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The Athlete Life Quality Scale:

Development and Psychometric Analysis

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Noah Benjamin Gentner

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DEDICATION

As with everything I do, this project is dedicated to my family and friends. You have all shaped me into the person I am today and, more importantly, made my life so incredibly rich and happy. Your love, support, smiles, laughter, jokes, compassion, and warmth keep me alive and anxious for each coming day.

I would like to give a special dedication to my grandparents who have all played such an important role in my life. Although only one of you is still with me in body, I feel the presence of each of you every day. I have so many wonderful memories of all of you. You taught me so many things, but none were more important than the ability to love and care for others and to laugh. For those gifts I am truly grateful to all of you.

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ABSTRACT

Quality of life (QOL) is a widely researched topic in many fields (Dijkers, 1999). However, there is a dearth of information regarding athletes' QOL contained within the extant sport psychology literature. Few attempts have been made to identify factors that influence athletes' quality of life (Chelladurai & Riemer, 1997; Riemer & Chelladurai, 1998). Unfortunately, this research has primarily focused on performance as the predominant factor in athletes' life quality, thus ignoring other salient aspects of athletes' experiences. These may include, but are not limited to, physical health (Gould, Jackson, & Finch, 1993), relationships with significant others (Scanlan, Stein, & Ravizza, 1989), and time demands/overtraining (Kellmann, 2002),

The purpose of the current study was to develop a valid and reliable instrument designed to assess athletes' quality of life. Initial items were generated using existing literature focusing predominantly on Pflaum's (1973) quality of life factors. After a pilot test to assess initial reliability, the questionnaire was given to 159 Division I athletes. Data analysis included principle components analysis and orthogonal (varimax) rotation. In addition, Cronbach's (1951) alpha was used to assess reliability.

Results of the exploratory factor analysis revealed an overall scale alpha of .83 which exceeded Nunnally and Bernstein's (1994) suggested .80 level. Furthermore, the results suggest the development of a reliable and valid scale with five possible subscales including: general life satisfaction, physical satisfaction, team/sport satisfaction, primary social satisfaction, and recovery/social satisfaction. Finally, recommendations for future research are provided.

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CHAPTER I

INTRODUCTION AND PURPOSE

Introduction

In recent years the field of sport psychology has witnessed tremendous growth. Many athletes and coaches have begun to use sport psychology services and the number of sport psychology consultants has increased dramatically. In fact, the Association for the Advancement of Applied Sport Psychology (AAASP) is now comprised of over 650 members dedicated to the promotion of applied sport psychology. Furthermore, the United States Olympic Committee (USOC) has increased its efforts to provide sport psychology consulting for elite amateur athletes and coaches. This has been done via the Sport Science Division of the USOC, which now includes a sport psychology registry identifying sport psychology consultants who are qualified to work with U.S. amateur athletes (Clarke, 1983; Waitley, May, & Martens, 1983). In 1987 the USOC established a permanent department of sport psychology, offering education and intervention services to athletes and coaches through the Olympic Training Center in Colorado Springs.

With increasing numbers of available consultants, more athletes are becoming exposed to applied sport psychology. Applied sport psychology is focused on identifying and understanding psychological theories and techniques that can be applied to sport and exercise in order to enhance the performance and personal growth of athletes and physical activity participants (Williams & Straub, 1998). Thus, effective practitioners not only focus on improving athletes' performance but also enhancing their personal growth.

Included in the latter should be attempts to improve athletes' life quality. Each year an increasing number of sport psychology consultants work with athletes with these aims in mind (Gordon, 1990; Halliwell, 1990; Loehr, 1990; Murphy & Ferrante, 1989; Ravizza, 1990; Rotella, 1990). However, too often the primary focus is on performance excellence rather than an athletes' personal growth and life quality.

Athletes devote much of their time and energy to improving their performance. Therefore, sport psychology consultants spend much of their time helping athletes in their search for peak performance. Unfortunately, this sometimes means that athletes' affective responses to their participation are neglected. There seems to be a common belief that successful performances lead to satisfied athletes (Chelladurai & Riemer, 1997) and therefore performance enhancement should be the sole aim of practitioners. However, several studies have shown that sport participation and competition (successful or not) can be a major source of stress for athletes (Gould, Jackson, & Finch, 1993a; Scanlan, Stein, & Ravizza, 1991). Thus, it appears that successful athletes are not always contented athletes. In addition, stressors from nonsport aspects of athletes' lives may abate any positive emotions drawn from successful performances. Consequently, consultants may be doing athletes a disservice by focusing solely on performance.

Consultants who have a single-minded focus on performance outcomes and ignore other aspects of athletes' lives can have a detrimental effect on individuals (Chelladurai & Riemer, 1997). Several theorists who suggest that athletes are best served when consultants work from a holistic, humanistic framework have highlighted this problem. Much of this commentary has focused on the need for multicultural consultants who understand the plight of different groups of athletes and how issues such as race

(Brooks & Althouse, 1993; Dewar, 1993; Eisen & Wiggens, 1994; Jarvie, 1991; Lee & Rotella, 1991; Melnick & Sabo, 1994; Parry & Parry, 1991; Smith, 1992), gender (Blinde, 1989; Blinde & Taub, 1992; Dewar, 1991; Greendorfer, 1989; Lenskyj, 1986, 1994; Messner, 1988; Nelson, 1991), and sexual orientation (Messner, 1992; Pronger, 1990) can affect athletes' lives on and off the field. In 1996, Wrisberg conducted a review of this literature, highlighting its connection to athletes' quality of life. His research suggests that there are many factors aside from performance that can affect athletes' life quality. Therefore, it seems apparent that athletes' lives are not totally consumed by competition and performance and, if consultants are truly committed to serving athletes, they must avoid a sole focus on performance and be aware of these other issues. Further evidence for the need for holistic consulting can be found in athletes' suggestions that nonperformance issues such as stress management are just as important to them as are performance-related techniques (Gentner, 2001). In a 2004 study by Gentner, Fisher, and Wrisberg, athletes further noted that the ease with which they can relate to their consultant is very important in a consulting relationship. This suggests that having an understanding of other salient issues in athletes' lives may be beneficial for consultants.

While the link between quality of life and important issues such as race, gender, and sexual orientation have been discussed in the extant literature, there has been little direct attention paid to the quality of athletes' lives (Wrisberg, 1996). Several researchers have attempted to ferret out the salient aspects of athletes' experiences (Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Gould, Jackson, & Finch, 1993a; Gould, Jackson, & Finch, 1993b; Gould, Tuffey, Udry, & Loehr, 1996; Gould,

Tuffey, Udry, & Loehr, 1997; Gould, Udry, Tuffey, & Loehr, 1996; Scanlan, Stein, & Ravizza, 1989, 1991; Wrisberg, 1996), however, few have focused directly on athletes' quality of life. Chelladurai and Riemer (1997) and Riemer and Chelladurai (1998) attempted to fill this void by identifying and measuring components of athlete satisfaction. However, their study was limited by its predominant focus on the performance aspects of athletes' lives. Thus, to date, there have been no attempts to directly study athletes' quality of life, taking into consideration both performance and nonperformance related aspects of athletes' lives. Furthermore, there have been no systematic attempts to develop and validate a psychometrically sound scale to measure athletes' quality of life despite Granito and Carlton's (1993) plea for such an instrument. This dearth of research regarding athletes' quality of life is somewhat surprising considering the amount of research dedicated to life quality of nonathlete populations (Dalkey, Lewis, & Snyder, 1972; Dijkers, 1999; Pflaum, 1973).

Statement of the Problem

Applied sport psychology has long been focused on enhancing athletes' performance. Various mental training techniques have been developed and implemented in an attempt to improve athletic performance. In fact, as of 1999, over 200 published studies have examined the relationship between mental training and sport performance (Martin, Moritz, & Hall, 1999). Looked at collectively, these studies have shown that mental training can improve the physical performance of a sport skill (Driskell, Cooper, & Moran, 1994; Feltz & Landers, 1983). Unfortunately, this focus on performance has caused practitioners to ignore other salient aspects of athletes' experiences. Many factors

such as race, gender, sexual orientation, relationships with significant others, physical health, and perceived personal growth can have a tremendous affect on athletes' quality of life (Wrisberg & Johnson, 2002). Therefore, in order to serve athletes in a more holistic manner, consultants must be aware of these components of athletes' lives. Unfortunately, at this time there have been no systematic evaluations of athletes' quality of life. Wrisberg (1996) highlights the need for such evaluations arguing that the life quality of NCAA Division I and national-caliber athletes is lower than many people realize. Unfortunately, the little research that has been done has focused on athlete satisfaction drawn mainly from their performance. Thus, there is a need for research that specifically targets athletes' quality of life. Moreover, this research should focus on both performance and nonperformance aspects of athletes' lives. In order to verify Wrisberg's (1996) claim that athletes' life quality is not very high, there is a need for an instrument designed to measure athletes' quality of life. To date, there have been no attempts to develop a psychometrically sound scale to assess athletes' life quality.

Scale Development

Sport psychology has roots in several other disciplines including sport science and psychology. Therefore, sport psychology researchers often employ methods of research and analysis that have been developed in these disciplines. This has created many problems. For example, many researchers have studied athletes using measures that were developed and validated on clinical populations (Weinberg & Gould, 1995). Others have used tests with questionable psychometric properties or have failed to provide an adequate theoretical basis for their use of an instrument (Gill, Dzewaltowski, & Deeter,

1988; Vealey, 1986). Such misuse of instruments prompted Vealey (1986) to suggest the need to develop of sport-specific measures for the study of athlete populations.

The Purpose of the Study

The primary purpose of this study was to develop a valid and reliable scale to measure athletes' quality of life. More specifically, the objectives of the study were:

1. To develop an instrument that would allow the assessment of athletes' quality of life, focusing on several components of athletes' lives; not just performance.
2. To establish the reliability and validity of the instrument.

Research Hypotheses

Despite the exploratory nature of the present investigation, the following hypotheses were tested:

1. The computation of Cronbach's (1955) alpha would reveal acceptable reliability for the scale items.
2. The factor analysis would reveal a factor structure that is interpretable and consistent with previous definitions of life quality.

Assumptions

The following assumptions (adapted from Giacobbi, 2000 and Martin, 1995) regarding the participants' responses to the instrument were applied in the current study:

1. The participants completed the surveys to the best of their ability.

2. The participants responded truthfully to each item on the instrument.

Delimitations

The current study was delimited in several ways. Primarily, the participants in the study were Division I collegiate athletes from one large school in the Southeast United States. The study was further delimited by the exclusion of several sports which were not offered at the university used for the study. Finally, item 14, "Your relationship with boyfriend/girlfriend, spouse, etc." may have been difficult for some athletes to answer as they may not have had a significant other.

Limitations

The study contained the following limitations. All of the participants competed at the Division I collegiate level, therefore the final scale may not be generalizable to athletes competing at different levels. Several of the participants were recruited from two different introductory classes for incoming athletes, therefore, many of the athletes representing several sports in the study were first-year athletes. Additionally, a large majority of the participants in the study were Caucasian. Finally, some external factors beyond the researcher's control may have influenced athletes' responses. These included the time and place of survey administration.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Quality of life (QOL) is a widely researched topic in many fields (Dijkers, 1999). However, there is a dearth of information regarding athletes' QOL contained within the extant sport psychology literature. The following review is an attempt to integrate the existing QOL literature with research regarding athletes' QOL. Initially, definitions of satisfaction, athlete satisfaction, and quality of life are given. In subsequent sections the different facets of life quality are discussed as well as athletes' descriptions of different factors that can affect QOL. Finally, a brief summary of Riemer and Chelladurai's (1998) Athlete Satisfaction Questionnaire (ASQ) is provided.

Definitions of Quality of Life

While quality of life has been widely studied (Dijkers, 1999), there currently exists no single definition of life quality. According to Farquhar (1995), there are several different philosophical views regarding quality of life. A review of the various definitions of QOL indicates that the one term that is consistently used is life satisfaction. Sometimes life satisfaction is considered to be a component of QOL, however, at times it is used synonymously with QOL.

Life Satisfaction

In 1976 Campbell, Converse, and Rodgers defined life satisfaction as, "the perceived discrepancy between aspiration and achievement, ranging from the perception of fulfillment to that of deprivation" (p. 8). Thus, according to these authors, life satisfaction is in some way dependent on the perception of the individual. That is, when people's perceptions are consistent with their desires, life satisfaction is increased.

Another component of life satisfaction deals with people's response to their surrounding environment. This relationship is clearly noted in Varca, Shaffer, and Saunders' (1984) statement that, "life satisfaction can be viewed as a general index of one's emotional or affective response to his or her circumstances, that is, one's sense of well-being" (p. 441). Consistent with the Campbell et al. (1976) definition, this definition emphasizes the individual's perceptions of and response to his/her external environment. Combining these two definitions, life satisfaction could be described as an individual's perception that his/her needs and expectations are being met within the constraints of his/her current surrounding environment.

Athlete Satisfaction

Within the athletic realm several definitions of life satisfaction have been proposed. However, the majority of these definitions have focused primarily on participants' satisfaction within sport and have ignored other components of satisfaction that may be due to events that occur off the playing field. Athletic satisfaction has often been related to job satisfaction which, according to Saal and Knight (1988), is mediated by the amount of effort people put into their job, their longevity within an organization, their ability to cooperate with others in the organization, and their overall happiness.

These facets of job satisfaction seem to be appropriate for athletic satisfaction as well. And, as collegiate athletes become increasingly identified as employees, similar to professional athletes (Bremmer, 1990), the study of athlete satisfaction becomes a progressively more important topic of research (Riemer & Chelladurai, 1998). In an attempt to further the knowledge base regarding athlete satisfaction, Whittal and Orlick (1978) identified six components of athlete satisfaction: sport/game, practice, coach, teammates, opposition, and performance. Taken together, these components provide a good measure of athletes' satisfaction within their sport. However, the authors did not consider the many nonsport factors of athletes' lives in their list. Their definition of athlete satisfaction is therefore limited by this exclusion.

Similar to the more general definitions of life satisfaction offered by Campbell et al. (1976) and Varca et al. (1984) many of the definitions of athlete satisfaction include peoples' perceptions that their needs are being met. Riemer and Chelladurai (1998) suggest that satisfaction occurs when, "athletic experience satisfies the needs" (p. 131). Conversely, dissatisfaction is likely when the athlete's needs are not being met. Chelladurai and Riemer (1997) defined athlete satisfaction in a similar way suggesting that it is, "a positive affective state resulting from a complex evaluation of the structures processes, and outcomes associated with the athletic experience" (p. 135). They also stated that this affective state is mediated by discrepancies between that which is desired and perceptions of what is received. "In essence, the level of satisfaction is a reflection of an athlete's reactions to the extent that the athletic experience meets one's personal standards" (p. 135). Consistent with previous attempts to define satisfaction (Campbell et

al., 1976; Varca et al., 1984; Riemer & Chelladurai, 1998), this definition highlights the individual's perception of whether or not his/her needs are being met.

Chelladurai and Riemer (1997)

The process of developing definitions of athlete satisfaction began in 1997 when Chelladurai and Riemer provided one of the most extensive investigations into the different facets of this construct. A primary goal of their study was to ferret out all the important components of athlete satisfaction. The authors began by searching for various facets of satisfaction that fall into the two major categories found in most organizational theories: "those relating to outcomes" (p. 138), and those that are associated with the processes involved in reaching those outcomes. Eventually, Chelladurai and Riemer (1997) saw the need for additional categories, noting that a difference existed between satisfaction in athletics and in traditional organizational settings. That is, athletes are not only concerned with personal outcomes and processes but also with team outcomes and processes. Therefore, Chelladurai and Riemer included both team outcomes/processes and individual outcomes/processes in their research. Finally, the authors considered the idea that some outcomes and processes deal with social factors or events while others are task-related. Thus, the final criteria they used for categorizing the facets of athlete satisfaction included "outcomes versus processes, personal versus team effects, and task versus social aspects" (p. 139). In the end, they catalogued the facets of athlete satisfaction into several categories, including team outcomes, individual outcomes, team processes, and individual processes. Moreover, each category contained a task and social

component. In the following sections each of these categories is discussed in greater detail.

Team Outcomes

Team outcomes falling under the task component included performance, team goal attainment, performance improvement, team maturity, and group integration. The authors suggested that performance is the most desired of team outcomes because of the amount of energy and effort that athletes put into their performance. This is consistent with Whittal and Orlick's (1978) belief that performance is a key component of satisfaction. Chelladurai and Riemer (1997) suggested that within the current sports climate where there is an extreme emphasis placed on winning, success is the most obvious measure of performance. Success can be measured by championships and winning percentages as well as by subjective measures such as perceived improvement and skill competence. Any combination of these can influence an athlete's satisfaction.

The second and third team outcomes, team goal attainment and team performance improvement, are mediated by the goals that teams set for themselves. Satisfaction may be affected by a team's perceptions of their successes and failures as they relate to the team's goals. In addition, beliefs about the team's improvements from previous competitions or in relation to team goals may have an affect on satisfaction.

Team maturity and group integration represent the final team outcomes. Team maturity refers to the team's growth and development as it relates to fitness, health, sport fundamentals, and tactics. Over time individual players can gain satisfaction from team maturation. Group integration is characterized by team solidarity stemming from similar orientations toward team goals and processes, role acceptance, respect for others, and the

determination of each member to extend his/her best effort in achieving team goals. The authors proposed that adherence to these principles of group integration would lead to greater athlete satisfaction.

Similar to group integration, interpersonal harmony, the team outcome falling under the social component, deals with relationships among team members. While group integration is aimed at performance excellence, interpersonal harmony deals more with a team's social climate. It refers to the degree to which team members get along and provide social support for each other. Such positive interactions and social support can lead to increased athlete satisfaction.

Individual Outcomes

Personal performance, personal goal attainment, personal performance improvement, personal growth, individual task role, and personal immersion comprise the individual outcomes falling under the task component. Consistent with team performance, personal performance plays a major role in satisfaction. Since personal performance is rather easily measured, athletes can develop a clear and immediate conceptualization of their satisfaction with their performance. This direct and concise form of feedback is one reason why personal performance satisfaction is predicted to be a major component of athlete satisfaction.

Personal goal attainment and personal performance improvement are based on an individual's pursuit of excellence. If an athlete believes that s/he is meeting her/his goals and is improving with time, s/he is more likely to be satisfied. These positive feelings about accomplishing goals and improving athletically can be significant aspects of participants' satisfaction.

While individual performance improvement refers to skill acquisition and mastery, personal growth deals with psychological and mental growth. Developing skills that will be useful in future sport experiences as well as increasing understanding of sport tactics can be important for athletes' satisfaction.

Individual-task role and personal immersion are the final individual-task outcomes. Individual task role refers to one's ability to accept his/her role and contributions to the team. A player's inability to accept his/her role may be a major cause of dissatisfaction while role acceptance and understanding may lead to increased satisfaction. Similar to individual-task role, personal immersion relates to the extent to which individuals are satisfied with their sport involvement; that is, their enjoyment of the sport and the pleasure they gather from sport participation.

Individual outcomes falling under the social component include belongingness, friendship, and social role. Belonging to a group can lead to feelings of pride and acceptance. In addition, being part of an athletic team can also improve one's status. Such feelings and prestige can lead to a heightened sense of satisfaction. Developing friendships with individual team members or coaches is another important aspect of athlete satisfaction. Finally, an athlete's social role within a team can be an important factor in satisfaction. Role acceptance and satisfaction can lead to increased overall satisfaction for athletes.

Team Processes

Team-task processes are those that relate to strategy, practice, and effort and are designed to make the team's performance as effective as possible. Included among these processes are strategy selection, mobilization, deployment, practice, competition tactics,

equitable treatment, ethics, team effort and coordination, facilities/equipment, budget, ancillary support, and community support.

The majority of these team processes are contingent upon coaches and administrators fulfilling their duties in an effort to enhance the team's performance. Coaches must recruit talented players, develop and integrate effective strategies, and manage team cohesion. Administrators are called upon to provide the facilities and resources needed to maintain or improve the team's effectiveness. Therefore, some of the factors affecting athlete satisfaction appear to be dependent upon the work of others.

Team processes falling under the social component include decision participation and loyalty support. These facets of athlete satisfaction are also reliant upon coaches and administrators. When athletes feel that they are given some decision-making power and are supported by loyal coaches and administrators, their overall satisfaction increases.

Individual Processes

Ability utilization, training/instruction, positive feedback, personal inputs, team contribution, recognition, financial support, and family support comprise the list of individual processes falling under the task component. These facets of satisfaction are all based upon athletes' perceptions that they are getting what they deserve; that is, proper training and feedback from coaches, recognition from significant others, and proper compensation for their services. The individual-social processes include social support and loyalty support. These are characterized by athletes' belief that coaches and administrators support them both on and off the field.

While Chelladurai and Riemer (1997) suggest that each of these facets of athlete satisfaction are mutually exclusive, visual inspection of their list suggests some

commonalities between various components. For example, athlete interaction with coaches, administrators, and significant others appears to be the major component of both individual and team processes. In addition, performance (team and personal), skill improvement, and role acceptance seem to be the most important factors in both individual and team outcomes. Therefore, it might be argued that interactions with coaches, administrators, and significant others, personal and team performance, skill improvement, and role acceptance are the most salient facets of athlete satisfaction. Interestingly, each of these components is dependent upon athlete perceptions. Therefore, it appears that the current definitions of athlete satisfaction are quite similar to the general definitions of life satisfaction proposed for nonathlete populations.

Quality of Life

Quality of life has been defined as possessing good physical health, having ample free time, and being financially secure (Singer, 1996). In 1972, Dalkey suggested that quality of life is "related to the environment and to the external circumstances of an individual's life" (p. 9). Finally, Singer (1996) suggested that QOL could be the never-ending pursuit for "enriching, stimulating, and healthy activities" (p. 248). Clearly, as Farquhar (1995) suggested, there are many different philosophical views regarding QOL. However, there are some commonalities in the existing definitions of QOL. In a review of definitions of QOL, Dijkers (1999) highlighted several components that were common to most QOL definitions. More specifically, all definitions included some degree of mental, emotional, physical, and spiritual health, the possession of socially desirable attributes, life satisfaction, and positive feelings.

Further inspection of the definitions of QOL suggests considerable similarity with the definitions of life satisfaction, particularly the importance of individual perception (Wrisberg & Johnson, 2002). Dalkey, Lewis, and Snyder (1972) defined QOL as the degree to which one is satisfied with his/her perceived psychophysiologic needs while Pflaum (1973) suggested that QOL pertains to the degree to which individuals believe that the environment is either facilitating or retarding their functioning. Consistent with these definitions, Andrews and Withey (1976) stated that "important perceptual and subjective elements" (p. 5) are included in QOL. More recent definitions include Scanlon's (1993) idea that the quality of peoples' lives is measured by the degree to which their needs are being met. Finally, Wrisberg (1996) defined QOL as a "state or condition of living that usually carries a positive connotation" (p. 393) and includes the interpretation of the individual.

Taken together, these definitions suggest that QOL refers to a positive affective state brought on by an individual's perception this his/her needs are being met. More specifically, athletes' QOL can be defined as their perceived satisfaction with various salient components of their lives. These may include health, performance, self-respect, survival, love, power, fun, freedom (Glasser, 1998), comfort, security, status, and involvement (Dalkey et al., 1972; Dijkers, 1999). This definition should not, however, be confused with previous definitions of athlete satisfaction since QOL encompasses many nonperformance aspects of athletes' lives that have been ignored by the previous satisfaction literature. Nevertheless, it should be noted that athlete satisfaction as previously defined appears to be a component of athletes' overall QOL. That is, athletes' satisfaction with the performance-related aspects of their lives is an element of their

overall QOL. However, other aspects of their lives must be considered in order to understand their overall life quality. In summary, athletes' QOL seems to be mediated by their perceived satisfaction with a number of important factors having an impact on their lives.

Factors Influencing Quality of Life

Similar to satisfaction, QOL is made up of several different factors. It is clear from the previous review that interpersonal relationships with coaches, administrators, and significant others, personal and team performance, health, and enjoyment are all components of athletes' QOL. In 1984, Varca et al. noted that the "relationship between sport participation and life satisfaction" (p. 441) had largely gone unstudied, although theorists (Morris, Lussier, Vaccaro, & Clarke, 1982) had suggested that simply participating in sport could increase QOL. Morris et al. (1982) found that 10 nationally ranked female runners scored higher than nonathletes on one measure of QOL. In a subsequent study, Varca et al. (1984) found further evidence of a link between athletic participation and QOL in their longitudinal investigation of 2,000 male athletes. Over a nine-year period a positive correlation between athletic participation and life satisfaction was reported. As a result, Varca et al. (1984) suggested that early sport participation could lead to increased satisfaction later in life. While these findings are encouraging, further examination of the different facets of athletes' life quality is needed.

Coaches and Significant Others

Athletes are greatly influenced by their coaches and parents because these individuals are often the only people that athletes have significant contact with during

their competitive seasons. Scanlan and Lewthwaite (1986) found that high frequencies of positive interactions between athletes and their parents and coaches can lead to increased athletic enjoyment. Therefore, it seems reasonable to suggest that athletes' relationships with these individuals can have a large impact on their life quality.

The research clearly shows that coaches can have an important impact on athletes' sport experience (Scanlan & Lewthwaite, 1986). As Allen and Howe (1998) stated, the "coach plays a central role in (the) quality of (the) sport experience" (p. 297). More specifically, existing research suggests that coaches' behaviors and leadership styles can play an important role in athletes' satisfaction and experiences of QOL (Chelladurai, 1984; Chelladurai, Imamura, Yamaguchi, Oinuma, & Miyauchi, 1988; Riemer & Chelladurai, 1995; Schliesman, 1987).

According to Weiss and Friedrichs (1986), certain leader behaviors are associated with highly satisfied athletes. Their research suggests that rewarding behavior, democratic behavior, and social support are the best predictors of satisfaction. In 1987, Schliesman found that a positive relationship existed between increased social support, democratic behaviors and athlete satisfaction. Riemer and Chelladurai (1995) further suggested that democratic behavior and social support lead to increased athlete satisfaction while autocratic behaviors are associated with dissatisfaction. Chelladurai (1984) also contended that athletes desire social support and prefer coaches who are considerate, friendly, trustworthy, respectful, and warm.

Several other theorists have highlighted the impact that positive reinforcement and praise from coaches can have on athlete satisfaction (Allen & Howe, 1998; Black & Weiss, 1992; Harter, 1978; Riemer & Cheladurai, 1995; Scanlan & Lewthwaite, 1986;

Schliesman, 1987). Athletes are more satisfied when coaches provide them with positive feedback and praise after desired performances (Black & Weiss, 1992). Furthermore, high frequencies of positive feedback have been shown to increase athletes' sport enjoyment and satisfaction (Allen & Howe, 1998; Scanlan & Lewthwaite, 1986). Finally, technical instruction appears to be an important component of athlete satisfaction. Chelladurai (1984), Scanlan and Lewthwaite (1986), and Riemer and Chelladurai (1995) all found that increased amounts of training and instruction from coaches contributed to increased athlete satisfaction. This is consistent with Chelladurai's (1984) findings that athletes prefer coaches who can initiate and provide structure.

A salient aspect of athletes' satisfaction with their coaches is the athletes' perceptions of coach behaviors. According to Chelladurai (1984) athletes have preferences for certain types of coach behavior and when they perceive that their coaches are exhibiting those aspects athletes are more satisfied. Riemer and Chelladurai (1995) also found support for this relationship. Earlier, Yukl (1971) suggested that satisfaction with leaders is mediated by the subordinate's preferences and perceptions. When perceptions are consistent with preferences, satisfaction is high. Overall, it appears then that athlete satisfaction is at its highest "when there is a congruence between athletes' perceptions and preferences" (Chelladurai, 1984, p. 31).

Coaches are not the only individuals that exert a major influence on athletes. Significant others, such as parents, friends, and teammates can have a major impact on athletes' QOL (Harter, 1978; Scanlan & Lewthwaite, 1986). Positive reinforcement and support from parents can be very important to children. In fact, athletes who feel that

their parents are satisfied with their performance say they enjoy sport more than those who perceive otherwise (Scanlan & Lewthwaite, 1986). Clearly, praise and encouragement from parents and other significant people in athletes' lives appears to lead to increased satisfaction and enjoyment (Harter, 1978).

Conversely, parental pressure, or more specifically the absence of such, is another factor that can increase athletes' QOL. Having positive adult interactions that are devoid of pressure can positively impact an individual's satisfaction (Harter, 1978; Scanlan & Lewthwaite, 1986). Scanlan and Lewthwaite (1986) found that athletes enjoyed sport more when they felt less pressure from their parents and when they had more positive perceptions of their sport specific interactions with their parents. Harter (1978) further suggested that individuals' satisfaction could be increased through praise and encouragement from significant others, including parents and peers. Thus, it appears that the perception of positive interactions with coaches and significant others can have a positive influence on athletes' QOL.

Performance

According to Chelladurai and Riemer (1997) athletic performance is another factor that plays a key role in determining athlete satisfaction. When there is an extreme emphasis placed on winning and the availability of immediate performance feedback, athletes can become extremely conscious of their performance. Such attention to performance can have major affects on athletes' satisfaction and QOL. Williams and Hacker (1982) have argued that effective performances lead to increased satisfaction. Furthermore, they suggest that high performance ratings early in the season and in the postseason can positively influence athlete satisfaction. In addition, Wankel and Sefton

(1989) posit that personal performance, not game outcome, is an important factor in athletes' sport enjoyment. Thus, it appears that satisfaction with one's performance may influence QOL independent of the outcome of a competition.

Much of the literature on performance satisfaction identifies an individual's performance standard as an important mediating factor in performance satisfaction. That is, satisfaction with one's own performance is mediated by the extent to which expected performance standards are reached (Chelladurai, 1984). Therefore, performance satisfaction is presumed to be highest when performance is equivalent to the individual's standards (Chelladurai, 1984). In addition to performance standards, perceived competence can also play an important role in performance satisfaction. In separate studies Scanlan and Lewthwaite (1986) and Harter (1978) found that high self-perceptions of ability lead to increased enjoyment and satisfaction of athletes.

Enjoyment

Humans naturally seek fun and pleasure through vigorous physical activity (Ziegler, 1996). Thus, it might be assumed that many athletes participate in sport because they enjoy it. In fact, as athletes become older, the importance of sport enjoyment increases (Wankel & Kreisel, 1985a). Thus, enjoyment can be an important factor in athlete satisfaction and QOL. According to Scanlan and Lewthwaite (1986), enjoyment is characterized by having fun while playing the sport and by an overall feeling of liking the sport. These authors further suggest that enjoyment includes pleasure, having fun, intrinsic motivation, and performance competence. Wankel and Sefton (1989) contend that athletes' enjoyment is achievement oriented. Earlier, Scanlan and Lewthwaite (1986) identified four types of achievement related sport enjoyment:

intrinsic achievement, extrinsic achievement, intrinsic nonachievement, and extrinsic nonachievement. Intrinsic achievement includes performance competence and control as well as perceived ability and mastery. This is consistent with Wankel and Sefton's (1989) suggestion that athletes have more fun when they think they have played well. Wankel and Kreisel (1985a, 1985b) also contend that skill improvement and personal accomplishment are two main factors mediating sport enjoyment. Extrinsic achievement refers to perceptions of performance due to the reinforcement of others. This may include peer comparison and feedback (Wankel & Kreisel, 1985b). Thus, positive reinforcement from coaches, parents, and other players can increase self-perceptions of performance which can subsequently increase enjoyment. Intrinsic nonachievement includes excitement and enjoyment of the sport, release of tension, and exhilaration. This is similar to Wankel and Kreisel's (1985a, 1985b) belief that enjoyment is positively affected by athletes' excitement of playing sport. Extrinsic nonachievement is characterized by being with friends and having positive adult interactions. This is consistent with Wankel and Kreisel's (1985a) determination that being with friends is an important aspect of athletic enjoyment.

Overtraining

Kuipers and Keizer (1988) describe overtraining as an inequity between training and recovery; that is, heavy training combined with inadequate rest/recovery time. Lehmann, Foster, Dickhult, and Gastmann (1998) further expanded on this definition by arguing that overtraining is caused by an imbalance between levels of stress and recovery. They also suggested that stress includes both training and nontraining factors. Nontraining factors may include stress from school, work, and social activities. Theorists

have used many different terms to describe overtraining, including overwork, overreaching, staleness, burnout, and overfatigue (Kreider, Fry, & O'Toole, 1998). However, the definition offered by Lehmann et al. (1998) is the one most accepted by researchers (Kellmann, 2002). Extreme levels of stress and overtraining have not only been shown to have damaging effects on performance (Gould, Guinan, Greenleaf, Medbery, Strickland, Lauer, Chung, & Peterson, 1998), but also to lead to the cessation of participation (Silva, 1990).

In 1996, Gould and colleagues (Gould, Tuffey, Udry, & Loehr, 1996, 1997; Gould, Udry, Tuffey, & Loehr, 1996) conducted a comprehensive investigation of burnout/overtraining in competitive junior tennis players using both quantitative and qualitative methods. Their research revealed several antecedents of burnout/overtraining that appear to have the potential to negatively affect QOL. These symptoms include negative affect, illness, injury, and lack of enjoyment (Gould, Tuffey, et al., 1996). One athlete in this study expressed feelings of depression by saying:

> I went through depression. I mean, I started, um, as far as being depressed…that was all I started thinking about. It was taking away from my schoolwork. I mean, I was kind of falling apart in a way (Gould, Tuffey, et al., 1996, p. 345).

Overtraining has also been linked to an inability to participate in social activities. One athlete described her inability to maintain a social life by saying:

> I completely had no social life whatsoever. I wouldn't do anything except tennis and study (Gould, Tuffey, et al., 1997, p. 264).

Another athlete mentioned that he was unable to cultivate any close friendships because of his time commitment to tennis. According to Csikszentmihalyi (1997), close

relationships can play a significant role in one's QOL. Therefore, an inability to form close friendships may be detrimental to some athlete's life quality. Finally, Gould et al. (1997) suggest that competitive athletes who are not afforded sufficient time for recovery enjoy their sport less and are more likely to end their participation than are more rested athletes.

Kellmann (2002) suggests a strong link between overtraining and underrecovery. Specifically, he contends that athletes need sufficient time for recovery during periods of intense training. Several recent studies have detailed the connection between underrecovery and performance deficiencies (Banister, Morton, & Clarke, 1997; Koutedakis & Sharp, 1998; Rowbottom, Keast, Garcia-Webb, & Morton, 1997). Kellmann (2002) argues that, "an awareness of the importance of the recovery process often marks the difference between a mediocre and an outstanding athlete" (p. 4). Moreover, it appears that underrecovery can lead to psychological consequences as well (Kellmann & Gunther, 2000; Lehmann, Foster, Dickhult, & Gastmann, 1998). Gould and Dieffenbach (2002) also suggest that the psychological effects of underrecovery can include loss of enjoyment and eventual discontinuation of participation.

Flow

Introduced by Mihaly Csikszentmihalyi (1990), the concept of flow is characterized by a feeling of total engagement in an activity. It is initiated when a participant has: (a) sufficient skill to complete a challenging activity, (b) an intense focus on the activity resulting in complete psychophysical involvement, (c) specific goals related to the activity, (d) immediate feedback regarding performance, (e) perceived control over self and situation, (f) lack of anxiety or worry about self, (g) an altered sense

of time, and (h) a feeling that the activity is worth experiencing (Csikszentmihalyi, 1990, 1993). Ziegler (1996) also suggested that flow experiences can increase one's QOL. That is, complete engagement in an activity can result in increased happiness, self-confidence, and enjoyment.

Glasser's Quality World

According to Glasser (1998), each person has a set of basic needs and desires that s/he works to satisfy. These include survival, love, power, freedom, and fun. In an attempt to satisfy these needs people create their own unique world, their "quality world." Each person's quality world is separated into three different categories: "(1) the people we most want to be with, (2) the things we most want to own or experience, and (3) the ideas or systems of belief that govern much of our behavior" (Glasser, 1998, p. 45). According to Glasser (1998), people feel good when the "real" world mirrors their quality world. That is, when their needs and desires are being met. Therefore, Glasser's (1998) basic needs of survival, love, power, freedom, and fun may have a substantial affect on QOL.

Pflaum's Quality of Life Factors

While no attempts have been made to develop instruments that allow the assessment of athletes' QOL, there have been instruments developed for the purpose of measuring general life quality. One such instrument was developed by Pflaum in 1973. The Life Quality Inventory was developed and validated using disabled persons, university professors and administrators, and psychologists as respondents. This inventory is based on Pflaum's (1973) presumption that there are four specific categories

of QOL. They include biophysical functioning, self-development and personal growth, primary social functioning, and secondary social functioning.

Biophysical functioning refers to one's physical health and well-being. Self-development and personal growth are related to the degree of one's self-acceptance and self-esteem. Primary social functioning includes relationships with significant others, such as parents, friends, and spouses. Secondary social functioning deals with relationships that are contained within an institutional context. These may include relationships with co-workers or professors.

In 1982, Morris, Lussier, Vaccaro, and Clarke conducted the only published study that used the Life Quality Inventory to examine the QOL of athletes. In this study, the QOL of a group of 10 nationally ranked female runners was compared to that of a group of nonathletes. The results indicated that the QOL of athletes' was significantly higher than that of nonathletes. While Pflaum's (1973) instrument has not been validated with athletes, Wrisberg and Johnson (2002) suggest that the four components listed in the Life Quality Inventory are consistent with athletes' descriptions of the facets of life quality found in other studies.

Athletes' Descriptions of Quality of Life Factors

During the 1990's several qualitative studies were conducted to assess various aspects of the experiences of elite athletes. Included in these studies were investigations examining sources of stress (Gould, Jackson, & Finch, 1993a; Scanlan, Stein, & Ravizza, 1991) and enjoyment (Scanlan, Stein, & Ravizza, 1989) for elite athletes, experiences of champion athletes (Gould, Jackson, & Finch, 1993b), and factors affecting athletes'

performance (Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999). In addition, a comprehensive investigation of the lives of collegiate athletes was undertaken by the American Institutes for Research in 1987-1988 (American Institute of Research, 1988a, 1988b). In this study over 4000 athletes and a control group of nonathletes involved in extracurricular activities (e.g., band) were asked to fill out a 116-item questionnaire regarding their collegiate experiences. Taken together, the results of these studies indicate that several factors are particularly salient within athletes' experiences, all of which have the potential to influence athletes' QOL. These include coach relationships, relationships with significant others, performance, physical well-being, and time demands.

Coach Relationships

According to Wrisberg (1996) coaches seem to have the most profound influence on athletes' life quality. Several theorists (Gould et al., 1993a; Scanlan et al, 1991) have suggested that coaches can be a major source of stress for athletes and that the high levels of stress imposed by coaches can have a detrimental affect on athletes' sport enjoyment.

In qualitative studies conducted with elite figure skaters, Gould et al. (1993a) and Scanlan et al. (1991) found that negative relationships with coaches were a significant source of stress for athletes. Working with an undesirable coach, having consistent conflicts with a coach, receiving high frequencies of criticism from a coach, and dealing with controlling coaches were the most often cited characteristics of negative relationships with coaches. Scanlan et al. (1991) found that athletes were often forced to work with an undesirable coach because of a distorted sense of loyalty or for monetary reasons. For example, some athletes felt obligated to continue working with an

undesirable coach because they had been with him/her for several years. These situations often led to increased amounts of stress for the athletes. As one athlete stated:

> And there were times in my career when I'd get into the car and drive away from the rink and say the only way I can get out of this situation is if he dies. And I can't leave him because he's the best coach for me. I can't get another coach because I couldn't hurt him. I don't know if I should get another coach. Maybe if he dies or I die, I could be out of this situation (Scanlan et al., 1991, p. 116).

Receiving negative feedback and precompetition lectures from coaches can also increase athletes' stress levels (Scanlan et al., 1991). In addition, domineering coaches can be detrimental to athletes' enjoyment. As one athlete put it:

> He was very, very domineering and very, very pushy. Extremely domineering. And he wanted to run my whole life. And there were times…in my career where the skating didn't bother me at all, it was the dominance of the coach trying to control what I ate, who I talked to (Scanlan et al., 1991, p. 112).

Coaches have also been shown to have a positive affect on athletes. In fact, Scanlan et al. (1989) found that positive relationships with coaches were a major source of enjoyment for elite athletes. Therefore, it appears that coaches can significantly affect (both positively and negatively) athletes' QOL.

Relationships with Significant Others

While coaches may have the foremost impact on athletes' life quality, other significant people such as parents, friends, and teammates can also affect athletes' QOL. Athletes often describe the significance of an extremely close bond between teammates (Wrisberg, 1996). As one athlete in a study conducted by Messner (1992) explained:

> The most important persons are your teammates, and to be loved and respected by them means more than anything (p. 87).

In a study of elite athletes' sources of enjoyment, Scanlan et al. (1989) found that friendships and positive relationships with significant others were major sources of enjoyment. According to the authors, friendship experiences include close, supportive relationships that involve recreational experiences outside of competition. Such forms of affiliation with other athletes can be a great source of enjoyment for athletes (Scanlan et al., 1989). As one athlete stated:

> It was always nice to come to the rink and, and know that your friends are there…and we all supported each other too, I think (Scanlan et al., 1989, p. 75).

Positive relationships with family members were also found to be important factors in athletes' enjoyment (Scanlan et al., 1989). Athletes experience enjoyment when they perceive their actions as sources of pride or enjoyment for family members. One athlete said:

> I think because I know how hard my parents were working and how expensive the sport was. To know that it was all worth it at the time that I performed well. Because I saw the enjoyment in their faces and I just knew it was all worth it at that point. And they know it was all worth it at that point for all the hard work they had to do (Scanlan et al., 1989, pp. 75-76).

Relationships with significant others can also be a source of stress for athletes (Gould et al., 1993a; Scanlan et al., 1991). Negative relationships with significant others can include strained relations with family and friends (Gould et al., 1993a). One athlete described a negative parental relationship in the following way:

> I always felt my father was very much against my skating. I just felt it. He thought it was a waste of time (Scanlan, et al., 1991, p. 112).

As in the case of coaches, the available research suggests that a variety of significant others can affect athletes QOL both positively and negatively.

Performance

In much of the qualitative research conducted with athletes, performance has been found to be an important facet of the athletic experience. Gould et al. (1993a) and Scanlan et al. (1991) suggest that an athlete's performance can have a marked affect on his/her levels of stress. For example, when athletes' performances do not live up to their own expectations or the expectations of others stress levels can increase (Gould et al., 1993a). In the following quote, one elite figure skater spoke of the burden of others' expectations:

> Expectations are definitely a concern and they are not a superficial one. Will I measure up to other people's expectations? It is much easier when you don't have any expectations, because if you don't do very well, people just don't notice you; you can always do better next year. But if you do bad with expectations upon you, they condemn you, so that's a stress factor (Gould et al., 1993a, p. 147).

When an athlete does not meet his or her own expectations, stress levels can also increase. As the following quote suggests:

> You've practiced and practiced and then you get out there and you just don't skate well. Why put in all that time and give up things, you know, and then go out and blow it? (Scanlan et al., 1991, p. 110).

According to the studies conducted by the American Institute of Research (1988a, 1988b) only 12% of football and basketball players and 16% of other athletes stated that they were "totally satisfied" with their performance. These numbers are extremely low when compared to those of a comparison sample of students participating in extracurricular activities (47% satisfaction) and suggest that very few athletes leave practice or competition feeling satisfied with their performance (American Institute of Research, 1988a).

In addition to dissatisfaction with their athletic performance, several athletes reported displeasure with their academic performance. Many athletes suggested that their status as student-athletes made it difficult to be seen as a serious student and to keep up with their coursework. Despite their admission that ample help was available, these athletes indicated that they had trouble receiving the grades they were capable of. Thus, it appears that dissatisfaction with performance both on and off the field is a very salient feature of athletes' experience.

Performances can also be a source of enjoyment for athletes. Scanlan et al. (1989) found that performance achievement and performance recognition are two major sources of enjoyment for athletes. These sources relate to one's ability to captivate an audience through his/her performance and to subsequently receive positive feedback about the performance. One athlete spoke about the enjoyment gathered through performance saying:

> Performing and…being good and having, you know, people think you're marvelous and want your autograph…go on and on about how wonderful you are. And just the admiration that people had for you (Scanlan et al., 1989, p. 78).

According to Scanlan et al. (1989), athletes also appear to gather enjoyment from achieving goals that they have set for themselves. That is, successful performances can be a major source of enjoyment for athletes. Gould et al. (1993b) also identified goal accomplishment and satisfaction as important tenets in the experiences of national champion figure skaters. Thus, it appears that successful performances and goal achievement can have a positive affect on athletes' QOL.

Physical Well-Being

Athletes' bodies are often put under extreme stress. In addition, their livelihood often depends on their physical health. Thus, physical well-being might be considered a major part of athletes' life quality. Gould et al., (1993a) and Scanlan et al. (1991) found that athletes' physical health had a major influence on their stress levels.

The physical demands that athletes put on their bodies have been shown to increase stress levels (Gould et al., 1993a; Scanlan et al., 1991). Athletes often put their bodies through extreme workouts in order to maintain a performance edge. Such heavy training can lead to burnout and performance decrements (Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999). In fact, several participants in the studies conducted by the American Institute of Research (1988a, 1988b) reported extreme levels of fatigue brought on by excessive amounts of training and limited time for recovery. In a study of Olympic athletes, Gould et al. (1999) found that overtraining/burnout was a major contributor to unsatisfactory team performances. The American Institute of Research (1988a, 1988b) also found that heavy training can lead to injury. Unfortunately, when athletes become injured, many (particularly males) feel pressure from their coaches and teammates to continue to play with pain (Wrisberg, 1996). Furthermore, players who refuse to play

when injured are often stigmatized and ostracized by teammates. Such treatment can cause an athlete to experience undue stress.

Another troubling aspect of athletes' physical well-being, particularly for female athletes in certain sports, is an obsession with body weight (Wrisberg, 1996). For these athletes, worrying about dieting and weight loss can be very stressful (Gould et al., 1993a; Scanlan et al., 1991). One figure skater spoke of her worries about weight in the following manner:

> If I was light, I was right. And if I was overweight, hey, forget it…One of the biggest negative things was always having to be on a diet…and the more pressure, the more you want to eat…the anxiety and nervousness over the fact that you might be too fat (Scanlan et al., 1991, p. 115).

Another athlete interviewed by Gould et al. (1993a) spoke about the preoccupation with weight in figure skating saying:

> You should do a whole story on weight in figure skating; it is such an appearance sport. You have to go up there with barely anything on…It's not like I'm really skinny or anything, but I'm definitely aware of it. I mean I have dreams about it sometimes. So it's hard having people look at my thigh and saying, "Oops, she's an eighth of an inch bigger," or something. It's hard…Weight is continually on my mind. I am never, never allowed to be on vacation. Weight is always on my mind (Gould et al., 1993a, p. 149).

The existing literature suggests that physical well-being and body image can seriously influence athletes' QOL. Specifically, injury and weight issues appear to play an especially important role.

Time Demands

Competitive athletics require a considerable time commitment. In order to be successful, athletes must sacrifice most of their discretionary time. Athletes in the American Institute of Research (1988a, 1988b) studies reported spending more time in their sport than in class, both inseason and out of season. In addition, 75% of the athletes said that their coaches discouraged them from participating in any extracurricular activities. The participants further indicated that because of the time demands of their sport, they were unable to meet many nonathletes. This led to a feeling of isolation from the general student population. Unfortunately, this isolation can often be another source of stress for student-athletes (Gould et al., 1993a, 1993b; Scanlan et al., 1991). Athletes not only have to balance training and school, but are often asked to sacrifice their social activities. This is extremely difficult, especially for younger athletes who often miss out on social and maturational experiences as well as opportunities to explore other life endeavors (Gould et al., 1993a; Scanlan et al., 1991).

In summary, the results of these studies suggest that athletes' QOL can be affected by many different factors. Relationships with coaches and significant others, satisfaction with performance, physical well-being, and time demands can all influence athletes' life quality. Taken together, the results of these studies lend support to the notion that student athletes do not experience very high levels of life quality (Wrisberg & Johnson, 2002).

The Athlete Satisfaction Questionnaire (ASQ)

In 1997, Chelladurai and Riemer observed that no attempts had been made up to that time to develop an instrument to measure athletes' life satisfaction. In an effort to fill this void Riemer and Chelladurai (1998) developed the Athlete Satisfaction Questionnaire (ASQ). They began by generating items using components from Whittal and Orlick's (1978) Sport Satisfaction Inventory and from several job satisfaction scales (e.g., the Minnesota Satisfaction Questionnaire of Weiss, Dawis, England, & Loftquist, 1967; the Job Descriptive Index of Smith, Kendal, & Hulin, 1969). In addition, they included several aspects of athlete satisfaction suggested by Chelladurai and Riemer (1997).

After refining and checking the reliability and validity of their scale, they identified 15 subscales that related to the most salient aspects of athletic satisfaction. Each subscale represented one of the more general components of satisfaction. These components included performance (team and individual), leadership, the team, the organization, and the individual. The authors highlighted performance as the main target of satisfaction.

The subscales of the performance component of the scale are individual performance and team performance. Ability utilization, strategy, personal treatment, and training and instruction are the subscales of the leadership component. Falling under the team component are the subscales of group's task contribution, group's social contribution, team's ethics, and team integration. Budget, medical personnel, academic support services, and external agents are subscales of the organizational component. Finally, personal dedication is the subscale of the individual component.

While the ASQ has been shown to be a valid instrument for assessing athlete satisfaction (Riemer & Chelladurai, 1998) it is not without its shortcomings. Much of the data collected during the development of the scale was provided by athletes from just three sports (ice hockey, basketball, and volleyball). This limited sample may limit the scale's generalizability to other athletes' satisfaction. In addition, the ASQ places an exclusive focus on athletic performance. In doing so, it fails to recognize several facets of athletes' lives. For example, time demands, recovery, and primary and secondary relationships appear to be absent from the ASQ. Therefore, as Granito and Carlton (1993) suggest, the need for a comprehensive scale designed to measure athletes' QOL still exists.

Summary

Although many definitions of quality of life exist, the majority stress the importance of the individual's perceptions (Wrisberg & Johnson, 2002). That is, life quality is mediated by an individual's perception that his/her needs are being met and that his/her desires are being fulfilled. In addition, there seem to be several different factors that can affect an athletes' QOL. A comprehensive review of the literature examining athletes' experiences reveals several potential components of life quality. These include: (a) relationships with coaches and significant others (Gould et al., 1993a; Scanlan et al., 1991; Scanlan & Lewthwaite, 1986), (b) individual and team performance (Chelladurai & Riemer, 1997), (c) overtraining/underrecovery (Gould, Tuffey, et al., 1996, 1997), (d) physical health (Gould et al., 1993a; Pflaum, 1973; Scanlan et al., 1991), and (e) time demands (Gould et al., 1993a, 1993b; Scanlan et al., 1991). While Riemer and

Chelladurai (1998) have provided an instrument that allows the examination of athlete satisfaction, their scale ignores several of the previously discussed components of life quality. Therefore, there remains a need for an instrument that would allow researchers and practitioners a more comprehensive assessment of athletes' QOL (Granito & Carlton, 1993).

CHAPTER III

METHODS AND PROCEDURE

Introduction

The purpose of this study was to investigate the life quality of athletes. Specifically, the study was designed to develop a valid and reliable measure of athletes' quality of life. Scale development consists of several important steps including item generation, reliability and validity tests, item deletion, and factor analysis (DeVellis, 1991). In the following sections the procedural steps of the current project are discussed.

Questionnaire Development

Operational Definition of Quality of Life

According to Nunnally and Bernstein (1994), the first step in scale development is a logical analysis of the construct under scrutiny. This can be done through examination of the construct and its definition (Cronbach, 1971; Pedhazur & Schmelkin, 1991). The process of developing an operational definition for athletes' quality of life begins with the careful examination of the current literature, which was provided in the previous chapter. This comprehensive review revealed several potential components of life quality. These included: (a) relationships with coaches and significant others (Gould et al., 1993a; Scanlan et al., 1991; Scanlan & Lewthwaite, 1986), (b) individual and team performance (Chelladurai & Riemer, 1997), (c) overtraining/underrecovery (Gould, Tuffey, et al., 1996, 1997), (d) physical health (Gould et al., 1993a; Pflaum, 1973; Scanlan et al., 1991),

and (e) time demands (Gould et al., 1993a, 1993b; Scanlan et al., 1991). Furthermore, as previously mentioned, athletes' quality of life is related to their perceived satisfaction with various components of their lives. These components may include satisfactory physical health, relationships with significant others, and personal growth. These needs are loosely based on the components of life quality proposed by Pflaum (1973) and further suggested by Wrisberg and Johnson (2002). They include physical well-being, personal growth, and social functioning.

Item Generation

Following DeVellis's (1991) suggestion, initial test items for the current study were developed from the existing life quality literature. Specific attention was paid to Pflaum's (1973) components of life quality, Chelladurai and Riemer's (1997) facets of athlete satisfaction, Riemer and Chelladurai's (1998) ASQ, and the results of several qualitative studies (Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Gould, Jackson, & Finch, 1993a; Gould, Jackson, & Finch, 1993b; Scanlan, Stein, & Ravizza, 1989; Scanlan, Stein, & Ravizza, 1991; Wrisberg & Johnson, 2002). Initially, constructs were developed from the literature and items representing each construct were subsequently generated. A committee member experienced in scale development checked the items to avoid unnecessary length and high reading difficulty (DeVellis, 1991). Furthermore, double barreled and ambiguous items (DeVellis, 1991) were avoided to eliminate any uncertainty for respondents.

At the outset Pflaum's (1973) components of life quality were used as constructs and items were generated to fit each construct. Additional constructs and items were developed through collaboration with three committee members. Finally, as suggested

by Nunnally and Bernstein (1994), one item with known psychometric properties was included. Analyzing new items with existing items provides a good measure of validity (DeVellis, 1991). The existing item assessed the athletes' satisfaction with their lives as a whole. After generating a pool of possible items, the items were examined and paired with the construct they best represented.

Reliability Check and Pilot Testing

After the items were matched with the proper construct, an initial scale (Appendix A) was generated. This was done through consultation with a committee member who is skilled in scale development. Upon completion, this initial scale was pilot tested on 31 Division I athletes. The scale included demographic information as well as several items relating to quality of life. Demographic information included gender, race, ethnicity, school year, sport, scholarship status, starting status, marital status, and desire to participate at the professional level. The scale itself was anchored on a seven-point satisfaction scale (Andrews & Withey, 1976). The scale included ratings for very dissatisfied, dissatisfied, slightly dissatisfied, neutral, slightly satisfied, satisfied, and very satisfied. Data from the pilot test were assessed using the Statistical Package for the Social Sciences (SPSS) and Cronbach's (1951) alpha. Cronbach's alpha is a measure of how well items tap a single construct (Hatcher, 1994) and was used to measure reliability. According to Nunnally (1978) an alpha value of .80 or greater is a sufficient measure of reliability. The primary purpose of the pilot study was to determine the overall scale reliability prior to the larger data collection. Therefore, an overall alpha value was determined for the entire scale. In addition, alpha values were calculated for each individual item on the scale. These individual alpha values were used to determine

whether item elimination would increase the overall scale alpha. Based on the results, items were eliminated or reworded if such action would lead to increases in overall scale alpha. However, since the major purpose of the pilot study was to determine the overall reliability of the scale and the sample size for the pilot study was relatively small, items were only removed or changed if there was overwhelming evidence that their deletion would lead to substantial increases in overall scale alpha. Based on the results of the pilot study no such changes were needed. After determining the overall scale alpha, the addition of items was discussed. Adding items can increase alpha values, however, long scales can be difficult for participants. Therefore, barring an adequate alpha, attempts were made to keep items at a minimum (DeVellis, 1991). Again, due to the high scale alpha found in the pilot study no additional items were included.

Initial Data Collection

Approval of Human Subjects Committee

Prior to commencing the study human subjects approval was obtained from the University of Tennessee Human Subjects Committee. At that point data collection was initiated.

Participants

After the pilot study, the scale was presented to a sample of athletes chosen on the basis of availability and representativeness. The number chosen was based on suggestions found in the existing literature. Bryant and Yarnold (1995) suggested a subjects-to-variables (STV) ratio no lower than 5. Tinsley and Tinsley (1987) advised 5 to 10 subjects per item. Hutcheson and Sofroniou (1999) recommended at least 150 - 300

cases while Gorsuch (1983) suggested no less than 200 subjects. Finally, Lawley and Maxwell (1971) argued that there should be 51 more cases than the number of variables, to support chi-square testing. For the purposes of this study Tinsley and Tinsley's (1987) suggestion of 5 to 10 subjects per item was used.

The participants in the current study were 159 (80 males and 79 females) Division I athletes at a large university in the Southeast United States. Eighty-five (53.5%) of the athletes were freshmen, 34 (21.4%) were sophomores, 22 (13.8%) were juniors, 16 (10.1%) were seniors, and 2 (1.3%) were fifth year seniors. The participants competed in several different sports including: Golf (10/6.3%), Volleyball (13/8.2%), Swimming (40/25.2%), Track (9/5.7%), Baseball (19/11.9%), Basketball (2/1.3%), Tennis (3/1.9%), Rowing (28/17.6%), Football (19/11.9%), Soccer (8/5.0%), and Softball (8/5.0%).

One hundred twenty-six (79.2%) of the participants identified themselves as white, 23 (14.5%) were African-American, 3 (1.9%) were Hispanic, 1 (0.6%) was Bi-racial, 1 (0.6%) was Asian, and 5 (3.1%) identified themselves as "other". When asked to identify their ethnicity, 50 (31.4%) considered themselves white, 14 (8.8%) labeled themselves as American, 10 (6.3%) chose African-American, 29 (18.2%) selected "other," and 56 (35.2%) did not select an ethnicity.

The majority (135/84.9%) of the participants were scholarship athletes while the remainder (24/15.1%) were not. 107 (67.3%) of the athletes considered themselves starters while 52 (32.7%) were reserve players. When asked about serious injuries, 57 (35.8%) of the participants reported suffering a serious injury during their career while the remainder (102/64.2%) reported no such injury. Eighty-four (52.8%) of the athletes

expressed a desire to compete beyond the collegiate level while 75 (47.2%) had no intention of playing after college. None of the participants were married.

Administration of the Questionnaire

The head coaches of all varsity teams at the university were initially contacted by phone. During this phone conversation the principal investigator explained the purpose of the study and requested permission to administer the questionnaire at a team meeting. Upon receiving the coaches' consent, the principal investigator scheduled an appropriate time for questionnaire administration. In addition, the instructors for three CHAMPS/Life Skills classes for freshmen athletes were contacted by phone. Upon briefing the instructors about the purpose of the study the principal investigator requested permission to administer the questionnaires during a class period. After obtaining each instructor's consent, an appropriate time was agreed upon. The questionnaires were administered during team meetings and during three CHAMPS/Life Skills classes. Athletes were provided with informed consent forms (Appendix B) as well as complete directions regarding the study prior to completing the survey (Appendix A). They were advised of their rights to discontinue participation at any time. Participation was voluntary and athletes did not receive payment or class credit for their involvement.

Data Analysis

Initial data analysis included descriptive statistics for the various demographic categories and for scale items. Means and standard deviations were computed for each item to gain a general understanding of the data. In addition, several analyses of variance

(ANOVA) were run to identify any differences between groups. After calculating the descriptive statistics and ANOVAs, an exploratory factor analysis was conducted.

Exploratory Factor Analysis

Factor analysis is a method of examining interrelationships between variables (Carr, 1992; Gorsuch, 1983). More specifically, it is designed to examine variables and explain their relationships using a small number of unseen variables called factors (DeVellis, 1991). Exploratory factor analysis is a method of analyzing the covariation of variables. Thus, it is a procedure designed to generate theory as opposed to testing theory (Stevens, 1996). Exploratory factor analysis includes a Principal Component (PrC) analysis that identifies the amount of variance explained by each component (Nunnally & Bernstein, 1994). In addition, orthogonal (varimax) rotation was used to further simplify each factor (Thurstone, 1947). For the current study, the following five criteria were used to determine the number of components to rotate: (a) the number of components with eigenvalues of at least 1.0, (b) the scree test, (c) the percentage of variance accounted for by each component, (d) the percentage of total variance accounted for by the retained Principal Components, and (e) the number of interpretable components (Tinsley & Tinsley, 1987). After the PrC analysis a second exploratory factor analysis was conducted in an attempt to strengthen the relationship between variables and components through component transformation (Nunnally & Bernstein, 1994).

Internal item consistency was assessed using Cronbach's (1951) alpha. This statistic is a way of assessing if items are measuring a single construct. That is, it is a check to see if each item is tapping the same construct. Cronbach's alpha assumes that the correlation among all possible items in a domain can be estimated by the average

correlation between items (Nunnally & Bernstein, 1994). Cronbach's alpha is computed for new measures and a total scale alpha of .80 or higher is considered acceptable (Nunnally & Bernstein, 1994). The suggested criterion for subscale reliabilities is .70 or greater (Nunnally, 1978).

CHAPTER IV

RESULTS

Introduction

The purpose of the current study was to develop a valid and reliable instrument to measure athletes' quality of life. Factor analysis was used to obtain validity and reliability measures for the scale. In addition, several other statistical analyses were used to obtain more information regarding different aspects of athletes' life quality. In the following chapter, the results of the analyses are discussed.

Pilot Study Results

The initial questionnaire was pilot tested on 31 Division I athletes. Cronbach's alpha was calculated for the scale to determine initial reliability. The results revealed an alpha of .8120. Further examination of the results suggested that the deletion of items 2, 11, and 14 would slightly increase the overall alpha of the scale. Deletion of item 2 would increase alpha to .8122, removing item 11 would increase alpha to .8176, and eliminating item 14 would increase alpha to .8376. Since these increases were relatively minor, the sample size was relatively small (N = 31), and the overall scale alpha exceeded Nunnally and Bernstein's (1994) suggested .80 level, the items were kept for future analysis. After careful consideration it was determined that any items with poor reliability would eventually be detected through factor analysis and, therefore, elimination of items at this point was premature.

Descriptive Statistics

Table 1 presents means and standard deviations for each question on the survey. Participants' responses to each item ranged from 1, "Very Dissatisfied," to 7, "Very Satisfied." Item means ranged from **M** = 4.30 for item 2, "The amount of free/recovery time you have away from your sport," to **M** = 6.13 for item 3, "Your relationships with family members." Other items with relatively high means included item 7, "Your relationships with your teammates" (**M** = 6.02) and item 4, "Your relationships with friends" (**M** = 6.00). Items with low means included item 11, "Your financial situation" (**M** = 4.70) and item 14, "Your relationship with boyfriend/girlfriend, spouse, etc" (**M** = 5.02).

Table 1

Descriptive Statistics for Questionnaire Items

Item	Mean	Std. Deviation
Your own physical health	5.75	1.40
The amount of free/recovery time you have away from your sport	4.30	1.60
Your relationships with family members	6.13	1.24
Your relationships with friends	6.00	1.13
Your social life	5.38	1.35
Your relationships with your coaches	5.39	1.48
Your relationships with your teammates	6.02	0.91
Your level of physical condition	5.81	1.22
Your athletic performance	5.28	1.43
Your role on your team	5.28	1.48
Your financial situation	4.70	1.68
Your spiritual health	5.22	1.43
Your mental health	5.53	1.32
Your relationship with boyfriend/girlfriend, spouse, etc.	5.02	1.65
Your life as a whole	5.87	1.18

ANOVA

Several one-way ANOVAs were used to analyze the current data set. The results of the ANOVAs revealed significant differences for several questionnaire items across different groups. Due to the number of statistical tests run, the Bonferroni adjustment was used to maintain an alpha level of **p** < .05 for the analyses (Thomas & Nelson, 1990). The Bonferroni adjustment corrected the alpha level used for the study to **p** < .006 (.05/9). Significant differences were found for various items across the subgroups of school year, sport, race, starter (yes or no), and desire to compete beyond college (yes or no). For the subgroups of school year, sport, and a Tukey post hoc test was used to identify where significant differences existed.

Differences Across School Year

Significant differences were found for item 10 (**p** = .005) the subgroup of school year. The Tukey post hoc test revealed differences between freshmen and seniors (**p** = .006) and sophomores and seniors (**p** = .004) for item 10. More specifically, seniors (**M** = 6.50, **SD** = 0.63) indicated significantly higher satisfaction with this item than both freshmen (**M** = 5.15, **SD** = 1.61) and sophomores (**M** = 4.94, **SD** = 1.46).

Differences Across Sport

The ANOVA revealed significant differences across sport for items 2 (**p** = .006), 6 (**p** = .000), 7 (**p** = .000), and 15 (**p** = .003). Post hoc tests revealed significant differences between volleyball and baseball (**p** = .004), volleyball and tennis (**p** = .019), and volleyball and rowing (**p** = .045) for item 2. Further inspection revealed that volleyball players (**M** = 2.95, **SD** = 1.28) reported lower satisfaction on item 2 than

athletes participating in baseball (**M** = 5.05, **SD** = 1.58), tennis (**M** = 6.33, **SD** = 1.15), and rowing (**M** = 4.54, **SD** = 1.43).

Item 6 showed significant differences between volleyball and swimming (**p** = .001), volleyball and track (**p** = .009), volleyball and baseball (**p** = .023), volleyball and rowing (**p** = .007), soccer and swimming (**p** = .018), and soccer and track (**p** = .034). Results of the Tukey post hoc tests showed that volleyball players (**M** = 4.00, **SD** = 1.58) reported lower levels of satisfaction with the item than athletes participating in swimming (**M** = 5.88, **SD** = 1.11), track (**M** = 6.22, **SD** = 0.67), baseball (**M** = 5.68, **S**D = 1.45), and rowing (**M** = 5.75, **SD** = 1.21). In addition, soccer players (**M** = 4.00, **SD** = 2.20) had lower levels of satisfaction than swimmers and track athletes.

Significant differences were found between softball and all other sports for item 7. Softball players showed significantly lower satisfaction with the item than athletes participating in golf, volleyball, swimming, track, baseball, rowing (all **p**'s = .000), basketball (**p** = .004), tennis (**p** = .025), football (**p** = .018), and soccer (**p** = .001). In each case, post hoc tests revealed lower satisfaction on the item for softball players (**M** = 4.38, **SD** = 1.19) when compared with the other athletes (golf, **M** = 6.30, **SD** = 0.67; volleyball, (**M** = 6.08, **SD** = 0.49; swimming, **M** = 6.13, **SD** = 0.82; track, **M** = 6.22, **SD** = 0.44; baseball, **M** = 6.26, **SD** = 0.87; rowing, **M** = 6.07, **SD** = 0.81; basketball, **M** = 7.00, **SD** = 0.00; tennis, **M** = 6.33, **SD** = 0.58; football, **M** = 5.63, **SD** = 1.07; soccer, **M** = 6.25, **SD** = 0.71). For item 15 significant differences were found for football and golf (**p** = .044) and football and baseball (**p** = .016). The Tukey post hoc tests revealed lower levels of satisfaction for football players (**M** = 5.16, **SD** = 1.46) than for golfers (**M** = 6.60, **SD** = 0.70) and baseball players (**M** = 6.47, **SD** = 0.77) on this item.

Differences Across Race

Differences across race were found for items 1 (**p** = .003), 5 (**p** = .001), and 8 (**p** = .004). Due to the low sample sizes for some of the racial groups, post hoc tests were not conducted. Therefore, no further information regarding differences among race were identified.

Differences Across Starting Status

Differences between starters and non-starters were found for items 6 (**p** = .000), 9 (**p** = .002), and 10 (**p** = .000). Further examination of these items revealed that starters were more satisfied with each of these items than non-starters. The starters reported the following means: item 6 (**M** = 5.69, **SD** = 1.31), item 9 (**M** = 5.52, **SD** = 1.31), and item 10 (**M** = 5.78, **SD** = 1.08). The nonstarters showed these means for the items: item 6 (**M** = 4.77, **SD** = 1.60), item 9 (**M** = 4.79, **SD** = 1.55), item 10 (**M** = 4.27, **SD** = 1.68).

Differences Across Professional Desires

Differences in athletes' desire to participate beyond college were significant for item 13 (**p** = .002). Athletes who had a desire to continue their participation (**M** = 5.85, **SD** = 1.16) indicated higher satisfaction with the item than those who expected to terminate their careers after college (**M** = 5.19, **SD** = 1.41).

Summary

No significant differences were found for any items across the subgroups of gender, ethnicity, scholarship status, or injury occurrence. For ease of interpretability Table 2 displays all significant differences for each item on the instrument. Specific differences are outlined for each subgroup save race where small sample sizes prevented the use of post hoc tests.

Table 2

Significant Differences for Scale Items Across Various Subgroups

Item/ Subgroup	School Year	Sport	Race	Starter	Beyond
Q1	None	None	Yes[2a]	None	None
Q2	None	Baseball[2], Tennis[1], Rowing[1]>Volley ball	None	None	None
Q3	None	None	None	None	None
Q4	None	None	None	None	None
Q5	None	None	Yes[2]	None	None
Q6	None	Swimming[2], Track[2], Baseball[1], Rowing[2]>Volley ball; Swimming[1], Track[1]>Soccer	None	Yes>No[2]	None
Q7	None	Tennis[1], Football[1], All Other Sports[2]>Softball	None	None	None
Q8	None	None	Yes[2a]	None	None
Q9	None	None	None	Yes>No[2]	None
Q10	Seniors >Frosh[2], Soph[2]	None	None	Yes>No[2]	None
Q11	None	None	None	None	None
Q12	None	None	None	None	None
Q13	None	None	None	None	Yes>No[2]
Q14	None	None	None	None	None
Q15	None	Golf[1], Baseball[1]>Footb all	None	None	None

[1] $\underline{\mathbf{p}} \leq .05$
[2] $\underline{\mathbf{p}} \leq .01$
[a] Small sample sizes prevented the use of Post hoc tests for the subgroup of race

Factor Analysis

Principal Components Analysis

The construct validity of the questionnaire was assessed through principal components analysis and principal components factor analysis with varimax rotation. The principal components analysis revealed five factors with eigenvalues greater than 1. Thus, five components accounted for at least as much variance as the fifteen original items alone. According to Kaiser's (1963) rule of retaining components with eigenvalues greater than one, all five factors were retained. The five components accounted for 65.3 percent of the total variance. Table 3 contains the results of the principal components analysis.

Cattell's (1966) scree plot was also used to further examine the necessary number of components to retain. The scree plot (Figure 1) revealed discontinuities after the third and fifth factors, suggesting a three factor or five factor solution. Taken together, the results of the principal components analysis and scree plot suggested a three, four, or five factor solution. Therefore, all three solutions were run using varimax rotation (Thurstone, 1947) to further validate the instrument.

For each solution factor loadings of 0.3 were considered the minimum requirement for retaining an item (Kline, 1994). After considering each possible solution a decision was made and the resultant factors were named.

Table 4 displays the results of the three-factor solution, which accounted for 51.0 percent of the total variance. The first component consisted of items 1, 2, 6, 8, 9, and 19.

Table 3

Total Variance Explained

Component	Initial Eigenvalues	Initial Eigenvalues	Initial Eigenvalues
	Total	% of Variance	Cumulative %
1	4.531	30.205	30.205
2	1.675	11.167	41.372
3	1.437	9.580	50.952
4	1.131	7.541	58.493
5	1.026	6.841	65.333
6	.828	5.518	70.851
7	.811	5.405	76.257
8	.699	4.658	80.914
9	.637	4.244	85.158
10	.526	3.509	88.668
11	.509	3.395	92.063
12	.350	2.331	94.393
13	.349	2.328	96.721
14	.272	1.812	98.533
15	.220	1.467	100.000

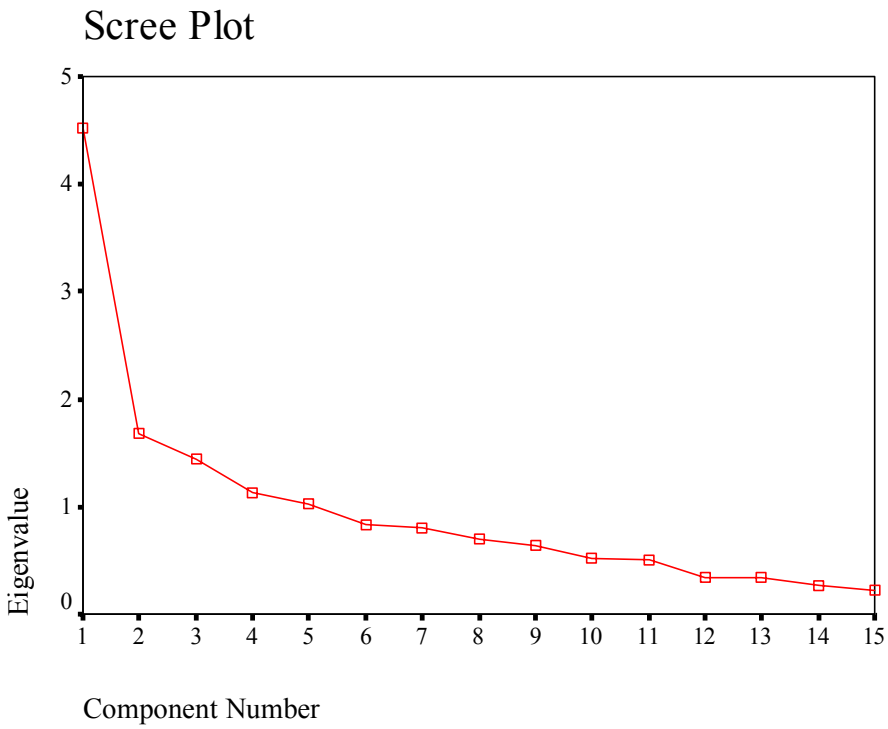


Figure 1

Scree Plot

Table 4

Rotated Component Matrix for Three-Factor Solution

	Component		
	1	2	3
Q8	.815		
Q9	.736		
Q1	.669	.360	
Q6	.623		
Q10	.602		
Q2	.385	.326	
Q12		.779	
Q13		.710	
Q15		.648	.303
Q14		.559	
Q11		.552	
Q4			.840
Q3			.690
Q5	.312		.492
Q7	.421		.467

The second component contained items 11, 12, 13, 14, and 15. The final component included items 3, 4, 5, and 7. No items had loading that were less than 0.3. The item loadings for the three factor solution ranged from .385 for item 2 to .840 for item 4.

The four-factor solution accounted for 58.5 percent of the total variance and is shown in Table 5. The first factor included items 1, 6, 8, 9, and 10. The second component consisted of items 11, 12, and 13. The third factor contained items 2, 5, 14,

Table 5

Rotated Component Matrix for Four-Factor Solution

	Component			
	1	2	3	4
Q8	.836			
Q9	.733			
Q1	.685	.399		
Q10	.574			
Q6	.573		.376	
Q12		.781		
Q11		.664		
Q13		.616	.391	
Q14			.698	
Q5			.650	.351
Q15		.431	.606	
Q2	.324		.504	
Q4				.826
Q3		.356		.741
Q7	.409			.467

and 15. The final factor had items 3, 4, and 7. The loadings ranged from .467 for item 7 to .836 for item 8. This solution did not reveal any items with loadings less than 0.3.

The five-factor solution accounted for 65.3 percent of the total variance and is shown in Table 6. The first factor included items 11, 12, 13, and 15. The second factor consisted of items 1 and 8. The third factor contained items 6, 7, 9, and 10. The fourth factor had items 3 and 4. The final factor included items 2, 5, and 14. The item loadings for this solution ranged from .430 for item 7 to .859 for item 1. Consistent with the three and four factor solutions the five factor showed no item loading less than 0.3.

Table 6

Rotated Component Matrix for Five-Factor Solution

	Component				
	1	2	3	4	5
Q12	.827				
Q13	.736				
Q11	.600				
Q15	.552				.490
Q1		.859			
Q8		.844	.303		
Q10			.846		
Q6			.692		
Q9		.517	.542		
Q7			.430	.413	
Q3				.816	
Q4				.776	
Q5				.320	.724
Q2		.376			.647
Q14	.359				.617

Looking at the three possible solutions it was clear that item elimination was not required for any. Therefore, it appeared that the instrument contained fifteen valid items and no decision regarding the three different solutions was required. However, in order to better understand the constructs included in life quality the five-factor solution, which accounted for the greatest percentage of the total variance was further analyzed.

The items contained in the first factor (11, 12, 13, and 15) seemed to relate to athletes' general life satisfaction; that is, their financial satisfaction, spiritual and mental health, and overall life satisfaction. The second factor contained items (1 and 8) and dealt with athletes' satisfaction with their physical health and condition. Factor three

consisted of items (6, 7, 9, and 10) that dealt with team or sport-related satisfaction. The fourth factor, which included items 3 and 4 appeared to relate to athletes' primary social satisfaction. The final factor contained items (2, 5, and 14) that dealt with athletes' satisfaction with their free time and social life. According to the five factor solution, athletes' quality of life could be partitioned into five components. These components include general life satisfaction, physical satisfaction, team/sport satisfaction, primary social satisfaction, and recovery/social satisfaction. Table 7 displays the eigenvalues and percent of total variance accounted for by the five components.

Reliability of the Instrument

Instrument reliability was assessed through Cronbach's alpha. Alpha was calculated for the entire scale and for each factor in the five factor solution. The alpha for the entire scale was .83. The alpha for the first component, general life satisfaction was .73. The second component, physical satisfaction, had an alpha of .83. Team/sport satisfaction, factor three, had an alpha of .69. The fourth factor, primary social satisfaction, had an alpha of .68. The final factor, recovery/social satisfaction had an alpha of .54. The alpha for the overall scale exceeded the .80 level suggested by Nunnally & Bernstein (1994). The alpha levels for each subscale either exceeded or closely approached the .70 level suggested by Nunnally (1978). The component with the lowest alpha was factor five, (recovery/social satisfaction), which contained item 14, "Your relationship with boyfriend/girlfriend, spouse, etc." As shown by the demographic information, no participants in this study were married although it was very likely that many of the participants in the study had a significant other. These participants may have

Table 7

Total Variance Explained for Five Factor Solution

Component	Initial Eigenvalues	Initial Eigenvalues	Initial Eigenvalues
	Total	% of Variance	Cumulative %
1-General Life Satisfaction	4.531	30.205	30.205
2- Physical Satisfaction	1.675	11.167	41.372
3- Team/Sport Satisfaction	1.437	9.580	50.952
4- Primary Social Satisfaction	1.131	7.541	58.493
5- Recovery/Social Satisfaction	1.026	6.841	65.333

been unsure how to answer this item. They might have been neutral because they didn't have a significant other, answered "Very dissatisfied" because they wished they had a significant other, or they might have responded "Very satisfied" because they were happy to be single. Thus, this item may have been the cause of the low alpha for this factor.

A second way to assess reliability is to look at the inter-item correlations and item-total correlations. Essentially Cronbach's alpha is a method of estimating correlations between items Nunnally & Bernstein, 1994). Therefore, inspecting the correlations between items contained in each factor would provide further insight into the reliability of the instrument. Items grouped together within factors should correlate with each other. In addition, item-total correlations provide information regarding correlations between individual items and the total scale score. The correlations for items contained in each of the five factors are shown in Tables 8 through 12. Item-total correlations are provided in Table 13.

Table 8

Correlations for Items in Factor 1

Items	11	12	13
12	.40	1.00	
13	.29	.60	1.00
15	.30	.40	.51

Table 9

Correlations for Items in Factor 2

Items	1
8	.72

Table 10

Correlations for Items in Factor 3

Items	6	7	9
7	.32	1.00	
9	.37	.25	1.00
10	.42	.30	.47

Table 11

Correlations for Items in Factor 4

Items	3
4	.52

Table 12

Correlations for Items in Factor 5

Items	2	5
5	.46	1.00
14	.19	.22

Table 13

Item-Total Correlations

Item	Item-Total Correlation
Your own physical health	.473
The amount of free/recovery time you have away from your sport	.464
Your relationships with family members	.309
Your relationships with friends	.320
Your social life	.494
Your relationships with your coaches	.464
Your relationships with your teammates	.407
Your level of physical condition	.527
Your athletic performance	.542
Your role on your team	.413
Your financial situation	.374
Your spiritual health	.493
Your mental health	.567
Your relationship with boyfriend/girlfriend, spouse, etc.	.267
Your life as a whole	.580

The correlations for the items contained in the general life satisfaction component ranged from .293 for items 11 and 13 to .599 for items 12 and 13. The physical satisfaction component contained a correlation of .721 for items 1 and 8. The team/sport satisfaction component revealed correlations ranging from .249 for items 7 and 9 to .472 for items 9 and 10. The fourth component, primary social satisfaction, contained a correlation of .516 for items 3 and 4. The final component, recovery/social satisfaction, consisted of correlations ranging from .195 for items 2 and 14 to .461 for items 2 and 5. The item-total correlations ranged from .267 for item 14 to .580 for item 15.

Open-Ended Responses

Ten participants responded to the open-ended question, "Are there any other things that affect your quality of life that were not listed?" The most frequent response dealt with academic concerns (**n** = 7), while diet (**n** = 2) and sleep (**n** = 1) were the other responses.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study was to develop a reliable and valid scale designed to measure athletes' life quality. One hundred fifty-nine student-athletes at a large university in the Southeast United States were asked to fill out the instrument, and their data were used to assess the validity and reliability of the instrument.

A secondary purpose of the study was to gather in-depth information regarding athletes' quality of life. Therefore, several additional statistical analyses were performed to gain a better understanding of athletes' life quality. In this chapter, the results of the current study are discussed relative to previous life quality and sport psychology literature. In addition, several conclusions and recommendations for future research are offered.

Descriptive Statistics

Initial inspection of the means and standard deviations of the scale items reveals a general dissatisfaction among these athletes with the amount of free/recovery time they have away from their sport. That is, despite the NCAA's efforts to increase athletes' free time by instituting the twenty hour rule (athletes are to spend no more than twenty hours each week involved in their sport) (NCAA, 2004), the results of this study suggest that athletes are not receiving an acceptable amount of recovery time. This finding is

somewhat troubling when one considers its link to overtraining and burnout. According to Lehmann, Foster, Dickhult, and Gastmann (1998), overtraining can occur when there is an imbalance between levels of stress and recovery. Kellmann (2002) further contends the notion that inadequate rest during periods of intense training can lead to overtraining and burnout. The results of the current study suggest that athletes may not have appropriate recovery time to avoid overtraining and burnout.

Overtraining has been shown to cause decrements in performance (Gould, Guinan, Greenleaf, Medbery, Strickland, Lauer, Chung, & Peterson, 1998), negative affect, illness, injury, depression, loss of enjoyment, inability to participate in social activities (Gould, Tuffey, et al., 1996), and eventual discontinuation of participation (Silva, 1990). Many of these outcomes of overtraining are closely linked to life quality and to several items on the current instrument. These include item 1, "Your own physical health," item 5, "Your social life," item 8, "Your level of physical condition," and item 9, "Your athletic performance." Thus, it appears that overtraining can have a marked effect on athletes' life quality. This link between overtraining and life quality further supports Kellmann's (2002) argument for providing athletes with proper recovery time during training. Moreover, the results of this study suggest the need for increased attention to issues of burnout and overtraining by coaches and athletic personnel.

Another scale item with a relatively low mean was item 11, "Your financial situation." This rather low mean is not unexpected considering most student-athletes' financial circumstances. It is not uncommon for student-athletes to be unsatisfied with their financial situation considering their limited ability to earn money beyond their meager scholarship stipend. In fact, student-athletes' general disgust with their lack of

funds has become a widely discussed topic within intercollegiate athletics (Sage, 1998). Many critics of the current system claim that the tuition waivers and room and board wages allotted to scholarship student-athletes are little compensation for the amount of time and work they put into their sport (Eitzen, 1992; Sage, 1998). Moreover, Sage (1998) speculates that college athletes are severely underpaid considering the amount of revenue they create for their schools.

The final item with a low mean was item 14, "Your relationship with boyfriend/girlfriend, spouse, etc." As previously discussed, the results of this item may have been skewed by participants' uncertainty as to how to respond to the question, particularly if they were not in a relationship. Despite this, the low mean is not surprising considering student-athletes' social lives. With little free time outside of sport, it is not atypical for student-athletes to have difficulty engaging in, and maintaining, intimate relationships.

The items that athletes reported the highest levels of satisfaction with included items 3, "Your relationships with family members," 7, "Your relationships with your teammates," and 4, "Your relationships with friends." These results are encouraging as they lend evidence to a strong social support network for athletes. This is very important considering Csikszentmihalyi's (1997) belief that close relationships play a significant role in one's life quality. In fact, Pflaum (1973) identified primary social relationships as one of his five factors that influence life quality. Moreover, Wrisberg (1996) listed close relationships with teammates as an important factor in life quality. Positive relationships with parents have also been shown to positively affect various components of life quality, including increasing athletic enjoyment (Scanlan & Lewthwaite, 1986) and overall

satisfaction (Harter, 1978). Thus, it is encouraging that the athletes in this study reported high satisfaction with their relationships with family, friends, and teammates, as these relationships serve as important contributors to life quality.

Analysis of Variance

While not the primary purpose of the study, the results of the ANOVAs provide some interesting information about the various aspects of student-athletes' life quality. Prior to discussing these results it is important to acknowledge a methodological concern dealing with sampling. Several of the athletes that participated in this study were recruited from three different first-year student-athlete orientation classes at the university. These individuals (freshmen or transfer athletes) were the primary representatives of several teams (i.e., Football, Basketball, Tennis, Track, and Soccer) and thus may not have constituted an accurate representation of those teams. Despite this, the results do provide further insight into student-athletes' life quality and, therefore, are worth noting.

Differences Across School Year

According to the results of the current study, seniors reported higher levels of satisfaction with their role on the team than freshmen and sophomores. This finding is not surprising as seniors have had more time to grow into and accept their roles. Seniors are often the major contributors on their teams and thus might be more satisfied with their roles than younger athletes who are playing less. Seniors who are not major contributors have had several years to accept this role and therefore may be more satisfied with it than their younger counterparts. According to Etzel, Ferrante, and Pinkley (1996), Heyman

(1986), and Parham (1993) freshmen student-athletes are placed under extremely demanding circumstances as they arrive on campus. One of these demands involves becoming comfortable with their team and their "niche" on the team. It appears that this process of incorporation may take several years.

Differences Across Sport

Several differences for the items were found across the various sports. Volleyball players reported lower satisfaction with their amount of free/recovery time than baseball, tennis, and rowing athletes. This may have been due to the fact that the volleyball players completed the questionnaire during the middle of their season while athletes participating in baseball, tennis, and rowing responded to the questionnaire during their off-season. Thus, not surprisingly, it appears that athletes are less satisfied with their free time when their sport is in season than during the off-season.

The volleyball and soccer players surveyed in this study reported lower satisfaction with their relationships with their coaches than did athletes in several other sports. While there are several possible explanations for these results, they point to a need for improved relationships between these athletes and their coaches. Several studies have suggested that coaches have a significant impact on athletes' sport experiences (Allen & Howe, 1998; Scanlan & Lewthwaite, 1986). The low levels of satisfaction with coach relationships reported by volleyball and soccer players in this study point to the need to further examine ways to improve coach-athlete relationships. Past research has suggested that certain leader behaviors are associated with highly satisfied athletes (Weiss & Friedrichs, 1986). Specifically, rewarding behavior, democratic behavior, social support, positive reinforcement, praise, training, and instruction have been shown

to increase levels of athlete satisfaction (Allen & Howe, 1998; Black & Weiss, 1992; Chelladurai, 1984; Harter, 1978; Riemer & Cheladurai, 1995; Scanlan & Lewthwaite, 1986; Schliesman, 1987). Thus, it can be suggested that increased frequencies of these behaviors by coaches may aid in the cultivation of positive coach-athlete relationships for these dissatisfied athletes.

The volleyball players also reported significantly less satisfaction with their relationships with their teammates than did athletes in the other sports. Again, these results are troubling considering that Wrisberg (1996) identified the importance of positive relationships with teammates as an important ingredient of life quality. The low levels of satisfaction reported by volleyball players in the current study suggest the need to further examine ways to improve interactions among teammates.

Football players showed significantly lower satisfaction with their life as a whole than golfers and baseball players These results may be due to the sampling bias suggested above. The majority of football players who participated in the study were freshmen while the sample of golfers and baseball players were comprised of athletes at several levels. Therefore, these results may primarily be due to the stress experienced by freshmen football players' who often struggle when making the adjustment from high school to Division I football.

Differences Across Race

The racial differences found are more difficult to explain because the small or unequal sample sizes prevented the use of post hoc tests. However, one might speculate that racial minorities would report lower satisfaction with their social life than would athletes from the dominant (i.e., white) racial groups. Along with the cultural,

psychological, sociological and educational adjustments facing minority student-athletes (Lee & Rotella, 1991), these athletes may find it difficult to find racially similar social groups on predominantly white campuses. According to Sellers (1993), African-American athletes are different than the two groups with whom they are most similar, white athletes and black non-athletes. Therefore, they often find it difficult to develop and maintain a satisfactory social life.

Differences Across Starting Status

Significant differences were found between starters and non-starters for items 6, 9, and 10. That is, starters reported higher satisfaction with their relationships with coaches, their athletic performance, and their role on their team. As previously mentioned, high frequencies of positive reinforcement and praise from coaches can have a positive affect on athletes satisfaction (Allen & Howe, 1998; Black & Weiss, 1992; Harter, 1978; Riemer & Chelladurai, 1995; Scanlan & Lewthwaite, 1986; Schliesman, 1987). It is possible that coaches demonstrate these positive behaviors more often for starters than for nonstarters. This is one possible explanation for starters reporting higher levels of satisfaction with coach interaction than nonstarters. Starters' high levels of satisfaction with their athletic performance and their role on the team are not surprising because, as starters, they generally view themselves as effective and important athletes.

Differences Across Professional Desires

The athletes in this study who had a desire to compete beyond the collegiate level were more satisfied with their mental health than other athletes. This satisfaction may be tied to these athletes' athletic identity. Athletic identity encompasses the affect, behavior, and cognition, that comes from the view of oneself as an athlete (Brewer, Van Raalte, &

Linder, 1993). It is possible that athletes with professional desires are more comfortable with their athletic identity than athletes with no such desires. That is, athletes with professional hopes may have a stronger athletic identity than other athletes and when this identity is reinforced through successful performances or a belief in their ability to compete professionally, they may become more satisfied with their life as an athlete. Satisfaction with mental health was also one of the items falling under the umbrella of the general life satisfaction component and, in this case, increased satisfaction with mental health may signal an overall increase in life satisfaction for athletes with a strong athletic identity.

Factor Analysis

The results of the factor analysis indicated that the current instrument is a valid and reliable measure of NCAA Division I collegiate athletes' life quality. Specifically, five components of these athletes' quality of life were identified and named. They include: General Life Satisfaction, Physical Satisfaction, Team/Sport Satisfaction, Primary Social Satisfaction, and Recovery/Social Satisfaction. These five factors are very similar to several of the components of life quality suggested by previous researchers. Pflaum (1973) identified biophysical functioning and primary and secondary social relationships as three major components of life quality. Pflaum's categories are similar to the physical satisfaction, team/sport satisfaction, and primary social satisfaction components identified in the current investigation. However, this is not surprising considering the fact that initial item creation was based partially on Pflaum's (1973) quality of life factors.

Prior to this project, several researchers (see American Institute of Research, 1988a, 1988b; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Gould, Jackson, & Finch, 1993a; Gould, Jackson, & Finch, 1993b; Scanlan, Stein, & Ravizza, 1989; Scanlan, Stein, & Ravizza, 1991; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999) that attempted to ferret out characteristics of athletes' life quality identified several components that are similar to the factors comprising the questionnaire developed in the present study. These include coach relationships, relationships with significant others, performance, physical well-being, and time demands.

The current findings are also similar to those of by Riemer and Chelladurai (1998) and the current instrument contains dimensions similar to those found in their Athlete Satisfaction Questionnaire (i.e., performance, leadership, team, and individual). However, it should be noted that the current instrument encompasses aspects of life quality in addition to the performance factor emphasized in the ASQ.

Reliability

When compared to the desired alpha level recommended by Nunnally and Bernstein (1994), the alpha for the current scale suggests a high level of reliability. The high alpha level for the present scale is particularly impressive given the relatively small number of items contained in the scale. The alpha levels for each individual component of the present scale also either exceeded or closely approximated the recommended level suggested by Nunnally (1978). In fact, the only factor that had an alpha level considerably lower than the desired level was the final component, recovery/social satisfaction. This is not surprising because, as a rule, alpha levels decrease with each

additional component. However, a possible explanation for the low reliability for this component might be participants' uncertainty about their answers to item 14, "Your relationship with boyfriend/girlfriend, spouse, etc." As previously noted, this item may have caused some uncertainty for athletes who were not currently in an intimate relationship. Despite the lower level of reliability, this item is considered important to the scale and, therefore it was deemed necessary to include it with its present wording. In addition, the results indicate that removal of this item would not increase the overall alpha levels of the scale or of this factor.

Visual inspection of the item-total correlations reveals high correlations for items 8, 9, 13, and 15. Items 8 and 9 measure athletes' satisfaction with their physical condition and athletic performance. Thus, it appears that, similar to previous research on athlete satisfaction (Chelladurai & Riemer, 1997; Riemer & Chelladurai, 1998), performance does play a substantial role in athletes' life quality. The high correlation for item 13, "Your mental health," suggests the importance of stress management for elite athletes. Item 15, "Your life as a whole" contained the highest item-total correlation. This result further reinforces the overall validity of the scale.

The items with the lowest item-total correlations included items 3, 4, and 14. These items all deal with relationships with individuals not involved with the athletes' sport (i.e., family, friends, significant other). These results corroborate previous suggestions that athletes who spend the majority of their time with coaches and teammates may rely very heavily on those relationships (Messner, 1992; Scanlan & Lewthwaite, 1986) and, therefore, may not be as concerned with relationships that they have with individuals who are not immediately involved with their athletic experience.

This suggests that while relationships with these individuals are important, they may not be as significant as athletes' relationships with coaches and teammates.

Conclusions

The primary purpose of the current study was to develop a valid and reliable instrument designed to assess athletes' life quality. Despite Granito and Carlton's (1993) call for such scale development, few attempts had been made to fill this void prior to this study. Wrisberg's (1996) observation that athletes experience relatively low levels of life quality further supported the need for such an instrument.

The current study employed factor analysis to develop an athlete quality of life scale. The resulting factor analysis revealed five components of life quality including general life satisfaction, physical satisfaction, team/sport satisfaction, primary social satisfaction, and recovery/social satisfaction. These components were based upon and consistent with those reported in previous life quality research, including Pflaum's (1973) quality of life factors and Riemer and Chelladurai's (1998) Athlete Satisfaction Questionnaire. However, the current scale places a greater emphasis on salient elements of athletes' lives outside of the performance domain than does Pflaum's (1973) inventory and Riemer and Chelladurai's (1998) questionnaire. Thus, it would appear to provide the most comprehensive instrument for assessing athletes' quality of life from a holistic point of view.

Recommendations

The current study represented an attempt to develop a valid and reliable measure of athletes' life quality. Based on the results of this study the following recommendations are offered:

1. A Confirmatory Factor Analysis should be conducted using a larger sample. This analysis would test the model derived by the Exploratory Analysis and further validate the instrument.
2. Upon completion of the Confirmatory Analysis the instrument could be used to examine a number of life quality issues from a variety of perspectives.
3. The scale could further investigate Wrisberg's (1996) claim that Division I athletes experience relatively low levels of life quality by assessing any differences in QOL for athletes at different levels of competition (i.e., Division I, Division I-AA, Division II, Division III, NAIA, etc.).
4. Lee and Rotella (1991) have suggested that African-American athletes face several unique problems including psychological and social adjustment. Once validated, this scale could further this research by assessing the QOL of athletes differing in race.
5. Wrisberg (1996) highlighted several differences in the experiences of male and female athletes at the Division I level. This suggests possible differences in life quality between these groups. These differences could be assessed using the current instrument.
6. Griffin (1998) has discussed the plight of lesbian athletes and the unique problems they face within the athletic environment. The current scale could provide further

information through an assessment of the QOL of athletes differing in sexual orientation.

7. Further research should be conducted to identify ways to improve athletes' satisfaction with the constructs identified on the scale. Such research would hopefully enlighten coaches, athletes, consultants, and administrators on some ways to improve the overall life quality of athletes.

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APPENDICES

Appendix A

Athlete Life Quality Scale

A. Are you: _____ Male _____Female (Check one)

B. Are you _____Freshman _____Sophomore _____ Junior _____ Senior

_____5th Year Senior _____Grad Student (Check one)

C. What is your primary sport? _____

D. What is your race? _____

E. What is your ethnicity? _____

F. Are you currently receiving a scholarship? _____

G. Are you a starter on your team? _____Yes _____No

H. Have you sustained any serious injuries in your playing career?

_____Yes _____No

I. Are you married? _____Yes _____No

J. Are you planning on participating in your sport beyond the collegiate level?

_____Yes _____No

Appendix A Continued

Using the scale below, indicate how satisfied you are with the various aspects of your life listed.

VD=Very Dissatisfied D=Dissatisfied SD=Slightly Dissatisfied N=Neutral/Undecided SS=Slightly Satisfied S=Satisfied VS=Very Satisfied

1. Your own physical health	VD	D	SD	N	SS	S	VS
2. The amount of free/recovery time you have away from your sport	VD	D	SD	N	SS	S	VS
3. Your relationships with family members	VD	D	SD	N	SS	S	VS
4. Your relationships with friends	VD	D	SD	N	SS	S	VS
5. Your social life	VD	D	SD	N	SS	S	VS
6. Your relationships with your coaches	VD	D	SD	N	SS	S	VS
7. Your relationships with your teammates	VD	D	SD	N	SS	S	VS
8. Your level of physical condition	VD	D	SD	N	SS	S	VS
9. Your athletic performance	VD	D	SD	N	SS	S	VS
10. Your role on your team	VD	D	SD	N	SS	S	VS
11. Your financial situation	VD	D	SD	N	SS	S	VS
12. Your spiritual health	VD	D	SD	N	SS	S	VS
13. Your mental health	VD	D	SD	N	SS	S	VS
14. Your relationship with boyfriend/ girlfriend, spouse, etc.	VD	D	SD	N	SS	S	VS
15. Your life as a whole	VD	D	SD	N	SS	S	VS

16. Are there any other things that affect your quality of life that were not listed? If so, please list them here.

Appendix B

Informed Consent Forms

Participant Consent Form

Hi. My name is Noah B. Gentner. I am a Ph.D. student in Sport Psychology at the University of Tennessee. I'd like to invite you to fill out a questionnaire regarding your quality of life as an athlete. Your answers to the questions contained in the questionnaire will provide great insight into the life quality of athletes as well as to the effectiveness of this questionnaire. Your responses will also allow me to change the questionnaire and make it more effective for future use. Therefore, your honesty in answering these questions is of the utmost importance.

All results from the questionnaire will be confidential. Because confidentiality is an important issue, several measures will be undertaken. Be assured that all information given on the questionnaires will be kept private and confidential. Furthermore, no one but myself will have access to the information from the study. I can provide you with a written summary of all the participants' answers if you would like, probably sometime in March 2004. Taking part in the project is entirely up to you, if you agree to take part, you can stop at any time if you choose. By completing and returning the following questionnaire you are providing your consent to participate in the study.

If you want to know more about this project, please call me anytime during the week at (865) 974-0601 or email me anytime (ngentner@utk.edu). This project has been approved by the Human Subject's Review Board at the University of Tennessee. If you have any questions regarding the University of Tennessee's regulations for research, please call (865) 974-3466.

Sincerely,

Noah B. Gentner
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VITA

Noah Benjamin Gentner was born in South Bend, Indiana, on February 10, 1977. He graduated from South Bend Clay High School in June of 1995. Noah attended Indiana University in Bloomington, IN, where he received a Bachelor of Arts degree in Psychology in May 1999. Throughout his high school and college career, Noah participated in many competitive sports, including soccer, tennis, and basketball. Through his athletic endeavors and Psychology studies at Indiana University, Noah discovered the field of Sport Psychology, thus providing him with an avenue through which he could pursue his two passions: sports and Psychology.

In August 2000, Noah entered graduate school at the University of Tennessee. While matriculating that year, he was awarded the A.W. Hobt Memorial Award for excellence in teaching for his work as a Graduate Teaching Associate in the Physical Education department. Noah received his Masters of Science degree in Human Performance and Sport Studies from the University of Tennessee in August 2001.

In 2001 Noah began his work toward a Ph.D. in Sport Psychology from the University of Tennessee. During his three year Ph.D. program Noah provided mental training consultation to athletes and coaches at the youth, high school, collegiate, and professional levels. He spent two years serving as a mentor to student-athletes at the Thornton Academic Student Life Center and one year as a Sport Psychology Graduate Assistant in Men's Athletics. Noah also spent three semesters as an instructor for an undergraduate sport and exercise psychology class. He expects to graduate in May 2004 and hopes to continue his professional career in Sport Psychology as a professor and consultant.