foods, with greater pressure when with other people who were eating, especially at school.

Junior 2 acknowledged the pressure of competition, but believed that it was a healthy pressure.

Retired Gymnasts' Perceived Pressures

Only one of the retired gymnasts stated that she was not affected by pressures during her gymnastics career. The two main pressures of the remaining gymnasts were school and maintaining the required weight and skinfold levels.

The retired gymnasts indicated that they felt a greater pressure to maintain their weight and skinfold levels than indicated by the junior gymnasts and became very stressed about their weight and skinfold.

Consistent with the junior gymnasts, the retired gymnasts felt pressure to maintain high standards at school and complete their homework as well as succeeding in their gymnastics. They explained that this pressure increased with age and their level of gymnastics, also acknowledging the importance of their final years of school.

The retired gymnasts also acknowledged the pressures of performance which increased with increased standards of gymnastics.

One of the retired gymnasts felt pressure from other people such as school friends with respect to being selected into National teams. She explained that because she had been selected in National teams previously, people expected her to be selected in other National teams and being asked if she had been selected was very stressful.

The retired gymnasts and coaches compared the pressure applied by other elite programmes with the pressure of another programme being described as a "nightmare" with a tremendous amount of pressure being applied by a particular coach.

Coaches' Opinions of Pressures on Elite Gymnasts

The coaches understood the pressures felt by the gymnasts and particularly acknowledged the pressures of their lifestyle to include their diet, controlling their weight and skinfolds and their school commitments.

... time commitment pressure as far as "I've got to get my homework done now, if I don't do it now it'll never get done, there's not other time in the day to do this". They deal with that and they become very efficient and I think that that's very good for them and sets them up well for later in life. But it is a pressure because it can get real stressful. Basically because I think that a lot of the girls are high achievers, high motivated kids and something like coming home at nine o'clock at night and having an assignment to do, nine times out of ten they'll sit there and say "I've got to do it..." and they'll stress themselves out and do it ...

(Coach 4)

While six of the retired and junior gymnasts reported that the many hours of training was a pressure, one coach further explained a pressure where the gymnasts were unable to take a break from their training schedule.

I think [another] pressure is the pressure of not being able to take a break, of this endless merry-go-round that just keeps on going. They can't even get off for a while and get back on again because if you get off and get back on it's too late, you can't join the ride and I think that's a pressure in itself as well. If they were able like some other sports people to take a month or two off and just take it easy and get back into it and achieve a higher level, I think we could keep more girls in the sport.

(Coach 3)

Coach 2 recognised a pressure for gymnasts coming into the programme to settle into the programme. It was explained that prior to entering the programme the gymnasts may not have been adequately prepared for the discipline of elite sport and need a transition time to adapt to a new and more demanding environment.

Other pressures that the coaches raised included the pressure that gymnasts may feel of being left in a generation of gymnasts and having people relying on them to be successful.

At a certain point when they turn around and realise either that the coach, the programme, the state or the country is relying on them for a result and if they quit it leaves a hole, I would say that that's a very real pressure for the girls. Even if nobody actually says it to them, they will understand at a certain point that numbers are always few and I think that that's a fair pressure.

(Coach 3)

Coach 4 suggested that some gymnasts may feel a personal pressure from their family to succeed in gymnastics because of the sacrifices and commitment that their family had made for them to pursue a career in gymnastics. While this was not indicated as a pressure, one of the sub-junior gymnasts indicated this type of situation.

The final pressures to be raised by the coaches included a range of internal pressures as well as the external pressures of competition.

The internal pressure to succeed ... the pressure of rejection ... the pressure to please the coach, to please the parent ... to beat their team mate.

(Coach 2)

Pressure of Weight and Skinfold

While it was acknowledged by one of the retired gymnasts that weight was a pressure in society especially for girls, she suggested that gymnasts felt additional pressures of having to be a certain weight and skinfold.

... it's general in life, as a society, there's too much pressure being put on, especially girls, what they should look like ... [it's] obviously a bigger problem in sports people ... but it's generally a problem in society ... [friends are] always talking about their weight as well so I suppose it's the same ... it's just that extra pressure that you have to do it ... you don't have to lose weight when you're just a normal person, but when you're doing gym you have to so you've got that extra pressure.

(Retired 2)

The coaches all agreed that there is a very real pressure on the gymnasts to maintain their weight and skinfolds at the required levels. Perhaps the time when there was the greatest amount of pressure was prior to the 1992 Olympic Games when the coaches expressed there was a tremendous amount of pressure with regard to the very strict skinfold levels.

Several coaches reported that the gymnasts did feel pressure to maintain their weight and skinfold with a greater pressure to reduce and this was supported by the retired gymnasts and three of the junior gymnasts. This pressure felt by the gymnasts to maintain their required weight and skinfold supports numerous authors including Calabrese (1985), Garden (1992), Harris and Greco (1990), Johns (1993), Rucinski (1989), Scanlan et al. (1991) and Stark and Toulouse (1984). The coaches and five of the gymnasts also suggested that the gymnasts did not feel the pressure until the first time that they have a problem.

... the girls place a lot of store on their skinfolds and they get quite anxious about it, I would think.

(Coach 3)

I think there is that natural pressure to maintain [weight and skinfold], or maybe in some cases to decrease ... it's part and parcel with the sport.

(Coach 2)

... I don't think they feel that pressure until the first time that their skinfold goes up ... until the first time that happens, I don't think they feel the pressure.

(Coach 4)

The junior gymnasts as a group did not appear to perceive their weight and skinfold as a pressure to the extent that the retired gymnasts did, however, some of the junior gymnasts did feel pressure to maintain their weight and skinfold. One of the coaches also suggested that the current gymnasts may not put as much pressure on themselves about their weight and skinfold as the retired gymnasts. This coach continued to explain that the gymnasts were still young and may have more problems when they are older, more mature and their performance demands are greater.

... I've got to a point now that I always sort of worry about it [weight and skinfold] a bit, whereas I never used to ... I actually sort of put them [pressures] on myself, even if the coaches ... don't say anything about my weight, I'm always worried about it ... it's just because we do it [weigh in] so often, it's just got to the stage it's become a habit.

(Junior 1)

[after] a few days off, I'm always scared that my weight's going to be too high.

(Junior 5)

... I don't think a lot of [the gymnasts] put as much pressure on themselves ... with their body image as "I've got to keep lean, I've got to keep skinny, I'm too fat" as what they have done in the past. ... I think the kids that are coming through now are more educated as to what's healthy and what's not healthy and I don't know, maybe it's the attitude we take with the girls.

(Coach 4)

Although it was not indicated by any of the gymnasts, one of the coaches expressed that some gymnasts would get very upset with their skinfold if they were too high.

... some girls who are too high cry every time the skinfold comes out ... sometimes I'd like to just leave a gymnast and not even bother skinfold her, but they seem to ... prefer to have that skinfold done.

(Coach 3)

While almost all of the gymnasts described a certain amount of pressure from the coaches to be the right weight every day and the right skinfold at each test, they also put pressure on themselves to control it. Retired 2 stated that "no matter how skinny you were, you always [had] that pressure".

Twice a [day] you had to weigh in and then if you went up a little bit it was a big stress ... [the pressure] was put on by other people, but you also ... put the pressure on yourself ... I always had the pressure on myself ... I put a lot of pressure on myself about it.

(Retired 2)

... you didn't think the good gymnasts had that [extra weight] so you had that pressure on yourself.

(Retired 1)

... my whole life used to revolve around the numbers ... you used to remember what [your skinfold was] last time down to the 0.1 mm ...

(Retired 1)

Most of the gymnasts felt pressure when people were eating around them, particularly if they had problems with controlling their weight and skinfold. It was also suggested by Coach 3 that this was very difficult for the gymnasts but that there may also be a lot of pressure on children to eat the unhealthy types of food. Coach 1 also mentioned the pressures of the advertising of these types of food.

It's really hard when you're at school seeing everyone just stuffing their faces and you know you're not allowed to eat it.

(Junior 3)

... they get annoyed if somebody is able to eat a lot and not put much weight on, some girls can and some girls can't and they're jealous of the ones that can eat more without putting the weight or the skinfold up ... I think it can get to them, especially if they're having trouble themselves and they're really trying hard to control it and their friends are eating junk.

(Coach 3)

... it seems to me there's a lot of pressure on children these days for eating those sorts of foods [junk foods].

(Coach 3)

Two of the retired gymnasts and one junior gymnast described pressure from wearing leotards, particularly if carrying extra weight as the leotard emphasised the body shape. Retired 1 also explained that the gymnasts felt pressure if they had to take off their tights during training and wear a leotard only, but if they did not wear tights at all there was not a "stress" of wearing just a leotard.

... just imagine spending you life in a leotard. ... we're so open ... to observation ... I mean, when you look at someone in a leotard you can't help but look at what they look like body wise.

(Retired 1)

All the junior gymnasts claimed that the weight and skinfold levels they were being asked to maintain were a reasonable demand, however, one gymnast sometimes felt annoyed because she would get sick of dieting.

The retired gymnasts also felt that the demands on their weight and skinfold were reasonable most of the time, however, one of the retired gymnasts stated that it would not be a reasonable demand for a non-gymnast. Another retired gymnast believed that she and others did not need to have as low a skinfold as some gymnasts. While they did not agree with some instances the retired gymnasts felt that most demands on them were reasonable.

[what they were asking] wasn't too bad ... you're kind of used to them asking [for] that ... it didn't seem that big a deal ... sometimes you thought they were asking too much, depended how high you were or how depressed you were ... sometimes I think they were asking too much but not really and back then I didn't really think they were asking too much either ...

(Retired 2)

... when you're doing gym it's not that extreme ... I used to eat quite well and look like that ... it's all relative.

(Retired 1)

... I don't think I had to be as low [in] skinfold ... I don't think my body ran best when I was lower ... some people don't have to be as low as others to look that good.

(Retired 2)

... it's good that something like that's there [skinfold requirement], but if it's going to be like a barrier, I think it's really stupid, [it] shouldn't be all just set on that [skinfold levels].

(Retired 2)

While the coaches reported that there were pressures on the gymnasts to maintain the required weight and skinfold levels, the coaches also felt tremendous pressure. Coach 1 explained that the pressure on the coaches came from the National body as well as their own concerns of eating and body image problems and the effect on their performance.

... shocking [pressure for the coaches] because you're worried all the time about developing mental problems with the girls, eating disorders or body image problems or something like that, and secondly is that their result, if it's going down because their skinfold is too high the coach feels pretty useless in terms of how do you actually control this thing ... you feel it all slipping away from you and it's not within your control to get them to do what they need to do. It's totally out of your hands. That's very frustrating.

(Coach 3)

While many of the gymnasts did not mind being weighed and having skinfold tests, several of the retired and junior gymnasts expressed a pressure from being weighed and skinfolded as often as they were. As has been indicated by coaches and gymnasts, it appears that these requirements are essential to be successful at the elite level especially with the stringent requirements as set by the National body.

... I can't think of a better solution at this point. ... I know they've tried [this programme]. ... it's [the] nature of the sport that they have to do it, [they] have to put in some sort of measure to maintain ...

(Retired 1)

Summary

This section has discussed the pressures on elite gymnasts as identified by the gymnasts and coaches. It was clear that the pressures on elite gymnasts increased with age and that the way in which each gymnast would perceive pressure would vary greatly causing different reactions to different situations.

The main pressures identified by the gymnasts, and also supported by the coaches, included maintaining the intense training regime which included early mornings and relatively late nights, maintaining high standards both at school and in their gymnastics, and maintaining the required weight and skinfold levels.

At the younger ages the gymnasts generally did not feel pressure to maintain the required weight and skinfold levels. The junior and retired gymnasts explained that they did feel pressure to maintain the required levels, with the adolescent and senior gymnasts indicating a greater amount of pressure. It was also indicated that the gymnasts generally would not feel pressure to achieve and maintain the required levels until the first time their levels rose.

While the coaches agreed that the gymnasts felt pressure to maintain the required weight and skinfold levels, they also indicated that the coaches also felt tremendous pressure which came from the National body as well as their own concerns of eating and body image problems and the effect on the gymnasts' performance.

Relationship of Results to Conceptual Framework

The results suggest that the conceptual framework presented in Chapter 3 provided an adequate base from which to frame the study and especially the interview questions. It was based on the researcher's personal experience as an elite gymnast, the literature and material from the Australian Gymnastics Federation (AGF) and provided an accurate representation of the direct and indirect factors contributing to the gymnasts perceptions of their body image.

Analysis of the results led the researcher to add two further significant elements which contributed to the gymnasts' perceptions of body image in addition to the direct and indirect factors originally presented. The first additional element was the stringent skinfold requirements as set by the AGF, and the second, the pressure the gymnasts felt to achieve and maintain the skinfold requirements. It was suggested that the coaching staff act as a mediator between the gymnasts and the demands of elite gymnastics including those set by the AGF, hence, a resulting overlap of the factors directly associated with the gymnasts.

The results also suggested that the pressure to achieve and maintain the required skinfold levels increased with age and standard of performance, with this pressure increasing throughout the gymnastics career.

The additional elements facilitated a reorganisation of the framework. The resulting conceptual framework is presented in Figure 5.

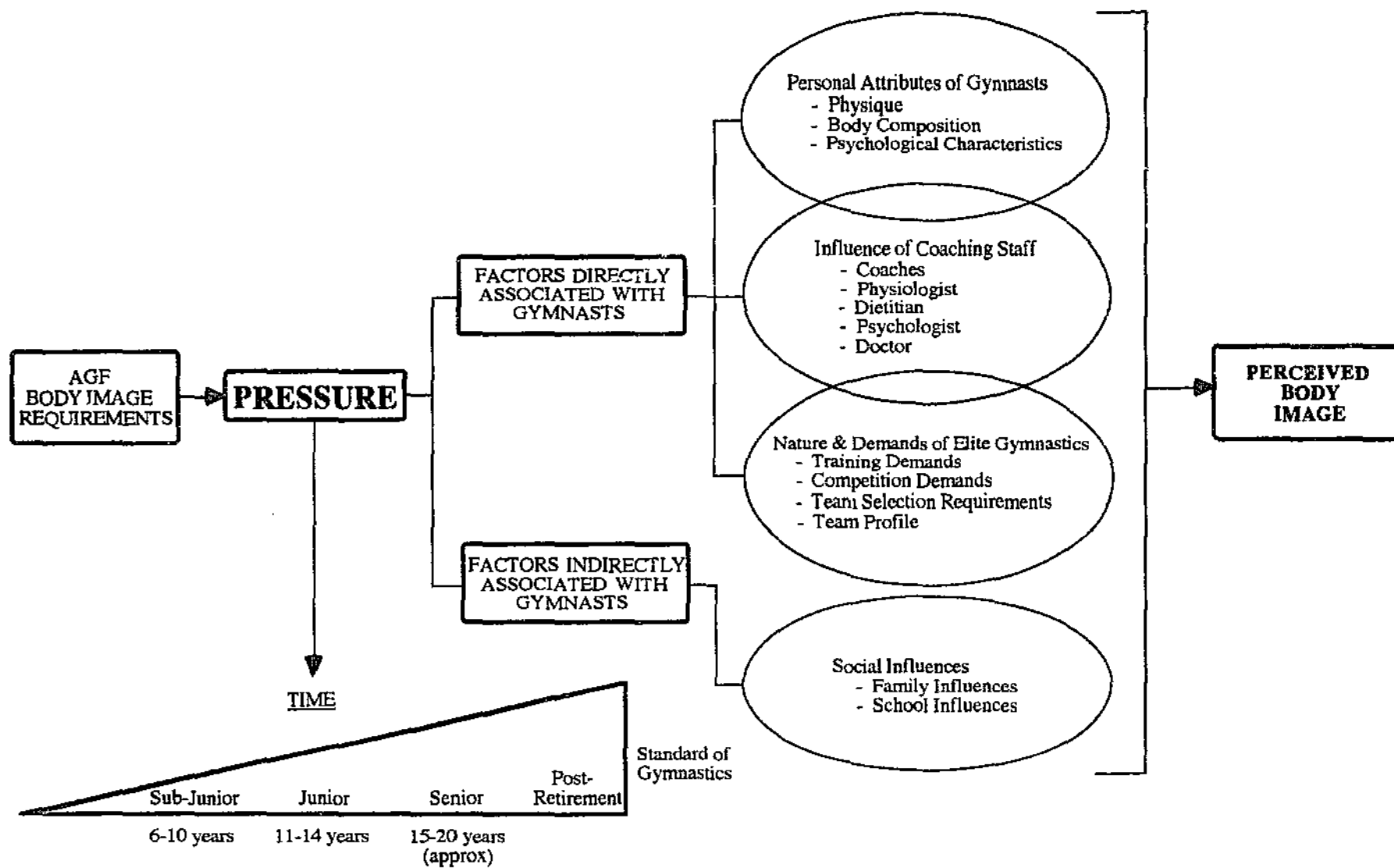


Figure 5 Conceptual framework adapted to include Australian Gymnastics Federation body image requirements and the increasing effects of pressure.

Summary of the Results

This chapter has presented the findings of this investigative study under six sections.

The first section introduced the subjects participating in the study presenting background information to their gymnastics development and reasons for participation in elite gymnastics.

The second section provided background information to the requirements of elite gymnastics to be successful at the elite level. The importance of several physical and psychological characteristics and the various training demands of the gymnasts provided a greater understanding into the factors influencing the gymnasts' perceptions of body image. The coaches and gymnasts have supported the literature in explaining that a small, light and very lean body type is most conducive to elite gymnastics. They also explained the importance of this body type for both mechanical and aesthetic reasons.

In the third section the gymnasts described their attitudes, feelings and opinions of their own physical appearance, their ideal physical appearance and the issues of weight and skinfold in their lives in and out of the gymnasium. All of the gymnasts were aware that a small and lean body type was required for elite gymnastics and all were conscious of their weight, skinfold and diet. While several of the gymnasts, particularly the junior and retired gymnasts, expressed some dissatisfaction with some body parts at various times and that most of them would like to be thinner, they all presented a positive body image of themselves in general. Responses from the gymnasts supported the literature in suggesting that body image is developed at a young age, with the sub-junior gymnasts having an unclear opinion of their body image, particularly their size and shape. The junior gymnasts presented a clearer opinion of their body image, particularly at adolescence. The retired senior gymnasts had the clearest opinion of their body image. Several of the junior and retired gymnasts reported that their weight and skinfold was more difficult to maintain during adolescence. Body weight and skinfold were described as major issues, particularly in the junior and retired gymnasts' training programmes because of the strict requirements and frequency of weighing in and having skinfold tests, even though the gymnasts preferred to be weighed as often as they were.

The coaches expressed their opinions about the weight and skinfold requirements of the gymnasts and their management in section four together with their opinions of the gymnasts' perceptions of their weight, skinfold and physical appearance. The coaches had a very good understanding of the perceptions the gymnasts held of their body image. They provided a comprehensive outline of the

management approaches adopted in this programme and the possible effects they may have on the gymnasts' perceived body image.

In section five the gymnasts and coaches identified the social influences on their body image. While the coaches and retired gymnasts felt that some members of the community held negative comments regarding the physical appearance of elite gymnasts, they also felt that many people held positive images. All the junior and sub-junior gymnasts felt that other people had positive images of elite gymnasts. The coaches also acknowledged naivety in the outside community with regard to the nature of elite gymnastics and the selection and management of elite gymnasts.

The final section identified the pressures of elite gymnastics as perceived by the gymnasts and coaches with particular emphasis on the pressures of achieving and maintaining the required weight and skinfold levels. This was perceived by the gymnasts to be their greatest pressure.

CHAPTER 6

Conclusions and Recommendations

Conclusions

The purpose of this study was to provide an understanding of the way in which current and retired elite, female artistic gymnasts from one Australian central training programme perceived their body image as elite gymnasts.

The subjects participating in the study included three retired senior elite gymnasts, five current junior elite gymnasts, seven current sub-junior elite gymnasts and four elite women's gymnastics coaches.

The study was guided by three research questions. Individual in-depth interviews with each of the subjects identified the perceptions the gymnasts had of their body image, the factors contributing to these perceptions and the development of the body image throughout the gymnastic career. In order to answer the research questions thoroughly, background information on the gymnasts as well as the requirements of elite gymnasts was also obtained during the interviews.

Question 1 asked the gymnasts how they perceive their body image. While the retired and junior gymnasts explained that they felt varying degrees of pressure to achieve their desired body image, they all presented a positive image of themselves. Although several gymnasts were dissatisfied with some aspects of their body image as to their appropriateness to elite gymnastics, they generally expressed total body satisfaction.

Question 2 probed the factors contributing to the gymnasts' perceived body image. The gymnasts and coaches indicated that several factors contributed to the gymnasts' perceived body image, however, the underlying factor was the National requirement of a certain skinfold level or 40 mm. The factors identified as contributing to the gymnasts' body image included:

1. Skinfold requirement as set through the National body influencing National team selections
2. Appropriateness of the gymnasts general body type to elite gymnastics
3. Perceptions of the ideal body image of elite gymnasts
4. Monitoring of weight and skinfolds in training programme
5. Management of weight and skinfolds
6. Education and level of understanding of the gymnasts about diet, weight and skinfold

7. Pressures from the gymnasts themselves to maintain the required body weight and skinfold levels
8. Pressures from coaches to maintain the required body weight and skinfold levels
9. The influence of weight and skinfold on the gymnasts training programme
10. Social influences

Question 3 focused on the development of the gymnasts' perceived body image throughout the gymnastic career. All gymnasts participating in this study, including the sub-junior gymnasts, were well aware of their weight and skinfold levels. Most of the sub-junior gymnasts, aged eight to 10 years, had not previously thought about their physical appearance and did not have a clear opinion of their body image. Almost all of the junior gymnasts, aged 11 to 13 years, had very clear opinions of their body image with several indicating concern of their weight and skinfold levels. The retired gymnasts expressed very strong opinions of their body image. Responses from the junior and retired gymnasts as well as the coaches indicated that opinions of the body reach a significant level at adolescence and continue to become clearer as the gymnasts pass through adolescence and experience the increasing demands of elite gymnastics at the senior level.

As a result of the interviews which were open-ended allowing the subjects to identify issues that were important to them, the concern of eating disorders among gymnasts emerged in addition. While this emerged as a very real concern, particularly for the coaches and retired gymnasts, there did not appear to be any indications of the prevalence of eating disorders in the programme participating in the study.

Recommendations for Further Research

The following recommendations provide suggestions for further research based on the results and limitations of this study.

i) This study and adaptations to this study may be expanded to include investigations into the global self-worth of elite gymnasts.

ii) Investigative studies on the perceived body image and global self-worth of gymnasts in other Australian elite programmes would provide a more comprehensive understanding of the perceived body image and self-worth of sub-junior, junior and senior elite female artistic gymnasts throughout Australia.

iii) Due to differences in management approaches in other Australian elite programmes as expressed in the results suggests the need to investigate the management of diet, weight and skinfolds in these programmes which would allow for comparisons to be made between the programmes, ultimately enhancing management of what is clearly a very important issue for female gymnasts.

iv) Investigative studies into the body image requirements, management procedures and the perceived body image of International elite artistic gymnasts would provide a more comprehensive understanding of the perceived body image of elite female artistic gymnasts throughout the International gymnastics fraternity.

v) Longitudinal studies of elite gymnasts from the sub-junior age would provide a more comprehensive understanding of the development of perceived body image and global self-worth and their influencing factors.

vi) Extensive research into the body composition variables of height, weight and skinfold measures of International elite gymnasts at major events such as World Championships or Olympic Games would provide evidence of the most appropriate skinfold levels of Internationally competitive elite gymnasts. This type of research would provide skinfold levels either supporting or refuting the level of below 40 mm as demanded in Australian gymnastics.

vii) Comparative studies of female gymnasts participating in elite and general stream gymnastics and rhythmic gymnastics may identify varying perceptions of body image and global self-worth between "Elite" and "Levels" stream gymnasts in the disciplines of Women's Artistic Gymnastics and Rhythmic Sportive Gymnastics.

viii) Comparative studies on the perceived body image and global self-worth of male and female artistic gymnasts may provide differences in the gymnasts' perceptions due to the different natures of the disciplines.

ix) The relevance of this study to other sports which emphasise leanness such as diving and dance provides avenues to adapt this study to similar sports and to compare athletes in sports having common requirements for leanness.

x) This study should be expanded to include the influence of the gymnasts' parents, judges, dietitians, physiologists, psychologists, doctors and any other individuals who are in contact with elite gymnasts and may influence their perceived body image.

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APPENDIX A

The Structure of Women's Artistic Gymnastics in Australia

The Australian Gymnastic Federation (AGF) was formed in 1949 under the name Australian Gymnastic Union ("Gymnastics", 1988?) with a purpose to govern gymnastics in Australia at a National level by overseeing each of its eight State Associations. The AGF comprises a nine member Board of Management to form policy and a National office where administrative duties are carried out. Each of the State Associations has its own structure and administration through their Boards of Management and State offices. The organisational structure of the AGF is presented graphically in Figure A1.

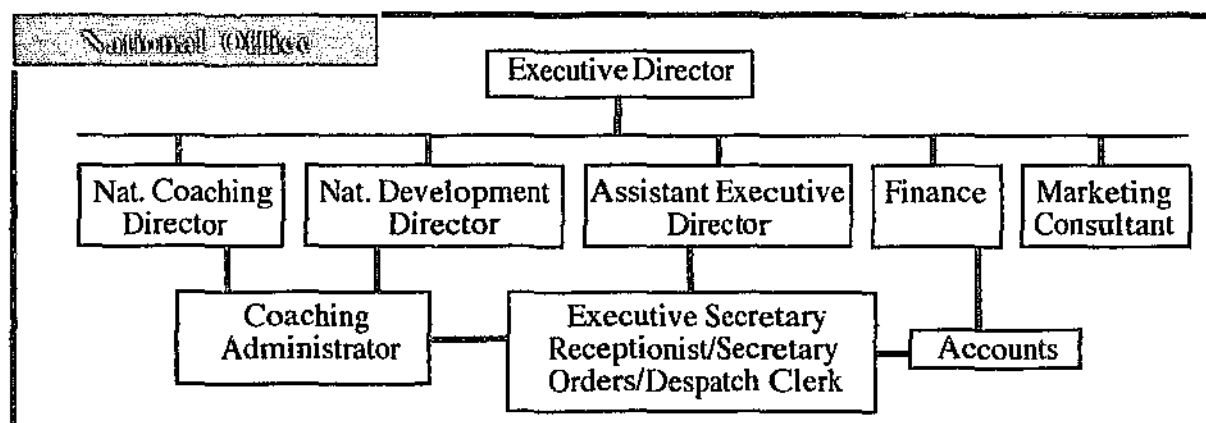
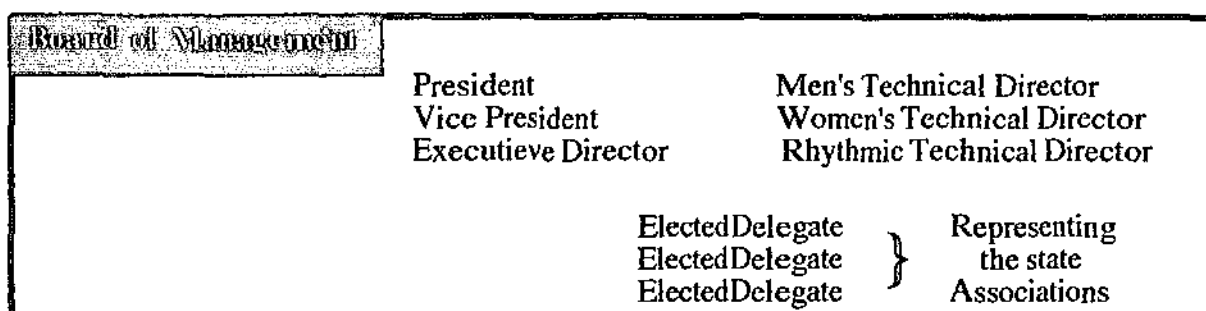
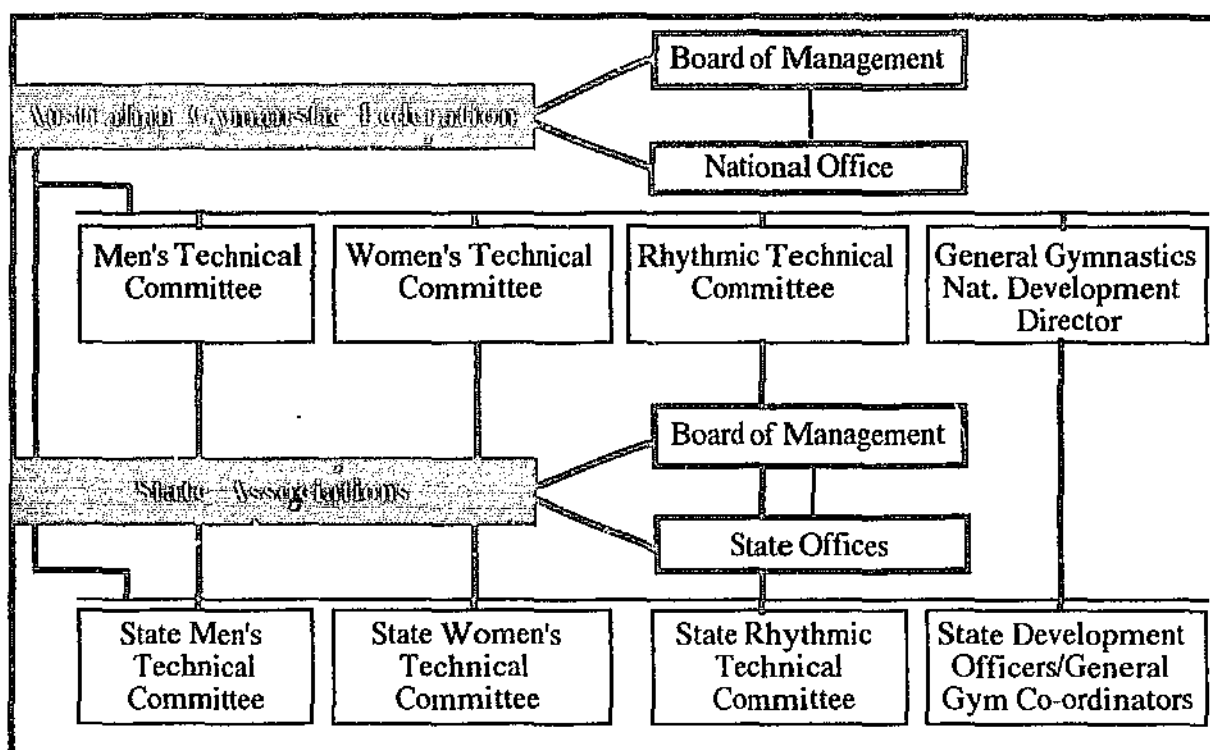


Figure A1 The Organisational Structure of the Australian Gymnastic Federation. (Adopted from 1993 - 1996 Development Plan (September 1992). Australian Gymnastic Federation)

Australian gymnastics was affiliated to its International body, the International Gymnastic Federation (FIG) in 1954 ("Gymnastics", 1988?) and currently has two official members on FIG committees (P. Browne, personal communication, 10 August, 1993) who were elected in 1984 (Annual Report, 1984). Both Men's and Women's Artistic Gymnastics first competed Internationally at the 1956 Melbourne Olympic Games, however, the first National Championships for Women's Artistic Gymnastics was not held until 1960 ("Gymnastics", 1988?).

Very little has been documented on the structure of Women's Artistic Gymnastics since its inception, particularly the changes that have occurred in the last decade and the many variables that have contributed to these changes. Initially gymnastics participation and competition in Australia was based age groups, followed by abilities and then levels (P. Browne, personal communication, 10 August, 1993). The last decade, however, has seen women's gymnastics in Australia change from a "structure which incorporated everybody who did gymnastics in the competitive sense" to one which now separates gymnasts at the recreational level from those at the elite level (P. Browne, personal communication, 10 August, 1993). It is believed that these changes have also influenced Australia's recent improvement in their World ranking from 16th place in 1989 to 6th place at the 1991 World Championships (Normile, 1992 p. 18) thereby allowing Australia to send a full women's team for the first time under the International qualification requirements to the 1992 Barcelona Olympic Games.

The National Technical Committees in each of the three competitive disciplines - Women's Artistic Gymnastics, Men's Artistic Gymnastics and Rhythmic Sportive Gymnastics - guide each of the State Technical Committees (Development Plan, 1992, p. 2). Similarly, the National Development Director for General Gymnastics guides the state Development Officers. At the International level the technical requirements of gymnastics are set by the FIG through the "Code of Points" and the way in which it rewards difficulty. The initial two levels of difficulties of "mediums" and "superiors" (P. Browne, personal communication, 10 August, 1993) have since been developed to include five grades of difficulties in terms of what you can do in gymnastics. These include "A", "B", "C", "D" and "E" elements, with the latter being introduced in the most recent Olympic cycle. According to P. Browne (personal communication, 10 August, 1993) "gymnastics is technically the most complicated sport that exists". P. Sharpe (personal communication, 10 August, 1993) suggests that "the trend in the sport is directly in the control of the technical committees and it is their decisions that have made the sport one for younger, smaller gymnasts". This is also evident in the Olympic compulsory routines which are set by the FIG. It appears that although Women's Artistic gymnastics is aesthetic in nature at the elite level it is driven by technical requirements, not aesthetics (P. Sharpe, personal communication, 10 August, 1993). At the National level the AGF sets the rules and guidelines for the national

competition structure and the programmes as well as the selection procedure and competition programme for International competitors (Development Plan: 1993 - 1996, September 1992).

Perhaps the first major milestone that has had a significant effect on Australia's improvement in gymnastics and its present structure would have been the establishment of the Australian Institute of Sport in 1981 (P. Browne, personal communication, 10 August, 1993). Satellite coaches were then introduced, thus establishing regional centres (Annual Report, 1985). This was followed by the establishment of High Performance Centres throughout Australia with the first centralised programme being established in 1984. This programme also became the first full time centralised programme with full time coaches in 1988.

P. Browne (personal communication, 10 August, 1993) describes the changes in Australia's structure as "dynamic" where "they're constantly being reviewed and therefore change", and this is evident when gymnastics in Australia over the last decade is reviewed. In August, 1983, the National Women's Technical Assembly responded to the increasing technical requirements by deciding to establish two "streams" of participation for Women's Artistic Gymnastics (Annual Report, 1984). The two streams were established in 1986 (Annual Report, 1986) as the "General stream" (now "Levels stream") to provide some competition at a recreational level, and the "Elite stream" for the development of elite and potential elite gymnasts (Annual Report, 1984). Each stream had their own National Championship for the first time in 1987 (Annual Report, 1987). The two streams as they are at present are presented graphically in Figure A2.

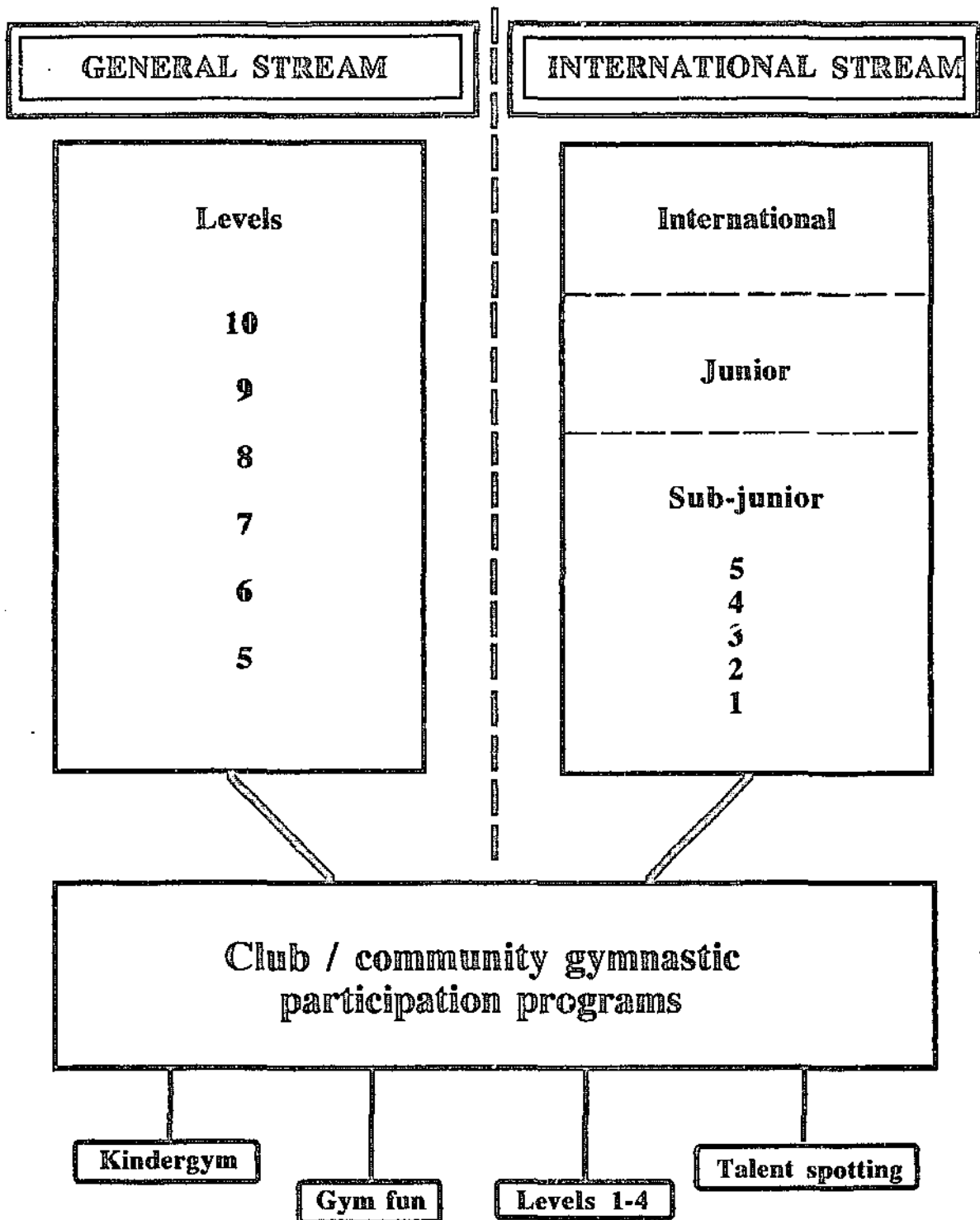


Figure A2 Model showing the Australian Gymnastic Federation's [AGF] two women's artistic gymnastic streams. The international stream includes the sub-junior program, which is a special high performance developmental stream.
(Women's Artistic Gymnastics (Sub-junior Development Scheme), n.d.)

In 1987 National selection and training camps were developed for talented girls and their coaches training at the pre-elite (now sub-junior) level who were likely to be potential members of the 1992 Olympic team (Annual Report, 1987). Extensive work on this sub-junior development programme continued in 1988 by the Women's Technical Committee, in particular the National coach and one of the satellite coaches (Annual Report, 1988). These began the long term planning and preparation of junior and sub-junior elite gymnasts for the 1992, 1996 and 2000 Olympic cycles.

In describing the development of the two streams of women's gymnastics in response to the demands of the International body, P. Browne stated the following:

Do we really want to perform in the elite area at the International level? If the answer to that is yes, then we have to provide the structure ... where we can achieve in that area. But we also have a responsibility [of] the Federation to allow every person to participate in the sport of gymnastics somewhere in our structure to the level in which they wish to participate.

(P. Browne, personal communication, 10 August, 1993).

1989 saw the first of several achievements for Women's Artistic Gymnastics in the International arena with Australia's first gold medal in an International competition, Australia's first gymnast into the top 36 competitors (in competition II) at a World Championship, and Australia's first opportunity of compete in the World Cup Qualifying Circuit (Annual Report, 1989). These achievements continued in 1991 which has been "recorded as a significant year for Women's Gymnastics because it heralded our qualification as a team into the Olympic Games" (Annual Report, 1991). This was the first time Australia had qualified a full team of six competitors to compete in the Olympic Games since the qualification was introduced after the 1964 Olympic Games (P. Brown, P. Sharpe, personal communication, 10 August, 1993). It has also been noted that such a giant leap from 16th place to 6th place in the World has never before been achieved by any gymnastics nations in recent history (Annual Report, 1991) and the Australian women's gymnastic programme could now rank itself amongst the best in the world. In 1992 Australia's women's team continued to demonstrate its dramatic improvement by maintaining its standard at the 1992 Olympic Games, achieving a team placing of 7th and individuals ranking 19th, 30th and 36th (Annual Report, 1992, p. 23). With strong competitive programmes now in operation, and particularly the High Performance programmes whose role it is to nurture and develop talented gymnasts for the 1996 and 2000 Olympic Games, the women's programmes now have the challenge to maintain and improve on the achievements in the last four year gymnastics cycle. A recent shift in resources therefore, has been to

address the needs of developing juniors, hence, the sub-junior programme which sets out the syllabus with a long term perspective aiming at the young, junior elite gymnasts and their coaches who are the focus of this study.

From the sub-junior stage 4 level to the senior level an elite gymnast's typical competition calendar will include two state trials, one State Championship, one National Club Championship and one National Club Championship. Junior and senior gymnasts may then compete in up to about two and four international competitions respectively. This illustrates the limited number of competitions available to the gymnasts. At the lower sub-junior levels the gymnasts will have testings within the programme.

APPENDIX B

Sample Consent

Gymnasts' Consent



12 August 1993

[Gymnast's parents]
[Gymnast's address]

Dear [gymnast's parent]

I am currently completing my Honours Degree in Sports Science at Edith Cowan University and am conducting research on elite female artistic gymnasts. I write to you to obtain consent for [gymnast] to participate in this study. The study will involve one or two tape recorded interviews with [gymnast] of approximately 30 minutes duration.

From my previous involvement in elite gymnastics, I am well aware of the various training and competition demands placed on young elite gymnasts. In my research I will be studying the attitudes elite female artistic gymnasts have of themselves as elite athletes.

Written consent has been received from [programme] for [gymnast] to participate in the study following verbal and written explanations of the nature of the study.

Pending consent, interviews will be conducted from September to October.

Please return the enclosed consent form to the above address as soon as possible.

If you have any questions concerning this study please do not hesitate to contact me at home on [redacted] or my supervisor Dr Lynn Embrey at work on [redacted] [redacted]

Yours faithfully

Michelle Saliba

enc.

An exploratory study of the development of perceived body image in elite female artistic gymnasts in one central programme

GYMNAST'S CONSENT FORM

The purpose of this study is to provide an understanding of the way in which current and retired elite female artistic gymnasts see themselves as elite gymnasts and the way they picture the "ideal" elite gymnast.

The study will be descriptive in nature and coaching staff and current and retired gymnasts will be interviewed individually by the researcher on various aspects of the elite gymnastics programme, including training and competition demands.

All interviews will be conducted in strict confidentiality and the identity of all participants will remain anonymous. When reporting results of the study, names will be changed.

Interviews will be conducted at a time and place convenient for the gymnast and will not interfere with her training or study commitments. The interview period will continue from September to October. Each gymnast will be required to complete one to two interviews of approximately 30 minutes duration. Interviews will be tape recorded and transcribed at a later date. Each gymnast will be given the opportunity to review transcriptions of her interview.

Little is known about the way in which elite female gymnasts perceive themselves as elite athletes. In particular, little research has been conducted on the younger gymnasts who now dominate the international arena.

Gymnasts who decide not to participate in the study will not be disadvantaged by their refusal.

Any questions concerning the study entitled An exploratory study of the development of perceived body image in elite female artistic gymnasts in one central programme may be directed to Michelle Saliba on [REDACTED] or Dr Lynn Embrey (supervisor) at work on [REDACTED]

I, _____ have read the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this study, understanding that I may withdraw at any time.

I agree that the research data gathered for this study may be published provided my name is not used.

Gymnast

Date

Parent/Guardian

Date

Investigator

Date

APPENDIX C

Schedule of Interviews

<u>DATE</u>	<u>SUBJECT</u>	<u>TIME</u>	<u>LENGTH OF INTERVIEW</u> (MINS)	<u>TOTAL HOURS OF INTERVIEW</u> (MINS)	<u>VENUE</u>
09/09	J1* ¹	8.30pm	45	45	SH* ⁵
14/09	J2	8.10pm	60	105	SH
15/09	R1* ²	2.30pm	120	225	SH
19/09	J3	4.45pm	45	270	SH
22/09	SJ1* ³	8.15pm	30	300	SH
25/09	SJ2	10.00am	30	330	SH
02/10	J4	2.10pm	35	365	SH
06/10	J5	7.50pm	70	435	SH
07/10	SJ3	12.20pm	35	470	SH
07/10	SJ4	8.05pm	20	490	SH
08/10	SJ5	10.45pm	35	525	SH
11/10	SJ6	1.15pm	30	555	SH
12/10	SJ7	12.15pm	25	580	SH
12/10	C1* ⁴	7.20pm	120	700	Gym
13/10	R2	10.15am	105	805	SH
14/10	R3	12.00pm	75	880	Gym
17/10	C2	3.45pm	90	970	IH* ⁶
20/10	C3	1.55pm	90	1060	Gym
21/10	C4	9.00am	90	1150	Gym

Total hours of Interview

1150 mins

- *1 J1 denotes Junior gymnast 1 } Subjects have been masked by
 *2 R1 denotes Retired gymnast 1 } generic and numeric labels to
 *3 SJ1 denotes Sub-junior gymnast 1 } protect their anonymity
 *4 C1 denotes Coach 1 }

*5 SH denotes Subject's Home

*6 IH denotes Interviewer's Home

APPENDIX D

Interview Questions

Retired Gymnasts

- 1.0 How old are you?
 - 1.1 How long were you in the [central] programme?
 - 1.2 Can you remember why you started training with [central programme]?
 - 1.3 When did you stop training in the [central] programme?
 - 1.4 Have you kept out of the sport all together, or are you still involved in some way?
- 2.0 How often did you train?
 - 2.1 If you remember back to when you were training, can you tell me what you would have done in an average training session?
 - 2.2 What would you have included in your total training programme as an eliteathlete?
- 3.0 What did you like most about your gymnastics?
 - 3.1 What kept you motivated to train for as long as you did?
- 4.0 What were your reasons your retiring from elite gymnastics?
 - 4.1 Do you ever feel that you'd like to go back?
 - 4.2 Was there anything that you didn't particularly like about gym or your training?
- 5.0 Can you tell me what you believe being an elite gymnast involves?
 - 5.1 Do you believe that you felt any extra pressures when you were training that you thought other girls of your age wouldn't have felt?
- 6.0 I'd like to know some more about your feelings about the physical appearance of elite gymnasts. Would you feel comfortable in telling me how you felt about your own body weight and shape as an elite gymnast?
 - 6.1 Can you remember how you felt about your physical appearance when you were training?
 - 6.2 What did you used to see when you looked at yourself in the mirror?
 - 6.3 Do you feel the same way now?

- 6.4 Can you tell me what other gymnasts may have felt about their physical appearance?
- 6.5 You competed in many International competitions, can you compare the appearance of gymnasts from other countries with that of Australian gymnasts?
- 7.0 If you were to picture the perfect elite gymnast, what qualities would she have?
 - 7.1 Why do you think you might have this image of the perfect gymnast?
 - 7.2 Going back to the way you perceived your own physical appearance as an elite gymnast, how would you have compared yourself to your image of the perfect gymnast?
 - 7.3 You mentioned ... as being important qualities for a gymnast to have, why do you think these qualities are important?
 - 7.4 Do you think that the training requirements of elite gymnasts may have an influence on your image of the perfect gymnast?
- 8.0 How do you feel your coaches feel about the physical appearance of elite gymnasts?
 - 8.1 How did you feel they felt about your physical appearance as a gymnast?
 - 8.2 What made you feel this way?
- 9.0 Now I know you had to weigh in and have skinfold tests as part of your training, how often did these occur?
 - 9.1 Was this the case throughout your whole gymnastic career?
 - 9.2 Did you have to be a certain weight and skinfold?
 - 9.3 How did you know what weight and skinfold you should be?
 - 9.4 Did you feel any pressure to maintain this weight and skinfold level?
 - 9.5 What do you understand about weight and skinfolds?
 - 9.6 Was this understanding the same when you were training?
 - 9.7 Did you ever have lectures or sessions to help you understand about your weights and skinfolds?
 - 9.8 Why do you think gymnasts are weighed and have skinfolds as part of their training?
 - 9.9 What is your opinion of this?
- 10.0 We'll focus on weight for a moment. If you think back to when you were training, how did you feel about being weighed?
 - 10.1 How did you feel about being weighed as often as you were?

- 10.2 What thoughts would go through you mind just before and while you were being weighed?
- 10.3 Were you weighed where other people could see?
- 10.4 Who in particular would be with you when you were being weighed?
- 10.5 How did you feel about these people being there?
- 10.6 Did you keep a record of your weights?
- 10.7 What would you say was the purpose of recording your weights?
- 10.8 Who had access to your weight records?
- 10.9 Do you know if cheating occurs?

- 11.0 We'll focus now on skinfolds. If you think back to when you were training, how did you feel about having skinfold tests?
 - 11.1 How did you feel about being skinfolded as often as you were?
 - 11.2 What thoughts would go through you mind just before and while you were being skinfolded?
 - 11.3 Were you skinfolded where other people could see?
 - 11.4 Who in particular would be with you when you were being skinfolded?
 - 11.5 How did you feel about these people being there?
 - 11.6 Did you keep a record of your skinfolds?
 - 11.7 What would you say was the purpose of recording your skinfolds?
 - 11.8 Who had access to your skinfold records?
 - 11.9 Were you told your skinfold results

- 12.0 In your training programme, would you say that body weight and / or skinfolds were a major issue?
 - 12.1 What made you feel that way?
 - 12.2 How easy or difficult was it for you to maintain your weight and skinfold or reach the levels you aimed for?
 - 12.3 What made it easy / difficult for you?
 - 12.4 What did you have to do to maintain or reach these levels?
 - 12.5 How did you feel about what was being asked of you with regard to weight and skinfold at the time?
 - 12.6 What do you feel about it now?
 - 12.7 Did anything happen if you went above or below your desired weight or skinfold?
 - 12.8 When you had injuries, did you find it more difficult for you to control your weight and skinfolds?

- 13.0 Do you think that other gymnasts have difficulties or problems controlling their weight and skinfolds?
 - 13.1 Did you talk about it with your team mates?
 - 13.2 What sorts of things did you talk about?
 - 13.3 Did you know of any gymnasts who didn't drink or eat to keep their weight and skinfolds down?

- 14.0 Do you think that the issue of weight and skinfold changed during your career as an elite gymnast?
 - 14.1 What were your thoughts about these strict weight and skinfold requirements and the junior and sub-junior gymnasts in the WAIS programme?

- 15.0 What were your feelings about wearing a leotard for training?
 - 15.1 How did you feel when people were watching your training?

- 16.0 Did you feel that the emphasis on your body weight and skinfolds affected the rest of your training programme?
 - 16.1 Do you think your training would have been different if you didn't have to worry about your weight and skinfolds?
 - 16.2 And what about the rest of your life?

- 17.0 Can you tell me what you think people who are not involved in gym might think of the physical appearance of gymnasts?
 - 17.1 When you were training, did anyone ever say anything to you about your appearance?
 - 17.2 Do they make comment about your appearance now that you're not training?

- 18.0 How do you think gymnastics in Australia is developing at the moment?
 - 18.1 Do you think Australia is on the right track to becoming one of the leading gymnastics nations?

Interview Questions

Junior Gymnasts

- 1.0 How old are you?
- 2.0 How long have you been doing gymnastics?
 - 2.1 How long have you been training in the [central] programme?
 - 2.2 Why did you start training with the [central] programme?
- 3.0 How often do you train?
 - 3.1 What has kept you motivated to keep training for this long?
 - 3.2 What would you include in your total training programme as an elite athlete?
 - 3.3 If I was to come and watch one of your training sessions, can you tell me what I would see you do from the time you arrived at the gym?
 - 3.4 If you remember back to when you were training in your club programme, how is the [central] programme different?
 - 3.5 Can you tell me what you believe being an elite gymnast involves?
 - 3.6 How do you feel about yourself as an elite gymnast?
- 4.0 What do you like most about gym?
 - 4.1 What goals do you have for your gymnastics?
 - 4.2 Can you tell me what you think it might take for you to reach your goals?
- 5.0 Is there anything that you don't really like about gym or your training?
 - 5.1 How do you overcome these things that you don't particularly like and keep motivated to train?
 - 5.2 Do you feel any pressures that you think other girls your age wouldn't feel?
- 6.0 I'd like to know some more about your feelings about the physical appearance of elite gymnasts. Would you feel comfortable in telling me how you feel about your own body weight and shape as an elite gymnast?
 - 6.1 Can you tell me how you feel about your physical appearance?
 - 6.2 How do you see yourself when you look at yourself in the mirror?

- 6.3 Can you tell me what other gymnasts might feel about their physical appearance?
- 6.4 How would you compare the physical appearance of gymnasts from other countries with that of Australian gymnasts?
- 7.0 If you were to picture the perfect elite gymnast, what qualities would she have?
 - 7.1 Why do you think you might have this picture of the perfect gymnast?
 - 7.2 Going back to the way you see your own physical appearance, how would you compare yourself to your image of the perfect gymnast?
 - 7.3 You mentioned ... as being important qualities for a gymnast to have, why do you think these qualities are important?
 - 7.4 Do you think that your training requirements may have an influence on this image?
- 8.0 How do you think your coaches feel about the physical appearance of elite gymnasts?
 - 8.1 How do you think your coaches feel about your own physical appearance as a gymnast?
 - 8.2 What makes you feel this way?
- 9.0 Now I know you have to weigh yourself and have skinfold tests as part of your training, how often do these happen?
 - 9.1 Do you have to be a certain weight and skinfold?
 - 9.2 How do you know what weight and skinfold you should be?
 - 9.3 Do you feel any pressure to maintain this weight and skinfold level?
 - 9.4 What do you understand about weight and skinfolds?
 - 9.5 Have you had any lectures or sessions to help you understand about your weights and skinfolds?
 - 9.6 Why do you think gymnasts are weighed and have skinfold tests as part of their training?
- 10.0 We'll focus on weight just for the moment. How do you feel about being weighed?
 - 10.1 How do you feel about being weighed as often as you are?
 - 10.2 If you think about when you're being weighed, what thoughts go through your mind just before and while you're being weighed?
 - 10.3 Are you weighed where other people can see?
 - 10.4 Who in particular is with you when you are being weighed?
 - 10.5 How do you feel about these people being there?

- 10.6 Do you keep a record of your weights?
- 10.7 What would you say is the purpose of recording your weights?
- 10.8 Who has access to your weight records?

- 11.0 We will focus on skinfolds now. How do you feel about having skinfold tests?
 - 11.1 How do you feel about being skinfolded as often as you are?
 - 11.2 If you think about when you're having a skinfold test, what thoughts go through your mind just before and while you're having the test?
 - 11.3 Do you have skinfold tests where other people can see?
 - 11.4 Who in particular is with you when you are having a skinfold test?
 - 11.5 How do you feel about these people being there?
 - 11.6 Do you keep a record of your skinfold measurements?
 - 11.7 What would you say is the purpose of recording your skinfolds?
 - 11.8 Who has access to your skinfold records?

- 12.0 In your training programme, would you say that body weight and / or skinfolds are a major issue?
 - 12.1 What makes you feel this way?
 - 12.2 How easy or difficult is it for you to maintain your weight and skinfold, or reach the weight and skinfold you aim for?
 - 12.3 What makes it easy / difficult for you?
 - 12.4 What do you have to do to maintain or reach these levels?
 - 12.5 How do you feel about what is being asked of you with regard to weight and skinfold?
 - 12.6 When you get injuries, do they make it more difficult for you to control your weight and skinfolds?

- 13.0 Do you think that other gymnasts have difficulties or problems controlling their weight and skinfolds?
 - 13.1 Do you talk about it with your team mates?
 - 13.2 What sorts of things do you talk about?
 - 13.3 What are your thoughts about the older gymnasts who used to train with you?
 - 13.4 What are your thoughts about the younger sub-junior gymnasts?
 - 13.5 Do you know of any gymnasts who don't drink or eat to keep their weight and skinfold down?

- 14.0 What are your feelings about wearing a leotard for training?
 - 14.1 How do you feel when people are watching your training?

- 15.0 Do you feel that the emphasis on your body weight and skinfold affect the rest of your training programme?
 - 15.1 Do you think your training would be different if you didn't have to worry about your weight or skinfolds?
 - 15.2 And what about the rest of your life?
- 16.0 Can you tell me what you think people who are not involved in gymnastics might think of the physical appearance of gymnasts?
 - 16.1 Has anyone ever said anything to you about the way you look?
- 17.0 How do you think gymnastics in Australia is developing at the moment?
 - 17.1 Do you think that Australia is on the right track to becoming one of the leading gymnastics nations?

Interview Questions

Sub-Junior Gymnasts

- 1.0 How old are you?
- 2.0 How long have you been doing gymnastics?
 - 2.1 How long have you been training in the [central] programme?
 - 2.2 Why did you start training with the [central] programme?
 - 2.3 Can you remember what you had to do to be selected to train in the [central] programme?
 - 2.4 Is training in the [central] programme what you expected?
- 3.0 How often do you train?
 - 3.1 What does your whole gym training programme include?
 - 3.2 If I came and watched one of your training sessions, can you tell me what I would see you do?
 - 3.3 If you remember back to when you were training in your club programme, how is the [central] programme different?
- 4.0 What does it mean to you to be an elite gymnast?
 - 4.1 Do you think of yourself as an elite gymnast?
 - 4.2 How do you feel about yourself as an elite gymnast?
 - 4.3 Do you feel any different to other girls your age?
 - 4.4 How do other people think of you doing gymnastics in the [central] programme?
- 5.0 What do you like most about gym?
 - 5.1 What goals do you have for your gymnastics?
 - 5.2 Can you tell me what you think it might take for you to reach your goals?
- 6.0 Is there anything that you don't really like about gym or your training?
 - 6.1 Do you feel any pressures that you think other girls your age wouldn't feel?

- 7.0 I'd like to know a little bit about how you feel about the physical appearance of elite gymnasts, about what they look like. Would you feel comfortable in telling me how you feel about your own physical appearance as an elite gymnast?
 - 7.1 Can you tell me how you feel about your physical appearance, about what you look like?
 - 7.2 When you look at yourself in the mirror, how do you feel?
 - 7.3 Can you tell me what other gymnasts might feel about their physical appearance?

- 8.0 If you make a picture in you head of the way you see the perfect elite gymnast, what would she look like?
 - 8.1 Why do you think it is important for a gymnast to look like this?
 - 8.2 What do you think helped you to have this picture in your head of the perfect gymnast?
 - 8.3 If you think again about the way you see yourself now, and you think of the picture you just had in your head of the perfect gymnast, how much are they the same or different?
 - 8.4 How do you think gymnasts get what you call this "perfect" physical appearance?

- 9.0 Do you have to weigh yourself at training?
 - 9.1 How often do you weigh yourself?
 - 9.2 Do you have to be a certain weight?
 - 9.3 How do you know what weight you should be?
 - 9.4 How do you feel about being weighed?
 - 9.5 How do you feel about being weighed as often as you are?
 - 9.6 If you think about when you're being weighed, what thoughts go through your mind just before and while you're being weighed?
 - 9.7 Are you weighed where other people can see?
 - 9.8 Who in particular is with you when you are being weighed?
 - 9.9 How do you feel about these people being there?
 - 9.10 Do you keep a record of your weights?
 - 9.11 What would you say is the purpose of recording your weights?
 - 9.12 Who has access to your weight records?

- 10.0 Do you have skinfold tests as well?
 - 10.1 How often do you have skinfold tests?
 - 10.2 Do you have to be a certain skinfold?

- 10.3 How do you know what skinfold you should be?
- 10.4 How do you feel about having skinfold tests?
- 10.5 How do you feel about being skinfolded as often as you are?
- 10.6 If you think about when you're having a skinfold test, what thoughts go through your mind just before and while you're having the test?
- 10.7 Do you have skinfold tests where other people can see?
- 10.8 Who in particular is with you when you are having a skinfold test?
- 10.9 How do you feel about these people being there?
- 10.10 Do you keep a record of your skinfold measurements?
- 10.11 What would you say is the purpose of recording your skinfolds?
- 10.12 Who has access to your skinfold records?

- 11.0 What do you understand about weight and skinfolds?
 - 11.1 Do you think that body weight and/or skinfolds are important for gymnasts?
 - 11.2 What makes you feel this way?
 - 11.3 Do you think many gymnasts have to be careful with their weight?
 - 11.4 Do you have to be careful of your weight?
 - 11.5 How easy or difficult is it for you to keep your weight and skinfold at that level?
 - 11.6 What makes it easy / difficult for you?
 - 11.7 What do you think gymnasts have to do to keep their weight and skinfolds the same?
 - 11.8 How do you feel about being asked to keep your weight and skinfold at that level?
 - 11.9 When you get injuries, do they make it more difficult for you to control your weight and skinfolds?
 - 11.10 Have you ever had someone talk to you about your weight and your health?

- 12.0 Do you talk about it with your team mates?
 - 12.1 Do you know of any gymnasts who don't drink or eat to keep their weight and skinfold down?
 - 12.2 How do you feel about the physical appearance of the junior gymnasts?
 - 12.3 Can you remember back to when the older girls were training in the WAIS programme? How did you feel about their physical appearance?

- 13.0 Can you tell me what you think other people who are not involved in gymnastics might think about the physical appearance of gymnasts?

- 13.1 Has anyone ever said anything to you about the way you look?
- 14.0 How do you think the Australian gymnasts compare with gymnasts from other countries?
- 14.1 Do you think that one day Australia will be one of the top gymnastics countries in the world?

Interview Questions

Coaches

- 1.0 How long have you been involved in gymnastics?
 - 1.1 In what capacities has your involvement been?
 - 1.2 How long have you been involved in the [central] programme?
 - 1.3 What qualities do you look for in selecting gymnasts to train in the [central] programme?

- 2.0 What do you like most about your gymnastics coaching?
 - 2.1 What are your coaching goals?
 - 2.2 What sorts of things do you ask of your gymnasts to help you fulfil your goals?

- 3.0 From a coach's point of view, what does being an elite gymnast involve?
 - 3.1 What does an elite gymnast's entire training programme include?
 - 3.2 Can you tell me why you think your gymnasts commit themselves to the intense training and competition demands of elite gymnastics?
 - 3.3 Do you feel that elite gymnasts feel any pressures that you think other girls of their ages wouldn't feel?

- 4.0 As you know, my research is focusing on the body image of elite gymnasts. Can you tell me what you perceive to be the ideal physical appearance of the elite, artistic gymnast?
 - 4.1 Why are these qualities important?
 - 4.2 Do you believe that the training requirements of elite gymnasts may have an influence on this image?
 - 4.3 How would you compare your gymnasts to what you perceive to be the ideal image?
 - 4.4 How would you compare the physical appearance of Australian gymnasts to those of the top nations?
 - 4.5 How do you believe your gymnasts feel about their body images?
 - 4.6 What makes you believe they feel this way?

- 5.0 Now I know the Junior gymnasts are weighed and have skinfold tests as part of their training, how often do these happen?

- 5.1 What do you believe is the purpose of weighing and skinfolding the gymnasts this often?
- 5.2 Is this the same for the younger gymnasts?
- 5.3 Do the gymnasts have to be a certain weight and skinfold?
- 5.4 How are these levels determined?
- 5.5 Do you believe these levels are a reasonable demand?
- 5.6 Do these levels remain the same throughout the year?

- 6.0 What is the process for weighing the gymnasts?
 - 6.1 Who is present when the gymnasts are weighing in?
 - 6.2 What are the reasons for keeping records of the gymnast's weights?
 - 6.3 Who has access to the gymnasts' weight records?
 - 6.4 Do you know if any cheating occurs?

- 7.0 What is the process for skinfold testing?
 - 7.1 Who is present when the gymnasts are having skinfold tests?
 - 7.2 What are the reasons for keeping records of the gymnasts' skinfolds?
 - 7.3 Who has access to the gymnasts' skinfold records?
 - 7.4 Are the gymnasts told their skinfold measurements?

- 8.0 Do the gymnasts ever make comment to you about their weight or skinfold?
 - 8.1 Do you know if they ever make comment to any other member of the coaching staff?
 - 8.2 Do the gymnasts talk about it amongst themselves?
 - 8.3 What do you believe are the gymnasts thoughts about weighing in and having skinfold tests?
 - 8.4 What happens if a gymnast rises above her desired weight and / or skinfold level?
 - 8.5 What about if she falls below her desired weight and / or skinfold level?

- 9.0 What do you believe is your gymnasts' understanding of weight and skinfold?
 - 9.1 What do you believe is their understanding of the purpose of these tests?
 - 9.2 What do you believe is their understanding of the purpose of recording their results?
 - 9.3 Do you believe your gymnasts feel any pressure to achieve and maintain their weight and skinfold levels?
 - 9.4 How easy or difficult do you feel it is for your gymnasts to achieve and maintain the weights and skinfold levels they aim for?

- 9.5 Are you aware of any practices used by your gymnasts to keep their weight and skinfolds at the desired level?
- 10.0 If you recall the gymnasts who made up the initial WAIS squad and the current junior and sub-junior squads, what comparisons, if any, could you make about their physical appearances?
- 10.1 What reasons would you give for this?
- 10.2 Do you believe this to be a similar trend for gymnasts throughout Australia?
- 11.0 Can you tell me what you think people who are not involved with gymnastics might think of the physical appearance of gymnasts?
- 11.1 Has anyone ever remarked either positively or negatively to you about the physical appearance of your gymnasts?
- 11.2 How do you respond to negative remarks?
- 12.0 How do you see the development of Australia's elite female gymnasts at this point in time?
- 12.1 What do you feel has contributed to this development?
- 12.2 How do you feel Australia's elite gymnasts compare with elite gymnasts Internationally?
- 12.3 Do you believe Australia is on the right track to becoming one of the leading gymnastic nations?

APPENDIX E

Sample Interview Transcript

Sub-Junior Interview Transcription

SUBJECT: SJ6
DATE: 11/10/93
TIME: 1.15pm - 1.45pm
VENUE: Subject's home
PRESENT: Interviewee
Interviewer

MS So how old are you SJ6
SJ6 10
MS 10, ok. And how long have you been doing gymnastics?
SJ6 About 3 years
MS Mhum. And how long have you been training in the (central) programme?
SJ6 2 years
MS Mhum, so it's only 1 year in your club?
SJ6 Yep.
MS Ok, and so shy did you start training with the (central) programme?
SJ6 Well um, there was, mum had a person at work and her daughter was in it and I kept on doing things in the back yard and mum thought I was really good so she just said to try it at (central).
MS Mhum, ok. And so you went along to a testing?
SJ6 Yep
MS And can you remember what you had to do for the testing?
SJ6 Um, they just sort of like tested you on how strong and flexible you were. Um, and (coach) was like showing us how do things and everything but we didn't do all that much.
MS Mhum. Different skills?
SJ6 Yep
MS Ok. Was there anything else that you had to do?
SJ6 No. We didn't do any apparatus or anything, we just like, um, tested us on our flexibility and strength and everything.
MS Mhum, ok. And is training in the (central) programme what you expected it to be?

- SJ6 Um, sort of. It's a lot harder than I thought it would be. I knew it would be hard but not as hard as this (laugh). And um, I sort of didn't really expect every, all that much when I went there.
- MS Mhum, ok. And how often do you train, normally?
- SJ6 Um, every, every day apart from Sunday. And Monday and Tuesday and Thursday in the morning for 2 hours.
- MS As well as the afternoon?
- SJ6 Yep.
- MS Mhum, ok. And so what does your whole training programme include?
- SJ6 Just when we get there we warm up, then do strength, um, then beam, bars, vault and floor and tumbling with the coach.
- MS Ok. And so if I came and watched one of your training sessions is that what I'd see you do?
- SJ6 Yeh
- MS Would I see anything else happen?
- SJ6 Not usually. Unless somebody did something wrong (both laugh).
- MS So there's not usually any major dramas?
- SJ6 No
- MS Ok. Alright, so if you remember back to when you were training in the club programme, how is the (central) programme different?
- SJ6 Um, they just, they, you had to have basics at (central), but at the training, training in the club they just like said, oh, just do that, and they didn't show you how to do it, they just said do it. And you know it was a lot messier and everything than you do at (central). They didn't do strength or anything, they just sort of mucked around most of the time.
- MS Mhum. Anything else that was different?
- SJ6 Um, the coaches were a lot different. They weren't so strict.
- MS Yeh, in what sort of ways are they strict?
- SJ6 Um, they just like, if you did something wrong, if you had messy feet they'd just like, wouldn't do anything, just keep training.
- MS Is that about all?
- SJ6 Yeh
- MS Ok. So what does it mean to you to be an elite gymnast?
- SJ6 Um, sometimes when you're feeling down you think "oh, no, I wish I never did this", but then sometimes you think about it and you think "oh my God, look what I'm doing, it's so good", and just think "oh my, like wow", sort of. It's like, everybody at school, like, just like, really wants to be your friend and everything and it's really funny (laugh). They treat you so much differently, sometimes that's a pain but sometimes it's really good.

- MS Mhum. How do they treat you differently?
- SJ6 Just um, like they, they kind of like, they always want to like, be nice to you and everything and like, to everybody else they just like "oh, go away" or something. But like if, if you ask if you could play with them they'd just say yes even if they don't like you very much (laugh). And um, they want you to teach them things, like how to do things and you say, "um, no, it might be a bit hard" (laugh) and stuff like that.
- MS So they think you're pretty special, do they?
- SJ6 Yeh
- MS Mhum, ok. And so how do you feel about yourself as an elite gymnast?
- SJ6 Um, ok. Everybody says that like, I'm so like, really good but sometimes you don't believe them and everything. You don't really think about it all that much. Sort of take one day at a time.
- MS Yep, ok. So do you feel any different to the other girls of your age, say the girls at school who don't do gym?
- SJ6 Yeh, but you sort of like, sometimes it can be a pain but you know, you don't, you don't really think about it that way.
- MS Mhum. And how do you feel that you're different?
- SJ6 Um, just, I don't know. You just sort of like, sometimes like, when they try to be as good as you and they, they like um, like show you things whenever, they try and try to do things, and like it's just totally weird. They're really funny. And like sometimes you tell them how to do stuff and they think you're really different and all this kind of stuff. But it's not that good being different but sometimes it is.
- MS Yeh. Ok. So how do you think that other people feel about you doing gymnastics in the (central) programme? Say people not at school?
- SJ6 Um, I don't really know, I've never asked them. Don't really pay much attention to what they feel.
- MS Yep, ok. So what do you like most about gym?
- SJ6 Um, I just love being there. It's just, just so much fun (laugh). And like you think, sometimes you think "oh, I wish I could be out there having fun" at play, like playing and everything but, but you know that if you did you'd regret it so much. And it's just fun, very much fun.
- MS Yeh. So why would you regret if you went out with your other friends?
- SJ6 If, if I ever quit gym I knew in a couple of years I'd, I'd wish I never did. And that's the only thing that really keeps me going.
- MS Yeh. Just because you enjoy it, you think you'd regret it?
- SJ6 Yeh.
- MS Mhum, ok. So what goals do you have for your gymnastics?

- SJ6 Um, my major goal is to go to the Olympics but at the moment we're training to go to (east) in December.
- MS Mhum. So is that 2000 Olympics?
- SJ6 Yep.
- MS And (east) in December, that's stage 4 is it?
- SJ6 Yep.
- MS Mhum. And getting ready for Nationals next year?
- SJ6 Yep.
- MS Ok. So what do you think it's going to take for you to reach 2000 and stage 4 in December?
- SJ6 A lot of hard work (laugh)
- MS Mhum
- SJ6 Yep. And just, sort or like, um, got to listen to the coaches and just do what they say and everything.
- MS Yeh, ok. And is there anything that you don't really like about gym?
- SJ6 No, not really, just that you can't do, do as much stuff as the other kids, but you know, you don't think, try not to think about it all that much.
- MS Ok. So do you feel any pressures that you think other girls of your age wouldn't feel?
- SJ6 Um, not really. I mean everybody's got something that they're good at and so you've got a bit more pressure than everybody else but it doesn't really make any difference to you.
- MS Mhum, so do you think being good at something is a pressure in itself?
- SJ6 Not really. It's just like, if you really um, are meant to be good at it you wouldn't feel the pressure as much if you weren't.
- MS Mhum. Ok then. Ok, well I'd like to know a little bit about how you feel about the physical appearance of elite gymnasts, [SJ6 - yep] ok. Would you feel comfortable in telling me how you feel about your own physical appearance?
- SJ6 Yeh
- MS Alright, so how do you feel about your physical appearance?
- SJ6 Um, I don't reckon it's all that much, just, that much of a difference to everybody else. I don't really care.
- MS No
- SJ6 No
- MS Ok. So when you look at yourself in the mirror, what do you see and how do you feel?

- SJ6 Just a normal person. But um, you know somewhere in there there's an elite gymnast and you don't really, you don't really mind. Sometimes you think "oh, I'm glad I'm a gymnast, 'cause otherwise I'd be a fat person like that other one over there" (laugh), so
- MS Mhum. So you don't think you're fat?
- SJ6 No. Oh, sometimes when you're at the gym you do, but not when you're around normal, average people.
- MS Mhum. So why do you think you're fat around gym people?
- SJ6 You don't really think you're fat, you just think "oh, my God, they're so skinny, I wish I was that skinny". And um, but like, you know that, you know you, you are that skinny sometimes so it doesn't really matter.
- MS And how do you feel about being that skinny?
- SJ6 Um, I think that it's, I think it's good because you can do a lot more things like, you, and you're a lot fitter and everything than most people. And it helps you do lots of things.
- MS Mhum, ok. So can you tell me what you think other gymnasts might feel about their physical appearance?
- SJ6 Probably the same. Um, you know, sometimes we talk about it and you, it's funny, you're talking about it and you think exactly the same as the other person. That's, it's really funny and it's really weird as well (laugh). Sometimes you think "Oh my God, I'm the only person here thinking that I'm, like, I'm skinny and I look horrible sometimes", but everybody else does as well and sometimes the coaches get worried if you're thinking too much about your weight and they don't tell you your skinfold and you're going "oh no, what if I've gone up" or something. And they think if they're not telling you they, that you don't worry about it, but you do even more (laugh).
- MS Mhum. So the coaches get, don't like it if you're worried about your weight?
- SJ6 Yeh.
- MS And how do they, have they told you that, or, let you know?
- SJ6 No you can just tell that, 'cause like whenever you're talking about it they always seem to not tell your skinfold (laugh) and it's just, pretty obvious.
- MS Yeh, ok. So what sort of things do you talk about with your team mates?
- SJ6 Um, just things like um, like sometimes you see other persons going and they go "oh my God, I feel fat today" and you say "oh yeh, so do I" (laughing) and you just start joking about it and everything.
- MS Mhum. Ok. Alright, what I want you to do is to make a picture in your head of the way you see the perfect elite gymnast.

- SJ6 Um, probably pretty tall and slim and not very muscly, just, probably, probably like one of the other ones at the Olympics or somebody.
- MS Mhum. So you've seen her before, have you?
- SJ6 Yeh.
- MS Mhum, ok. So if you think about um, your perfect gymnast and then you think about the way you see yourself, how are the two the same or different?
- SJ6 They're pretty much the, pretty much the same, same hair colour, same eyes, same body shape. You know um, they're on your favourite apparatus and everything, so, pretty much the same.
- MS Mhum, so you think that your perfect elite gymnast is, you?
- SJ6 Yeh, basically. Well what I hope to be me anyway.
- MS So, perhaps you, a little bit older?
- SJ6 Yeh
- MS Mhum, ok. Alright so you mentioned tall and slim and not muscly, why do you think these qualities might be important?
- SJ6 Well um, people sometimes, they've got really muscly and they don't look all that good, they, sort of really stiff and, and people think "oh, yuk, look at all her muscles bulging" and everything and you just don't want to be like that.
- MS Yeh, and what about tall and slim?
- SJ6 Um, I don't know, you just look like a bit longer and, and slimmer when you're tall and it just looks better, I reckon.
- MS Mm. So basically just to look better [SJ6 - Yeh] more than anything else?
- SJ6 Longer lines
- MS Mhum. And how about um, doing your actual gymnastics, do you think that body type might be important for that?
- SJ6 Yeh
- MS Yeh, how do you think it might be important?
- SJ6 Well, um, you have to be quite muscly, but like, it doesn't have to be, you can be like slim and not be really bulky so you can get enough height and length and everything and just like your strength not heaps and heaps. And um, just have to be skinny 'cause otherwise it just looks really bad.
- MS Yeh, ok then. So how do you think gymnasts get what you call this perfect body.
- SJ6 Some people are just born with it, I suppose. Like some people are really short, some people are really tall, just goes.
- MS Mhum. Is anything else as well as being born with it?
- SJ6 Suppose you, you have to like work hard to get the strength and you have to work hard to get the flexibility but that's about it.

- MS Mhum. Nothing else, you think? No, ok. Alright now you have to weigh yourself at training?
- SJ6 Yep
- MS Yeh. And how often do you have to weigh yourselves?
- SJ6 Um, 3 or 4 times a week.
- MS Mhum, ok. And how do you feel about being weighed?
- SJ6 I don't really mind. Some people really mind, but I don't. 'Cause usually I don't have any troubles with my weight.
- MS Mhum. Do you think if you had troubles you might mind?
- SJ6 Yeh
- MS Is that why the other people mind?
- SJ6 Some people do, not many, but some.
- MS Mhum, ok. So if you think about when you're being weighed, shat sorts of things go through your mind?
- SJ6 "Oh no, what if I've gone up" (laugh)
- MS Yeh, anything else?
- SJ6 Um, not really. Just sort of hope that you've gone down, or stayed the same.
- MS Yep, ok. And so are you weighed where other people can see?
- SJ6 Yep
- MS Mhum. And who would be there when you're weighing?
- SJ6 Um, the other gymnasts and sometimes coaches check, but not very often.
- MS Mhum. And how do you feel about them being there, the gymnasts and the coaches?
- SJ6 I don't mind. Sometimes they just say "oh my God, I'm like 5 kilos more than that".
- MS What, when the see yours?
- SJ6 Yeh, that makes you feel good but some, just like stand there. You don't really mind.
- MS Mhum. And what about when the coaches are there?
- SJ6 You don't really mind either 'cause you know that you don't have any troubles, most of the time.
- MS Yeh. What about if you have got troubles?
- SJ6 You're in trouble! (laugh)
- MS Yeh. Does that make it more nervous if you think you might be going up?
- SJ6 Yeh, 'cause sometimes you step on there and you go "oh no, I had that chocolate cake, oh my God, what am I going to do, I hope I haven't gone up?
- MS Mhum. Ok. And so you have to write down your weights?

- SJ6 Yep
- MS And what would you say is the reason for writing them down?
- SJ6 So the coaches always know like, how your weight's going. And like if you go up or down or just if you keep it steady, steady line. And you have to like tick off as well, just make sure that you're there and everything.
- MS Mhum, ok. And who can see your weight records?
- SJ6 Um, the coaches, the other gymnasts, and that's about it.
- MS Mhum. And how do you feel about these people being able to see them?
- SJ6 I don't mind.
- MS Mhum. Ok. And you had to have skinfolds as well.
- SJ6 Yep
- MS How often do you have skinfolds?
- SJ6 Um, sometimes after holidays we have them like twice, about a fortnight or something, but some, like we don't have them for ages, about a month. So it changes all the time.
- MS Yep. And how do you feel about having skinfolds?
- SJ6 Um, it's, like, you don't really mind but sometimes you think "oh, no" but you know, you have them all the time so it doesn't really matter.
- MS Mhum. So do you think it's better to have them more often?
- SJ6 Um, yeh, 'cause you like to know how you're going and like, if you are getting um, putting on any you have to like, get it down and everything.
- MS Yeh.. So why do you have to get it down?
- SJ6 Um, just because like, you can get a lot of injuries if you, you know, keep on putting on weight and everything, so you just try to keep it the same. And like sometimes you grow heaps and you put lots on. That's, that's a problem.
- MS Yeh. So what happens then?
- SJ6 You just have to train a lot harder and do a lot more strength and everything.
- MS Mhum. So do you think it, perhaps it can go up a bit when you're growing?
- SJ6 Yeh, sometimes you just have a growth spurt and you put on a bit of weight but that doesn't really matter 'cause you know it's growing, not, not widening.
- MS Yep, ok. That's a good way of putting it, isn't it.
- SJ6 Yeh (both laugh)
- MS Ok. Alright, so when you have your skinfolds are they where other people can see?
- SJ6 Yep
- MS And who would be there?

- SJ6 The person who does it and sometimes coaches and sometimes other gymnast.
- MS Mhum. And how do you feel about them being there for your skinfolds?
- SJ6 Don't mind. You don't really worry about anything, you just worry about how it's going and like, sometimes you check over on the scores and you try to add it up in your head and everything, but you don't really mind them being there at all.
- MS Mhum, ok. And so you write down your skinfold measurements?
- SJ6 Yep
- MS And what would you say is the reason for writing them down?
- SJ6 The same as your weight. Just to see how it's going all the time. And um, just like to see if you're putting on or losing or whatever.
- MS Yeh, ok. So do you think it's important to write them down?
- SJ6 Yeh, 'cause if you're having difficulties in training and everything they know by the weight, if like, it's because you, you're putting on any weight or anything or if you're growing or anything.
- MS Mhum, ok. And so who has access to your skinfold records?
- SJ6 Um, I don't really know. Just coaches, I suppose.
- MS Mhum, ok then. So do you think that body weight and skinfolds are important for gymnasts?
- SJ6 Yeh, some gymnasts, but some just don't have to worry about it at all.
- MS So which gymnast are you?
- SJ6 I'm one that doesn't have to worry (laugh).
- MS Ok. Alright, so why do you think it's important?
- SJ6 Um, just 'cause um, just 'cause if you're having troubles you can, you can tell and, and um, everything.
- MS Yeh, ok. So what do gymnasts have to do to keep their weight and skinfolds the same, or stop them from going up?
- SJ6 Um, just like eat the same diet all the time and work as hard as you are and it just stays the same.
- MS Yeh, and what sort of diet do you have to eat?
- SJ6 Um, just basically, just the good foods. A lot of energy foods but not too many lollies as, like you can eat some but not as much as most people.
- MS Mhum. So do you eat enough, or do you have to cut right back on how much you eat?
- SJ6 Um, you just eat as much as, as you have to but just don't overdo it.

- MS Mhum, so you don't feel like you're starving yourself at all [SJ6 - yeh] or anything.
Mhum, ok. And have you ever had anyone come and talk to you about your weight and skinfolds?
- SJ6 Um, yeh, some people like um, they come and talk to you about the nutrition and everything and everybody goes there and you have nutrition talks and everything and um, they just tell you what to eat and what not to.
- MS Mhum. So how do you feel about the physical appearance of the junior gymnasts in the group above you?
- SJ6 Um, sometimes you think um, "when I'm older I want to be like that", or I "don't want to be like that". And um, sometimes you think, "oh I'd probably be like that" and um, you just hope that the ones that look better are the ones that are better. And you don't really look at them all that much but you just look at them and compare them to you.
- MS Mhum. And how do they compare to you?
- SJ6 Um, sometimes like, there's no-one who's got the same body shape as you and you think "oh, no, what am I going to be like", but sometimes they do and you think "oh, um, you know, they're pretty good, that's ok".
- MS Mhum. So what do they actually look like to you?
- SJ6 Um, oh, just the same as everybody else there. Just another gymnast.
- MS Yeh. Do they fit into your picture of the perfect gymnast?
- SJ6 Some of them do but some don't.
- MS In what ways do they or don't they?
- SJ6 Um, just um, the bulky and some, some just um, just aren't them.
- MS Mhum. Ok, so it's more the bulkiness than anything else?
- SJ6 Yeh
- MS Mhum. How about their slimness?
- SJ6 Um, you know everybody in there is just about basically slim, so you, you don't usually look at that all that much.
- MS Mhum. So you mainly just see the muscliness?
- SJ6 Yep
- MS Yeh, ok. And can you remember back to when the senior girls were training in the programme?
- SJ6 Yep
- MS How did they compare to your perfect gymnast?
- SJ6 Um, some of them were pretty perfect but um, some weren't. It's just basically the same as the juniors.
- MS Yeh, mainly just how muscly they were?
- SJ6 Yeh

- MS Mhum, ok then. Can you tell me what you think other people who are not involved in gymnastics might feel about the physical appearance of elite gymnasts?
- SJ6 Um, some of think "oh yuk, they look horrible, they're so skinny" and everything but some wish they were like that. I think.
- MS Yeh, do you think it's just individual preferences, do you?
- SJ6 Yeh.
- MS Mhum, ok. And has anyone ever said anything to you about the way you look?
- SJ6 No. Just the height, usually (laugh)
- MS Mhum, what being small, or?
- SJ6 Yeh
- MS Ok. We've just about finished. I've just got another couple of questions. How do you think Australian gymnasts compare with the gymnasts of other countries that you've see?
- SJ6 Um, mostly just, I think that most of the other countries are a lot skinnier or they're um, but usually they're, they're basically the same. It' doesn't really make any difference, it's um, just sometimes you think "oh they're really good" but they're the same body shape and you think, you just get really confused (laugh), you don't know what to think about them. Sometimes you think um, "how come she's really good and she's got the body shape, but they haven't and they're like, not as good". But it's just basically the same.
- MS Ok, and how do you feel about the gymnasts who are a lot skinnier than our girls?
- SJ6 Um, you just, er, they're basically the same size, just a little bit of difference and usually they're a lot shorter and, and things, but um, they, they don't look any fitter, they don't look any, any different usually.
- MS Mhum. So you think it's alright to be skinnier still than what our girls are?
- SJ6 Yep
- MS Ok. And do you think that maybe one day Australia will be one of the top gymnastics countries?
- SJ6 Yep
- MS Yeh. When do you think that might be?
- SJ6 Hopefully in the year 2000.
- MS Mhum. When you're there?
- SJ6 Yep (laugh)

MS Mhum. Ok. Oh well that sounds pretty good to me. That's about all I've got to ask you. They were all my questions. Is there anything else that you want to say, or anything?

SJ6 No

MS No. Ok, well thank you SJ6. That was a very big help.

END

GIRLS: 2 TO 18 YEARS **HEIGHT PERCENTILE**

APPENDIX F **Junior Gymnasts**

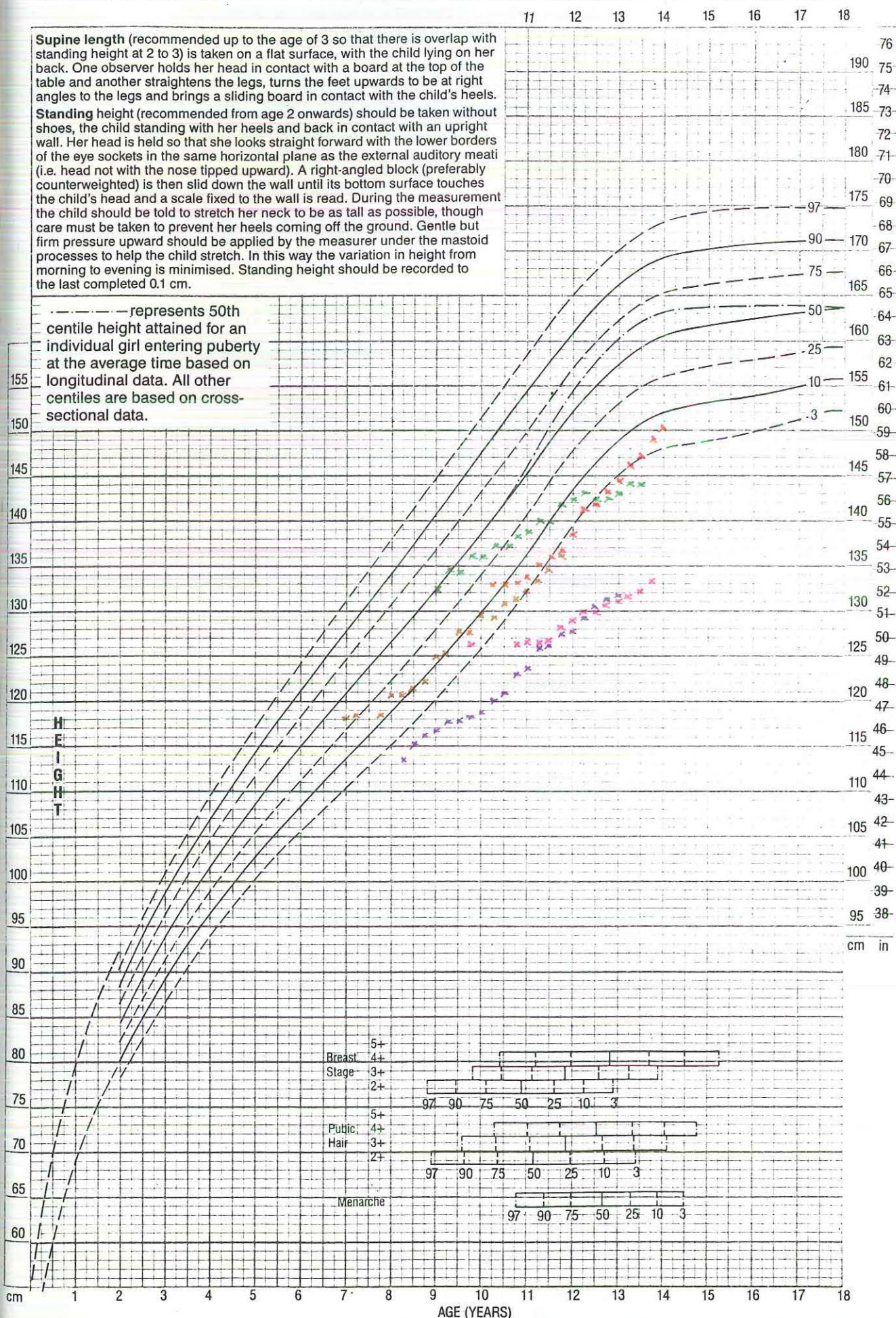
MOTHER'S HEIGHT _____

FATHER'S HEIGHT _____

Supine length (recommended up to the age of 3 so that there is overlap with standing height at 2 to 3) is taken on a flat surface, with the child lying on her back. One observer holds her head in contact with a board at the top of the table and another straightens the legs, turns the feet upwards to be at right angles to the legs and brings a sliding board in contact with the child's heels.

Standing height (recommended from age 2 onwards) should be taken without shoes, the child standing with her heels and back in contact with an upright wall. Her head is held so that she looks straight forward with the lower borders of the eye sockets in the same horizontal plane as the external auditory meati (i.e. head not with the nose tipped upward). A right-angled block (preferably counterweighted) is then slid down the wall until its bottom surface touches the child's head and a scale fixed to the wall is read. During the measurement the child should be told to stretch her neck to be as tall as possible, though care must be taken to prevent her heels coming off the ground. Gentle but firm pressure upward should be applied by the measurer under the mastoid processes to help the child stretch. In this way the variation in height from morning to evening is minimised. Standing height should be recorded to the last completed 0.1 cm.

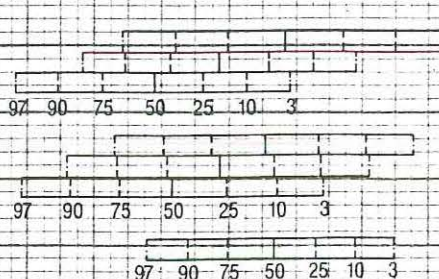
— represents 50th centile height attained for an individual girl entering puberty at the average time based on longitudinal data. All other centiles are based on cross-sectional data.



Breast Stage

Pubic Hair

Menarche



**GIRLS: 2 TO 18 YEARS
WEIGHT PERCENTILE**

Junior Gymnasts

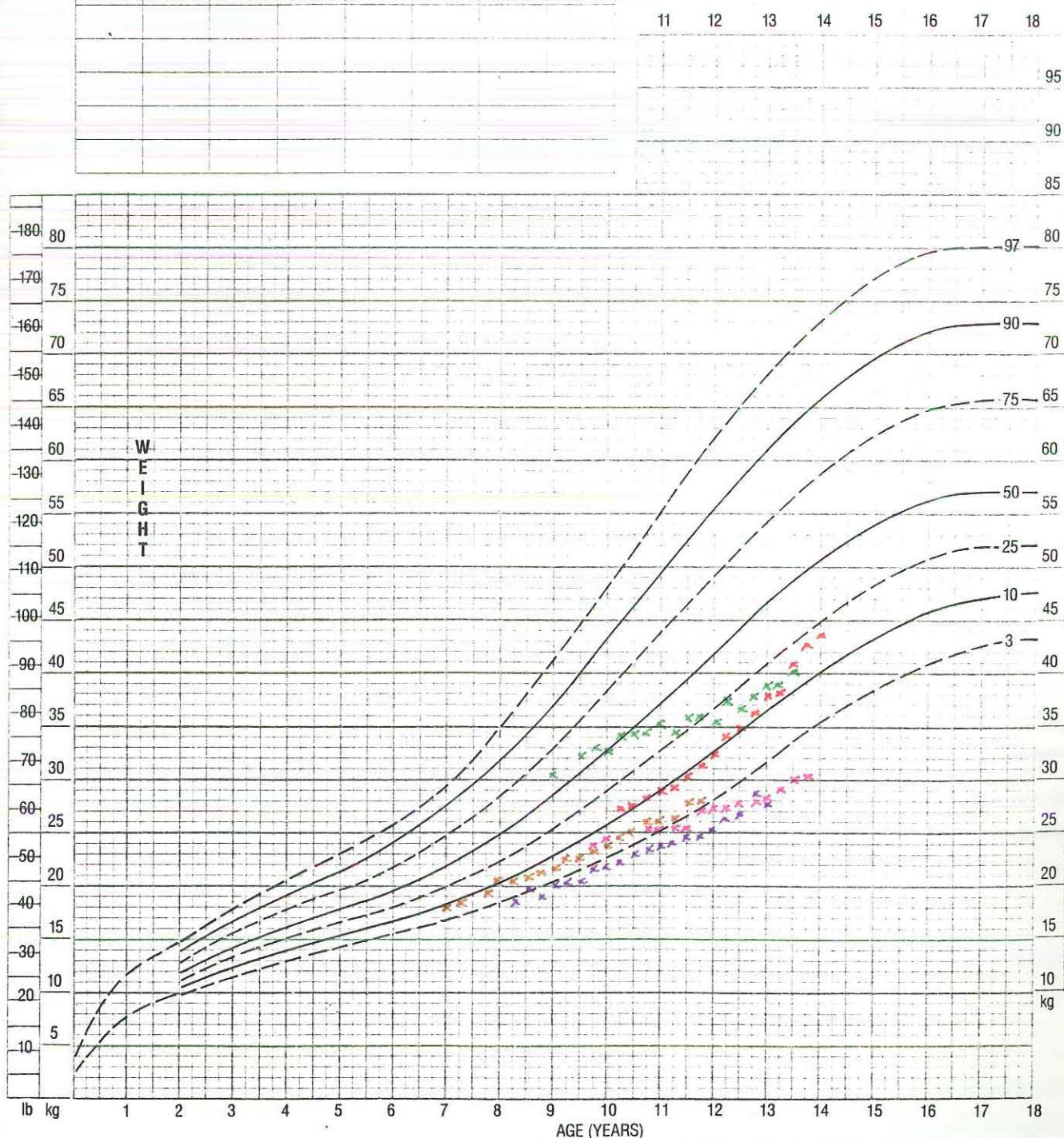
Weight should be taken in the nude, or as near thereto as possible. If a surgical gown or minimum underclothing (vest and pants) is worn, then its estimated weight (about 0.1 kg) must be subtracted before weight is recorded. Weights are conventionally recorded to the last completed 0.1 kg above the age of six months. The bladder should be empty.

[illegible]

SIMPLIFIED CALCULATION OF BODY SURFACE AREA (BSA)

$$\text{BSA (m}^2\text{)} = \sqrt{\frac{\text{Ht (cm)} \times \text{Wt (kg)}}{3600}}$$

Ref: Mosteller R.D.
Simplified calculation of body surface area
N.Engl. J.Med. 1987; 317:1098.



Source: Adapted from Hamill P.V.V.: NCHS growth curves for children. DHEW publication (PHS) 78-1650