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## II. ACKNOWLEDGEMENTS

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### III. EXECUTIVE SUMMARY

## THE PATH TO EXCELLENCE:

# A COMPREHENSIVE VIEW OF DEVELOPMENT OF U. S. OLYMPIANS WHO COMPETED FROM 1984 - 1998

## Scope of the Report

This is the first in-depth study conducted by the United States Olympic Committee (USOC) that provides a comprehensive view of the development of U.S. Olympians. One of the strongest aspects of this questionnaire is that it reports such development from the perspective of the Olympian. From the introduction to a sport to making an Olympic team, we hear the voice of U. S. Olympians describing the motives, processes, people, and organizations that helped them reach the top in their sport.

Due to the large amount of information generated by this project and in order to provide reports that are useful and practical, the results of the questionnaire will be delivered in several reports. **In this initial report, the main objectives are to provide the general patterns and trends that characterized the training and development of U. S. Olympians.** To provide meaningful comparisons, the data has been grouped as male and female Olympians, winter and summer Olympians, and medalists and non-medalists (non-medalists are divided into two groups: 4<sup>th</sup> – 8<sup>th</sup> place and 9<sup>th</sup> – 25<sup>th</sup> place). Where appropriate, the central tendencies of each question were reported including mean, median, mode, and standard deviation. Additionally, the word “**Olympian(s)**” in this report will mean Olympian respondents to this questionnaire, specifically, for the sake of simplicity and may not necessarily reflect the trends of all U. S. Olympians.

## Purpose of the Questionnaire

The U. S. Olympic Committee and its member National Governing Bodies (NGBs) are constantly seeking ways to improve the quality and the effectiveness of their programs in the area of talent identification and talent development. These programs are becoming increasingly important as the level of international competitiveness increases and patterns change by which youth are introduced to Olympic sports within the United States. The purpose of this questionnaire was to obtain a comprehensive view of the factors that have been significant in the areas of athlete identification and development as reported by U. S. Olympians. This information will be invaluable in helping a variety of organizations design and implement programs for the development of future Olympians.

## Origin and Design of Questionnaire

The idea to survey U. S. Olympians originated from Jay T. Kearney Ph.D., former sport physiologist for the USOC. The Athlete Development Division adopted the idea and requested the help of the Sport Science and Technology Division of the USOC to provide assistance in questionnaire design, data collection, and analysis. Authors of the questionnaire include Alica McConnell of the Athlete Development Division and Jay T. Kearney, Tim Gibbons, and Lisa Whitford of the Sport Science and Technology Division. The authors identified several main areas from which to collect information from U. S. Olympians: performance at the Olympic games; motives for participation and pursuit of excellence in sport; physical activity during childhood, adolescence, and adulthood; age and amount of training at 13 milestones of development; coaching factors; factors related to financial support; long-term progression in performance; dropout in sport; factors that contributed to the achievement of success; and obstacles to success. See Appendix A for a copy of the Talent Identification and Development Questionnaire.

## Data Collection

This questionnaire was sent out in January of 2000 to 2170 athletes who attended the Winter and Summer Olympic Games from 1984 to 1998. Completed questionnaires were returned from January through September of 2000. A postcard was sent in July to remind those Olympians who had not yet returned a questionnaire. The completed, anonymous questionnaires were read by a scanner and verified by the software program Teleform, to identify and correct responses that were unrecognizable. Once verified, questionnaire data were entered into a Microsoft Access database.

Of the 2170 identified Olympians, 816 athletes returned a completed questionnaire, a 37.6 percent return rate. Included in this data set, were 475 males (58.2 % of respondents) and 341 females (41.7 % of respondents). Medalists made up 34.6 percent of respondents for a total of 283 athletes, 157 males and 126 females, respectively. Appendices B and C provide a detailed listing of the number of male and female respondents and the total number of U. S. Olympians by sport who competed from 1984 – 1998. Due to the large number of events that are present in Olympic Summer Games, athletes were grouped by NGB. Conversely, winter athletes were grouped by sport. For example, track and field athletes are listed as track and field athletes regardless if the athletes competed in the marathon or high jump. Alternatively, skiers were listed by event such as cross-country or alpine rather than skiing only.

## Major Findings

Benjamin Bloom, researcher in expert performance, has succinctly captured the essence of long-term talent development with this statement in his book “Developing Talent in Young People” (1985): “...no matter what the initial characteristics of the individuals, unless there is a long and intensive process of encouragement, nurturance, education, training, the individuals will not attain extreme levels of capability in the particular fields.” U.S. Olympians reported a similar process. Success at the Olympic level is the culmination of a complex, long-term process involving not only the athlete, but also a support cast of individuals and organizations. The major findings presented here reflect the main categories of the questionnaire.

### Olympic Dream

Questionnaire responses indicated that U.S. athletes first dreamed of becoming an Olympian at the time they achieved local competitive success. One of the strongest trends was the short period of time, 1.7 years, between the decision to become an Olympian and the belief that it was possible. On the average, 8.5 years transpired from an introduction to a sport to the belief it was possible to become an Olympian. **For many Olympians, the development of the Olympic dream occurred in programs at the local and community level, thus emphasizing the importance of these programs to provide opportunities in Olympic sport.**

### Motives for Participation and the Pursuit of Excellence in Sport

Several themes of motivation were evident throughout the careers of Olympians. Initially, these athletes were directed to a particular sport because of a love of sport, love of activity, and early success in the sport. Parents and coaches also had moderate influence in directing these Olympians, as children, to sport. Once they were introduced to a sport, the challenge and love of competition, fun, and a desire to be successful were the dominant factors that motivated these Olympians to continue to participate in their sport. As the level of competition increased, intrinsic factors such as the challenge and love of competition, a desire to be successful, the need for a competitive outlet, and fun remained the key motives for Olympians to pursue excellence in their sport. In addition, female winter Olympians appeared to place more importance on intrinsic rewards over female summer Olympians who valued extrinsic rewards to a greater degree. **These results suggest that youth sport programs that emphasize fun, enjoyment, and love of sport provide a springboard for athletes to continue their development upward.**

### Regular Sport Participation and Frequency of Physical Activity

Overall, it appears that these U.S. Olympians were very active in a variety of activities as children and adolescents. In the age groups, <10 years old and 10-14 years old there was a range of 2.6-3.5 sports for all respondents. In elementary and secondary school physical education, Olympians reported an average of 3.3-3.4 days per week of activity. In addition, respondents reported an average of 3.1 days per week of activity in other scholastic sports and an average of

2.5 days per week in club or community based programs. In all age groups, males reported more sport participation than females. This may represent the lack of sport opportunities that were available to young women from 1960 – 1985. In all Olympians the number of sports declined with age. This decline in the number of sports may indicate that athletes were specializing in one sport. **These results suggest that sport-specific training was sought in the scholastic, club, or community-based sport programs. The frequency of physical activity of these Olympians suggests that school-based physical education programs were an integral part of their development providing general fitness and skill development.**

### **Type of Program – Initial Participation and Commitment to Pursue Excellence in Sport**

The top four programs that introduced Olympians to their sports were: unstructured activity with friends, family activity, private or commercial club, and community based programs. Interestingly, NGB-sponsored programs ranked the lowest in introducing Olympians to sport. Of equal interest, physical education programs did not introduce most Olympians to their sports. For all respondents, the private or commercial club was the most common type of program in which Olympians made the decision to pursue excellence, collegiate sport programs were second in popularity. U.S. Olympic medalists came from private or commercial clubs followed by collegiate programs, high school athletic programs, and finally NGB-sponsored programs. Programs that were noticeably absent from the backgrounds of male winter medalists were high school and collegiate sport programs. **The results of this questionnaire suggest that the development of most Olympians is based primarily upon the private/commercial club and community-based programs. It would appear that the future of Olympic sport organization within the United States would favor a highly developed club system.**

### **Age at Developmental Milestones**

As a whole, U.S. Olympians began their sport participation at the average age of 12.0 and 11.5 years old for males and females, respectively. On the average, female respondents reached each developmental milestone one year earlier than male respondents. Most Olympians reported a 12-13 year period of talent development from their sport introduction to making an Olympic team. In addition, Olympic medalists were younger in age (1.3-3.6 years) during the first five stages of development than non-medalists suggesting that medalists were receiving motor skill development and training at an earlier age. This finding suggests that physical activity and motor skill development during childhood and early adolescence may be an important part of an Olympian's overall development. **These results suggest that an average of 12-13 years of training and development is needed in order to develop Olympic talent in most American athletes.**

### **Monthly and Yearly Training at Developmental Milestones**

Most Olympians demonstrated a progressive increase in the number of months of training per year over a 12-year period. There was a linear progression in training duration beginning with an average of 6.0 and 6.3 months at sport introduction to 9.1 and 9.7 months when first making the junior national team to 11.1 and 11.3 months of training upon making an Olympic team for males and females, respectively. Male and female respondents trained a similar number



of hours during the developmental period (range: 250-1130 yearly hours). Males generally trained a greater number of yearly hours than females at each milestone; however this difference (range: 3-49 hours) was very small throughout their athletic careers. There was one exception: females trained a greater number of hours (682 hours) than males (584 hours) during the stage when they first made the junior national team. At this stage, male and female respondents reported that at 16.5 and 15.3 years old they were training 9.1 and 9.7 months per year, respectively. To make an Olympic team required an average of another eight years of training while progressively increasing the number of months and yearly hours of training. **Results suggest that a progressive increase in training load over a long period is needed in order to reach the top levels of Olympic sport.**

### **The Importance of Coaching at Various Stages of Development**

Female and male Olympian respondents rated the importance of coaching highest during the national and international competitive phases of development. For women and men, this occurred at the average age ranges of 17.4-19.5 and 18.3-20.8 years, respectively. Nearly equal in importance was the coaching that occurred during the skill acquisition phase. **These data strongly suggest that Olympians regard coaching as an important factor over the course of their development. Placing successful coaches at the highest ranked development phases may yield a better overall development program for NGBs.**

### **Important Qualities of a Coach and Methods for Selection**

Olympian respondents ranked the ability to teach and the ability to motivate or encourage as the two most important qualities in their coach. The next three qualities were all ranked similarly and included training knowledge, skill competence, and strategic knowledge of sport. Interestingly, the qualities reported as least important were assistance with goal setting, management and organizational skills, and assistance with balancing the lives of athletes. Further, medalists sought the many years of experience and strategic knowledge from a coach regardless of personality. The most common factor for a specific coach involvement for Olympians was the coach's assignment to the national team. Previous coaching record and recruitment by the coach were the next higher rankings. The least common methods for coach selection were recommendations by the previous coach or recommendations from peers. **These data suggest, along with the data from the other coaching questions, that national coaches who possess the qualities that Olympians value such as an ability to teach, an ability to motivate, training knowledge, and strategic knowledge of a sport may yield better performance results.**

### **Effect of Financial Factors during Development**

As Olympians progressed up the developmental track they reported more limitations from financial factors. Respondents rated the effect of financial factors on a scale of 1 – 5 with one representing a positive factor and five a major limitation. They reported average scores for financial factors between 3.2-3.4 through all developmental phases. Financial factors played the most negative role during the national competitive phase. Within the winter Olympian group, financial factors played the most negative role during the regional and national competitive

phases (3.4). In the summer Olympian group, the national and international competitive phases (3.3) had the most negative scores for financial factors. **These results suggest possible differences that are associated with the costs of equipment, travel, and programs between winter and summer Olympic sports.**

### **Financial Support from NGBs**

Progressively more Olympians reported receiving NGB funding as their competitive level increased, with funding levels peaking at the international competitive phase. Primarily, NGBs are placing resources at the national and international level. The area of funding receiving the largest percentage was competitions.

An analysis of male winter Olympians revealed discrepancies between medalists and non-medalists (4 – 8<sup>th</sup> and 9 – 25<sup>th</sup> finishes). As would be expected, male winter medalists had the highest reporting percentage of NGB funding for training and coaching. At the international competitive phase of development, 75 percent of male winter respondents who placed between 9<sup>th</sup> and 25<sup>th</sup> reported that they received NGB funding for training and coaching. Similarly, 80 percent of male winter medalists reported that received NGB funding in the same area. **These results suggest that a large percentage of NGB resources for training and coaching were placed on athletes who placed between 9<sup>th</sup> and 25<sup>th</sup>.** One must also consider factors such as this group of non-medaling respondents may have placed higher in World Championships and World Cup competitions prior to the Olympic results listed here.

### **Financial Support from the USOC**

Predictably, the highest percentage of Olympian who indicated they received USOC funding occurred at the national and international competitive phases. **Similar to NGB funding, results regarding USOC funding indicate that a larger percentage of non-medalists received financial support from the USOC than did medalists.**

### **Financial Support from Sponsors**

The largest percentage of Olympians who received financial support from a sponsor occurred at the national (range: 15.5-36.5 percent) and international competitive phases (range: 22.3-52.2 percent). At the international competitive phase, the largest percentage of male and female respondents received support for equipment, followed by supplemental stipend, competitions, and finally training and coaching. Male and female respondents indicated similar support at all categories. At nearly all categories across both national and international competitive phases a greater percentage of winter Olympian respondents reported funding from sponsors than did summer Olympian respondents. Summer Olympian respondents demonstrated a larger percentage of sponsors funding for competitions at the international competitive phase.

### **Percentage of External Funding for Sport**

As Olympians moved from the early to the international competitive phase, a greater percentage of funding came from all sources (external sources) other than the athlete or his/her family. This external funding ranged from three percent at the earliest competitions to nearly 50 percent at the international competitive phase. Male Olympian respondents reported a larger

percentage coming from external sources at all competitive phases. At the national competitive phase, males reported 27.9 percent originating from external funding and females 23.9 percent. A greater disparity occurred at the international competitive phase, males citing 55.5 percent coming from outside funding source and females 47.5 percent.

Female winter Olympian respondents reported 30.9 percent of funding originating from external sources at the national competitive phase versus 21.4 percent for female summer Olympian respondents. At the international competitive phase, female winter Olympians reported 61.2 percent and female summer Olympians 42.8 percent of financial support coming from external sources. These data possibly reflect greater sponsor support for female winter Olympians.

### **Factors for Long-Term Performance Progression**

Olympian respondents ranked dedication and commitment as the number one factor for long-term performance progression. Mental focus and competitive success were ranked second and third, respectively. These results suggest that the most important factors were coming from the individual athlete. The next set of factors, ranked fourth through sixth focused on supportive individuals and groups and included family, coach, and training environment. The last set of factors, ranked seventh through ninth, included training partners, competitive failure, and education about training. *Throughout this report, we have not presented data from an individual sport. The following information on female Olympic swimmers is shown as an example of the significant information that lies within these data.* Female medalists in swimming placed more importance on social interaction, support, and the environment of training than female swimmers who finished in 4 – 8<sup>th</sup> place. Both competitive success and competitive failure received a higher ranking among the top eight female finishers in swimming than among the data set of female Olympians as a whole. **These results suggest that key individual factors and several layers of support are important for the long-term progression of performance in Olympians.**

### **Factors that Contributed to Dropout in Sport**

Olympian respondents cited conflict with other life pursuits as the most common reason why their peers discontinued participation in sport. Financial pressures and failure to improve followed closely. Male Olympians ranked these three factors, among their peers, slightly higher than did female Olympians. The factors least likely for peers dropping out were an overly competitive program for males and lack of peer support for females. Possible causes of dropout include misdirected attitudes and philosophy of parents, coaches, and programs. In addition, respondents listed financial incentive and financial reward as the least important factors for long-term progression, but ranked financial pressures as the second most important factor for why their peers discontinued sport participation. **The apparent dichotomy in the responses to the two financial questions suggests that while athletes aren't motivated by money, a lack of money can be a detriment to continuing in a sport.**

## Recommendations

Many complex factors account for an athlete's performance at the international level. There may never be a perfect system to train an athlete or ensure the best athlete will in fact even make the Olympic Team. The U.S. can increase its potential however, if collaboration exists between all entities responsible for sports. The following are some specific recommendations based on the results shared by Olympian respondents.

### Sport Program Collaboration

**The USOC should take a leadership role in promoting relationships between community-based organizations, private sports clubs, scholastic and collegiate athletic programs and NGBs to ensure a seamless system of athlete development in Olympic sports.** Credit should be given to each entity responsible for an Olympian's success (Type of Program – Initial Participation and Commitment to Pursue Excellence in Sport; Pages 30-33).

### Talent Identification Summit

Information from the Olympian Questionnaire provides a case for talent identification programs. First, Olympian respondents rated the importance of coaching at the skill acquisition phase very high, an important time of athlete development, and an important time to identify talent (The Importance of Coaching at Various Stages of Development, pages 42-43). Second, Olympians reported that NGBs spend a large percentage of their athlete funding at the national and international competitive phases. NGB funding could be effectively placed just below the national competitive phase to identify and recruit talented and motivated athletes. Third, male winter Olympians who placed from 9<sup>th</sup> – 25<sup>th</sup> represented a group in similar size to male winter medalists (Financial Support from NGBs, pages 50-51) receiving NGB funding. These points provide an argument that it may be cost effective for NGBs, especially those with limited resources, to implement talent identification programs to increase the probability that specific athletes will have success at the highest levels. **In order to provide NGBs a more effective way of developing talented and motivated athletes it is recommended that the USOC convene a Talent Identification Summit for NGB coaches and program directors. At this summit, the knowledge of the most successful international and domestic talent identification programs could be shared.**

### Multi-Lateral Development

**In order for potential Olympic medalists to acquire the physical training and motor skills necessary to succeed in sport, the USOC and NGB coaching programs should promote the benefits of multi-lateral development (participation in a variety of sports) during the early stages of athletic development.** (Frequency of Physical Activity and Sport Participation; Pages 28-29).

### Coaching Programs

**For coaching at all levels to be most effective, the USOC and/or NGBs should institute an "endorsement" or seal of approval program for the various coaching certification and physical education programs that meet selected criteria.** Among other important facets, listed by this study's respondents, endorsed coaching programs should highlight and promote the advantages of multi-lateral development, talent identification programs, and the qualities of coaches that U. S. Olympians found important (Regular Sport Participation, Pages 26-27). Our findings indicate that most Olympians and medalists worked with a coach because that coach was the national team coach; therefore, in order to maximize performance, national team coaches who possess the qualities valued by Olympians should be selected by the NGBs.

### **Promotion of Physical Activity in School Children**

Results from the questionnaire suggest that U. S. Olympians were regularly participating in physical education for 3.0 or more days per week at the elementary and secondary school level. In addition, they reported an average of 3.0 days per week of training in scholastic sports and an additional average of 2.5 days per week in club and community-based sport programs (Frequency of Physical Activity and Sport Participation, pages 28-29). This high level of physical activity suggests that school physical education was an integral part of an Olympian's development providing general fitness and skill development, while sport specific skills were sought in the scholastic, club, or community-based sport programs. **Due to the recent decline in physical activity of school-aged children over the last decade (CDC, Youth Risk Behavior Survey, 1991-99) it is recommended that the USOC join forces with national organizations to promote funding and interest for more physical activity in schools and grassroots programs.** Currently, the American College of Sports Medicine; the American Alliance for Physical Education, Health, Recreation, and Dance; PE 4 Life; and the Centers for Disease Control and Prevention have a coordinated national effort underway to educate the general public and U. S. legislators on the benefits of physical activity.

### **Review of Funding**

While it can be extremely hard to predict who may win a medal at the Olympics, the USOC's recent implementation of the International Results Database should help them better target funding to potential medal winners at the Olympics. **NGBs and the USOC should re-evaluate their funding criteria for athletes at the National Competitive phase since funding impact was listed as the most negative in that area (Effect of Financial Factors during Development; Pages 48-49).** In reviewing the funding issues at this phase, the NGBs may be able to retain athletes who could be potential medal winners but don't necessarily have the resources to continue training. Since this report focused only on Olympic performance, it may be important to consider U. S. athletes who perform well at World Championships, World Cups and other Olympic quota competitions. Resources targeting these athletes may well contribute to Olympic success.



**IV. RESULTS, DISCUSSION, and CONCLUSIONS OF TALENT  
IDENTIFICATION AND DEVELOPMENT QUESTIONNAIRE**

**THE PATH TO EXCELLENCE:**

**A COMPREHENSIVE VIEW OF DEVELOPMENT OF  
U. S. OLYMPIANS WHO COMPETED FROM 1984 – 1998**

**Questions 1 and 2 are not included here.** Question 1 identified the gender of respondents. Question 2 identified the sport(s) and event(s) of respondents. Both pieces of information were used for an analysis breakdown in the remaining questions.

**Question 3: What was the socioeconomic status of your family at the time you began participating in sport?** 0-\$20,000; \$20 – 40,000; \$40 – 60,000; \$60 – 80,000; \$80,000 +

**Rationale:** The intent for asking this question was to determine the socioeconomic status of Olympian families when respondents began their sport.

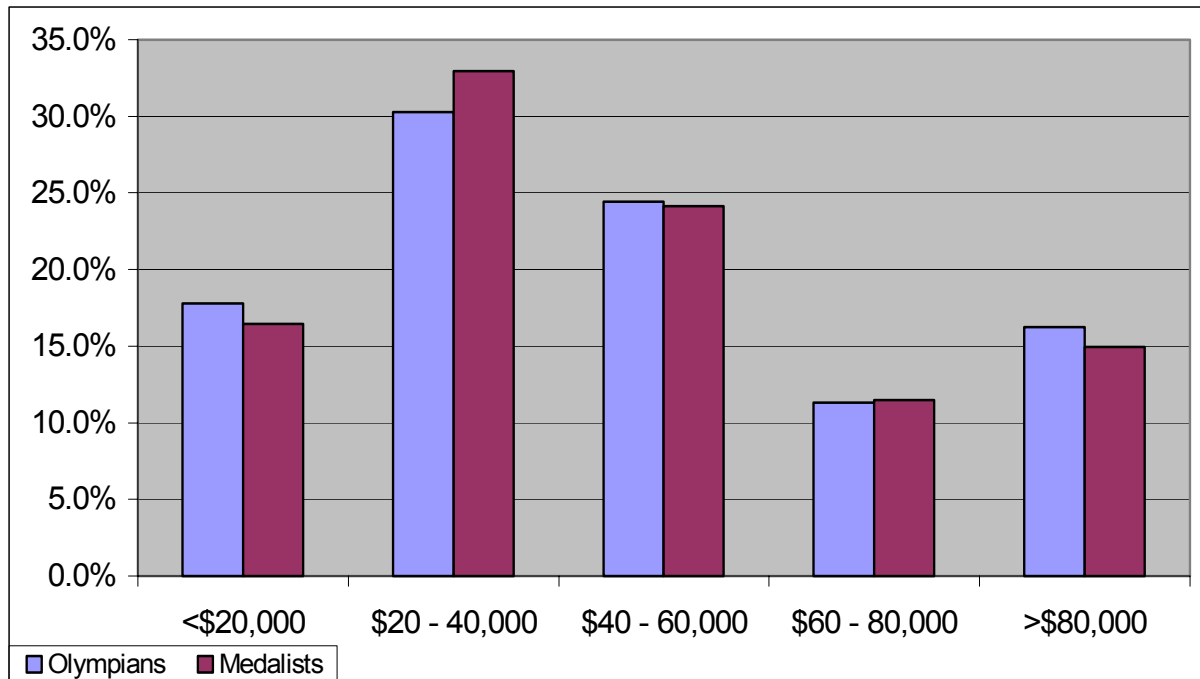
Nearly one-third of Olympians (30.3 %) came from families with a socioeconomic status that was between \$20 – 40,000 (Figure 1) when they began participating in sport. Close to three-quarters of Olympians came from families with a socioeconomic status that was less than \$60,000. A substantial portion (17.8 %) came from the lowest class of less than \$20,000. Olympic medalists demonstrated similar trends regarding economic status. The percentage of medalists originating from each class was similar to the percentage of Olympian families coming from each socioeconomic class. The largest percentage of medalists came from the \$20 – 40,000 and \$40 – 60,000 economic classes at 33 and 24.1 percent, respectively.

In order to provide meaningful data, Figure 2 shows the percentage of Olympian families from each economic class whose athletes attended the 1984 Winter and Summer Olympic Games or the 1998 Olympic Winter Games. Given the fact that most Olympians reported a 12-year period of development (data shown on page 35), 1984 and 1998 Olympians most likely began participating in sport around the years 1972 and 1986, respectively. It is at these early dates we compared the real value of 1972 and 1986 dollars. In 1972, the mean and median family income in the United States was \$12,500 and \$11,000, respectively (Sahr, 2001). In 1986, those same values had risen to \$35,000 and \$30,000, for mean and median incomes, respectively. Because we are limited by a general income category and not an exact income value it is not possible to provide a precise family income value. However, using the categories, the median family income category for 1984 Olympians was \$20 – 40,000 and in 1998 it was \$40 – 60,000. An estimate of the mean income for 1984 Olympian families was \$28,000 and for 1998 families was \$40,000. These data show that the family income of 1984 and 1998 Olympians, at the time they began participating in sport, was well above the mean and median family incomes of the general population.

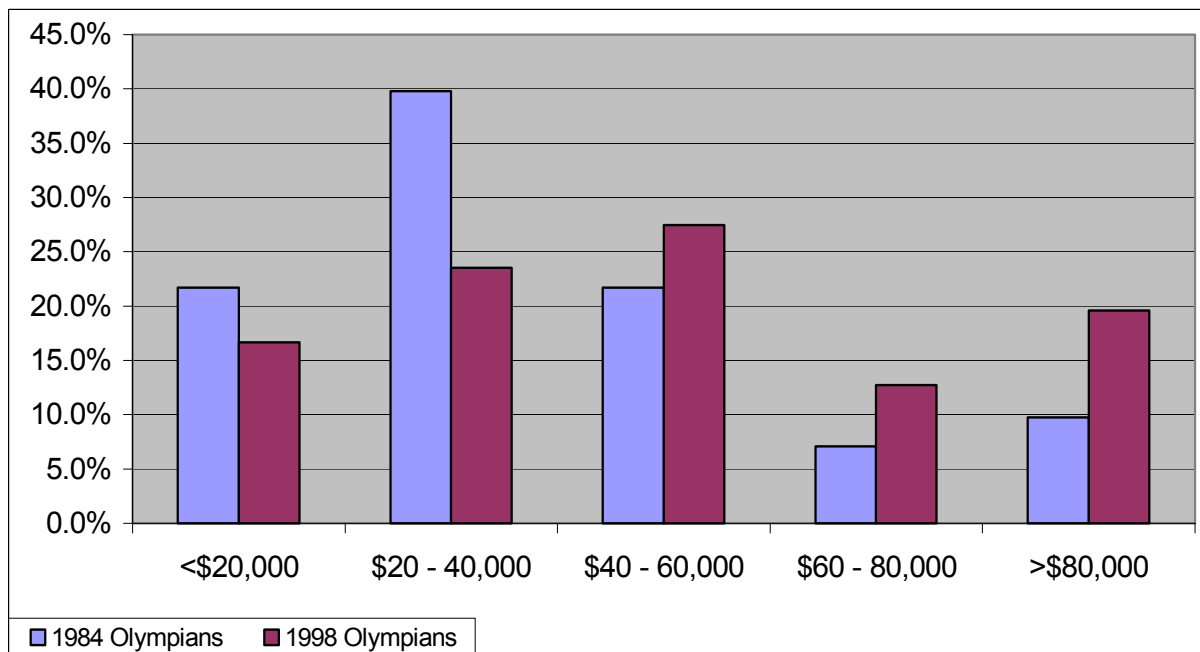
Generally, there was a decrease in the number of Olympian families from the lowest economic classes and an increase in the highest economic classes (Figure 2). The largest decrease occurred in the \$20 – 40,000 class, from 39.8 percent in 1984 to 23.5 percent in 1998. The greatest increases occurred in the highest economic classes. The \$60 – 80,000 and >\$80,000 classes nearly doubled in size from 7.1 to 12.7 percent from 9.7 to 19.6 percent, respectively. From 1972 – 1986, inflation grew at an average annual rate of 6.8 percent (Sahr, 2001). For instance, \$20,000 in 1972 is comparable to \$82,300 in today's dollars. As inflation increased, it would be expected that salaries grew by a similar rate, thus accounting for some of the shift to the higher economic classes.



**Conclusions:** These data show that primarily most Olympic athletes originated from families that were above the mean and median family incomes at the time they began participating in sport.



**Figure 1.** The socioeconomic status of Olympian families at the time the athlete began participating in sport.



**Figure 2.** The socioeconomic status of Olympian families who had athletes that competed in the 1984 or 1998 Olympic Games.

**Questions 4 and 5 are not included here. Question 4 identified the level of Olympic performance of respondents. Question 5 identified the city and state of respondents at three different stages of development and has not been analyzed.**

**Question 6: Please indicate the age at which you reached the following stages of development in your sport.** Introduced to the sport; Achieved local competitive success; First dreamed of becoming an Olympian; Actually started making decisions that would contribute to actualizing that dream; Believed it was possible to become an Olympian.

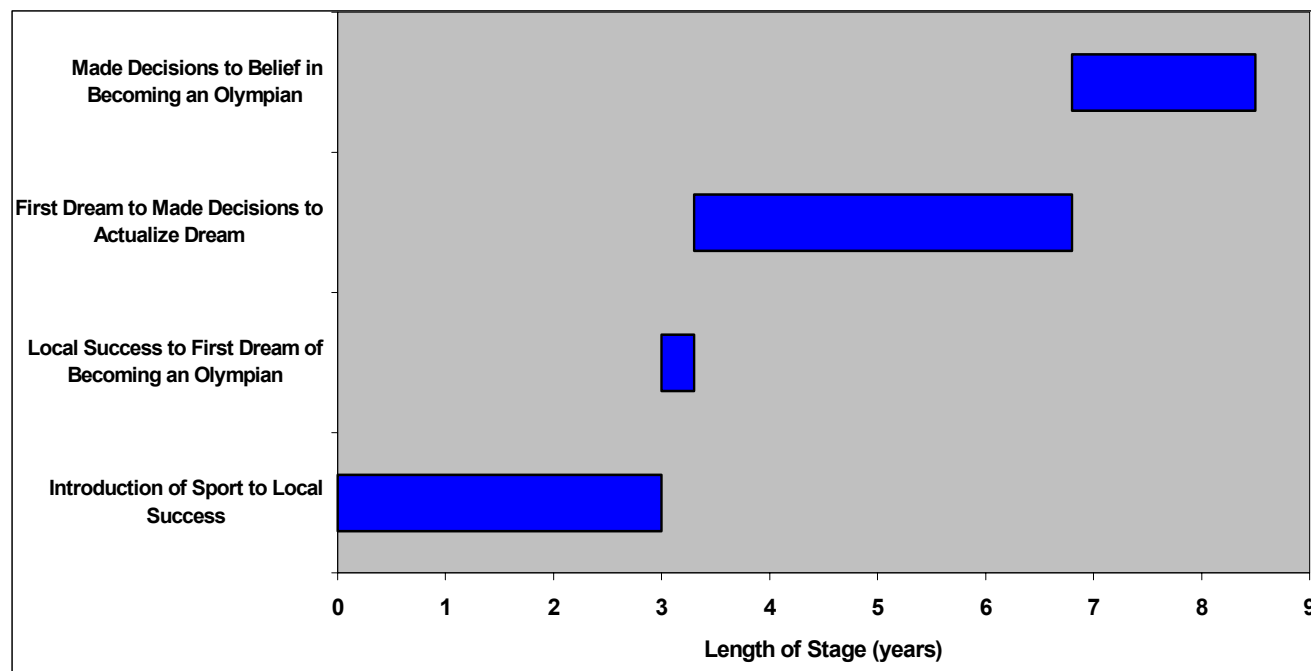
**Rationale:** The basis for this question was to determine a trend in chronological age in which Olympians progressed at certain “mental” milestones.

The age at which Olympians were introduced to sport varied greatly (Table 1). In order to determine trends across all sports, the length of stages was analyzed (Figure 3). Fourteen sports were chosen from a broad spectrum and included eight summer and six winter Olympic sports. This group of sports was sorted by age (starting with the youngest age) at the time athletes believed it was possible to become an Olympian.

An average of 3.0 years transpired from an introduction to a sport to achieving local competitive success. Athletes first dreamed of becoming an Olympian (age range 10.9-18.0 years old) around the time of achieving local success. For most Olympians this occurred 1.0 year before or 1.0 year after the time of achieving local competitive success. An average of another 3.5 years of development occurred before athletes started making decisions to actualize their dream of becoming an Olympian. Once this occurred, it was a relative short period of time; an average of 1.7 years, before U. S. athletes believed it was possible to become an Olympian. The range in ages when athletes believed it was possible to become an Olympian were 13.4-22.4 years old.

*One of the strongest trends to emerge from these data was the short period of time between the decision to become Olympian and the belief that it was possible.*

**Conclusions:** These data suggest that U.S. athletes first dream of becoming an Olympian at the time of achieving local competitive success. One of the strongest trends to emerge from these data was the short period of time between the decision to become Olympian and the belief that it was possible. On the average, 8.3 years transpired from an introduction to a sport to the belief it was possible to become an Olympian. For many Olympians, the development of the Olympic dream occurred in programs at the local and community level, thus emphasizing the importance of these programs to provide opportunities in Olympic sport.



**Figure 3.** Average length of stages (in years) in the progression of the Olympic dream.

**Table 1.** Ages during various stages of development and progression of Olympic dream.

	Introduced to Sport	Achieved Local Competitive Success	First Dreamed of being an Olympian	Made Decisions to Actualize Dream	Believed it was Possible to Become an Olympian
Gymnastics	6.6	10.0	11.3	12.9	13.4
Swimming	6.6	9.4	11.5	14.3	15.9
Speed Skating	9.0	11.9	11.8	15.0	16.0
Alpine Skiing	4.9	10.6	11.6	14.9	16.6
Luge	14.7	15.1	10.9	16.5	18.1
Figure Skating	8.0	10.9	10.9	15.2	18.2
Nordic Skiing	10.8	15.2	14.0	16.7	18.5
Soccer	6.5	11.0	12.6	15.5	18.6
Ice Hockey	5.0	10.0	13.0	17.8	19.5
Cycling	13.7	16.9	14.7	19.2	19.6
Athletics	13.0	14.6	16.3	19.2	20.5
Fencing	13.3	15.8	16.1	19.6	21.1
Rowing	16.8	18.0	18.0	20.4	21.3
Shooting	14.8	16.9	17.6	20.7	22.4

**Question 7: Rate the relative importance (1 the lowest to 5 highest) of the following factors that directed you toward your sport.** Parental influence; Encouragement from a physical education teacher; Peer recruitment; Sibling recruitment; Early success; Intrinsic love of activity; Love of the sport; Coaches recruitment; Other – please list.

**Rationale:** This question sought to determine the most influential factors that contributed to introducing Olympians to sport.

The most important factors, reported, in directing a young athlete to his or her sport were “love of sport” and “love of activity” (Figure 4). Success at the early stages, not necessarily winning, was also important for keeping the young athlete interested in the sport. Parents and coaches had moderate influence in directing the respondents to sport.

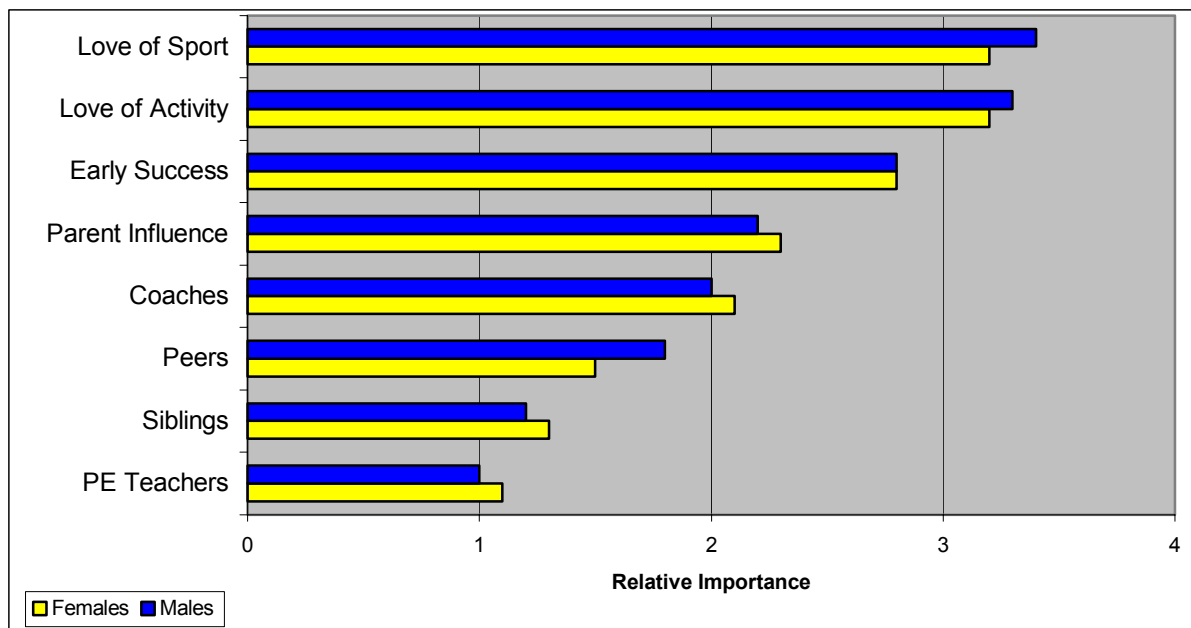
*These findings suggest that an athlete is directed to a particular sport because of a love of sport, love of activity, and early success.*

To further discern differences between sports by season, female winter and summer Olympians were compared (Figure 5). “Love of sport” and “love of activity” remained the most important factors directing a young female athlete toward a particular sport. These were followed closely by “early success” and “parental influence”. “Physical education teachers” and “sibling influences” were again the least significant factors directing the Olympian respondents toward sport. Female winter Olympians reported that parents and siblings were more influential in directing them to their sport than did summer female Olympians. On the other hand, summer female Olympians considered “early success”, “coaches”, and “physical education teachers” to be more influential factors than did winter female athletes. These differences also held true for winter and summer male Olympians. The main findings from these data suggest that family influences were more important to a young athlete becoming involved in a winter sport, than a summer sport athlete. Due to equipment and facility needs of winter sports it was not surprising that coaches and physical educators were less influential in directing young athletes to winter sports than summer sports since most communities do not have access to Olympic Winter sport facilities.

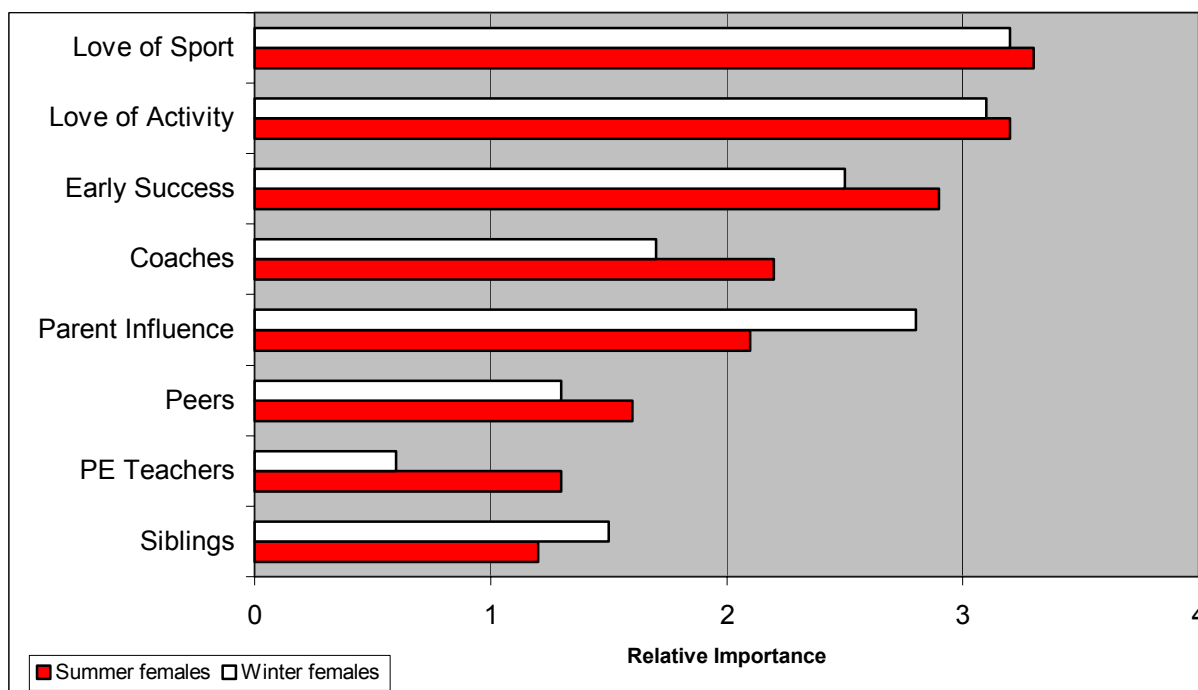
**Conclusions:** These findings demonstrate that an athlete was directed to a particular sport because of a love of sport, love of activity, and early success in the sport. These findings are supported by previous research from Benjamin Bloom (1985), who found that those who achieved excellence such as Olympic athletes, artists, musicians, and scientists first developed a love of the sport (or activity) at the time the sport (or activity) was introduced to the child. This suggests that a child must freely choose the sport rather than being coerced into participation. Additionally, Bloom discovered that the people most responsible for developing an athlete’s love of sport were the initial coaches or teachers. He found that throughout their careers, a love of sport (or activity) would always be firmly grounded in successful athletes.

Parents and coaches had moderate influence in directing children to sport, while data also suggest that educated and experienced coaches must be in place at the youth sport level in order to provide an appropriate and fun atmosphere. Ewing and Seefeldt (1990) found that the top

three reasons that American youth participate in sport are: 1) have fun, 2) develop skills, and 3) be with friends. Results of the questionnaire also support these contentions. It is crucial that today's youth sports emphasize fun, enjoyment, and love of sport in order for athletes to continue their development upward.



**Figure 4.** Factors that directed male and female Olympians to their sports.



**Figure 5.** Factors that directed female winter and summer Olympians to their sports.

**Question 8: Please rate the importance (1 the lowest to 5 highest) of the following factors in motivating your participation in your sport.** Dollars; Recognition; Desire to be successful; Acceptance in a peer group; Pleasing parents; scholarship incentive; Fun; Intrinsic value of the sport; Acquisition of skill; Desire to improve fitness; Competitive outlet; Challenge/love of competition; Other – please list

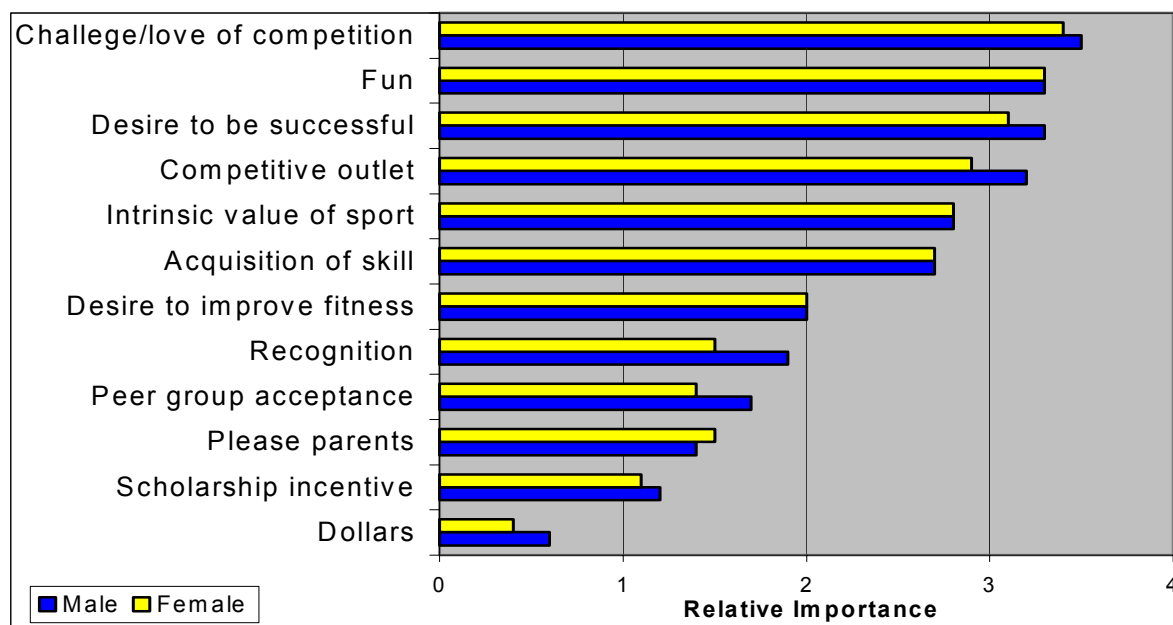
**Rationale:** This question determined the motives why an Olympian decided to participate in a sport.

“Challenge and love of competition”, “fun”, and “success” were the dominant factors that motivated Olympians to participate in their sports (Figure 6). Additional importance was placed on gaining skill and proficiency. The areas of “fitness improvement”, “recognition”, and peer and parental acceptance did not seem to be as important for providing motivation for participation. Interestingly, the “desire to be successful”, the “challenge of competition”, “love of a competitive outlet”, “recognition”, and “peer group acceptance” appeared to be more important for males than for females. Although men ranked “money” as a motivation factor more often than women, when viewed in sum, it was the least important motivational factor for all Olympians.

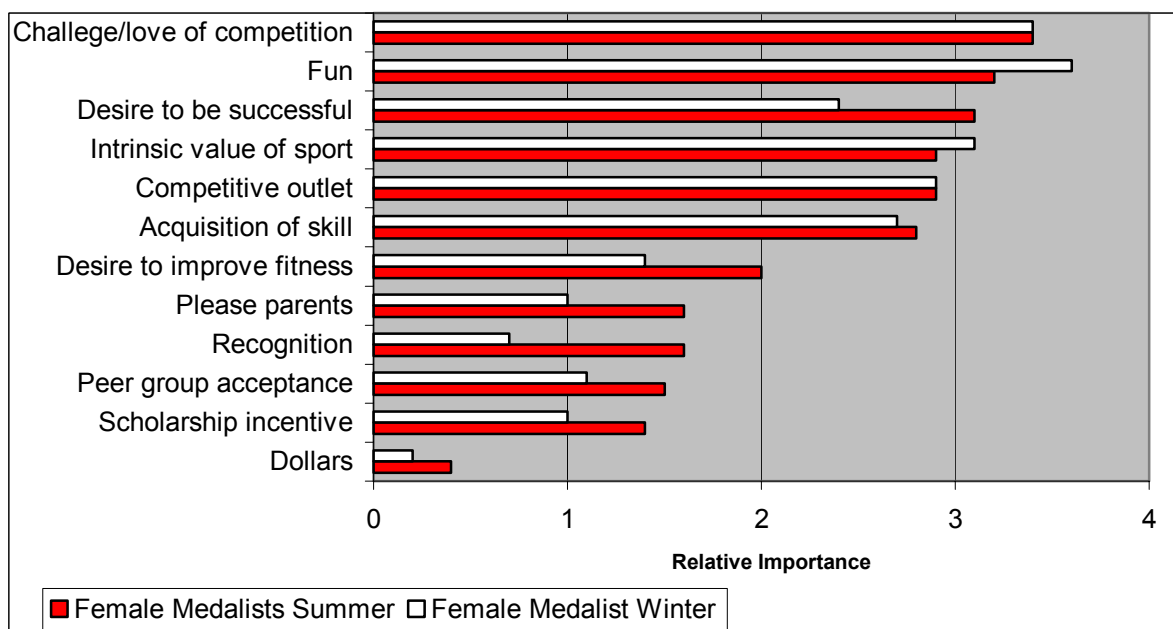
*Results suggest that values representing achievement motivation such as challenge and love of competition, success, and fun were the dominant motivational factors for male and female Olympians to participate in their sport.*

To determine what motivated more successful respondents to participate in their chosen sports a comparative analysis was completed between female winter and summer medalists (Figure 7). This analysis brought forth some differences in motivation for these successful female Olympians. These data suggest that “having fun” and “intrinsic value of the sport” were more important for female winter medalists than for female summer medalists. For the female summer medalists, the “desire to be successful”, “improve fitness”, “obtain recognition”, “gain acceptance among friends and family”, and gain financial reward were more important than for winter medalists. Similar values were observed for male medalists, respectively.

**Conclusions:** Values representing achievement motivation such as challenge and love of competition, success, and fun appear to be the dominant motivational factors for male and female Olympians to participate in their chosen sport. The data from the last two questions suggest that winter and summer Olympians are motivated differently regarding sport participation. The differences between these two groups suggest that methods to find, recruit, and retain young athletes need to address the factors that motivate them to participate in sport.



**Figure 6.** Factors that motivated male and female Olympians to participate in their sport.



**Figure 7.** Factors that motivated female winter and summer Olympic medalists to participate in their sport.

**Question 9: Please rate the motivation (1 the lowest to 5 highest) for your decision to pursue excellence in your sport.** Dollars; Recognition; Desire to be successful; Acceptance in a peer group; Pleasing parents; scholarship incentive; Fun; Intrinsic value of the sport; Acquisition of skill; Desire to improve fitness; Competitive outlet; Challenge/love of competition; Other – please list.

**Rationale:** The pivotal point at which an athlete proceeds from participating in a sport to pursuing excellence was the theme for this question.

The “challenge and love of competition”, “a desire to be successful”, the need for a “competitive outlet”, and “fun” were the four prominent factors that motivated all Olympians to pursue excellence in their sport (Figure 8). The “intrinsic value of sport” and the “acquisition of skill” rounded out the top six factors. The remaining six factors included: the “desire to improve fitness”; “seek recognition”; “peer group acceptance”; “scholarship incentives”; and “dollars”. Male Olympians demonstrated a trend towards “obtaining success”; “gaining recognition”; “peer group acceptance”; and obtaining monetary incentive more than female Olympians; however, these differences were small. Female Olympians placed more importance on the “acquisition of skills” and pleasing their parents.

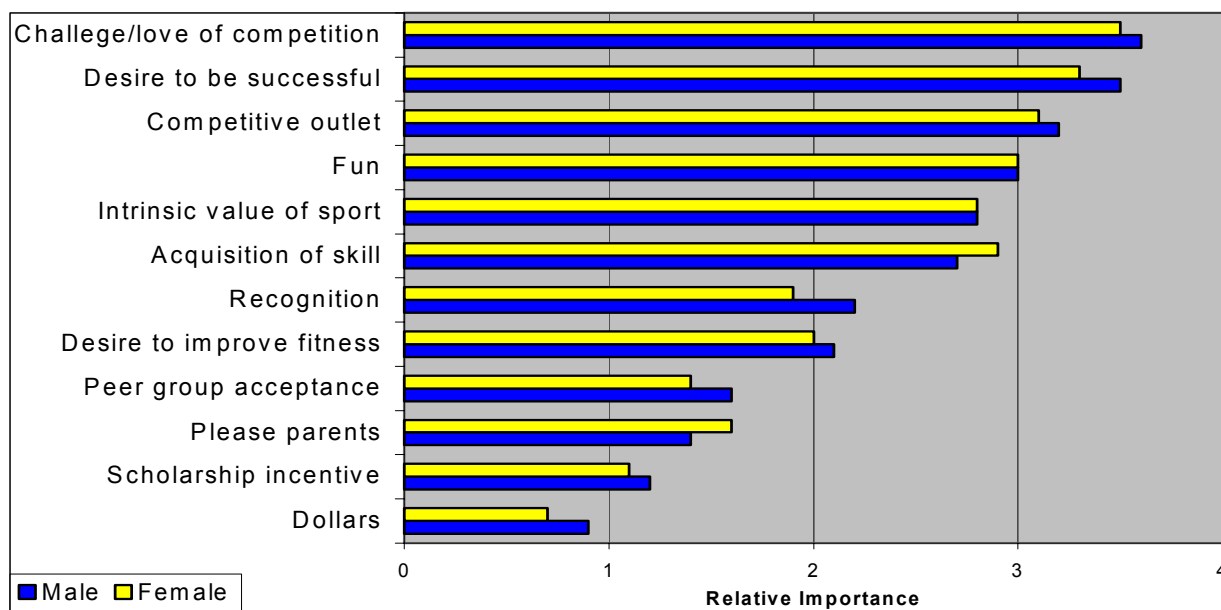
*Intrinsic factors such as the challenge and love of competition, a desire to be successful, appreciating the intrinsic value of sport, having fun, and acquiring skills represented the prominent reasons why Olympians chose to pursue excellence in their respective sports.*

To further elucidate the reasons why Olympians chose to pursue excellence in their respective sports, a comparative analysis was done between female summer and winter medalists (Figure 9). Both groups of athletes emphasized (range: 2.9-3.4 out of 5) six factors: the “challenge and love of competition”; the “desire to be successful”; the “need for a competitive outlet”; “having fun”; the “intrinsic value of sport”; and the “acquisition of skill”. A further analysis of the data revealed a division between intrinsic and extrinsic factors. Female summer medalists ranked importance on “recognition”; “peer group acceptance”; “pleasing parents”; “dollars”; and a “desire to improve fitness” more highly than female winter medalists. Sociological factors might have influenced these results. Factors such as a strong sport culture in the local community and greater public recognition and acceptance within American society may be present to a larger degree in summer Olympic sports than winter Olympic sports.

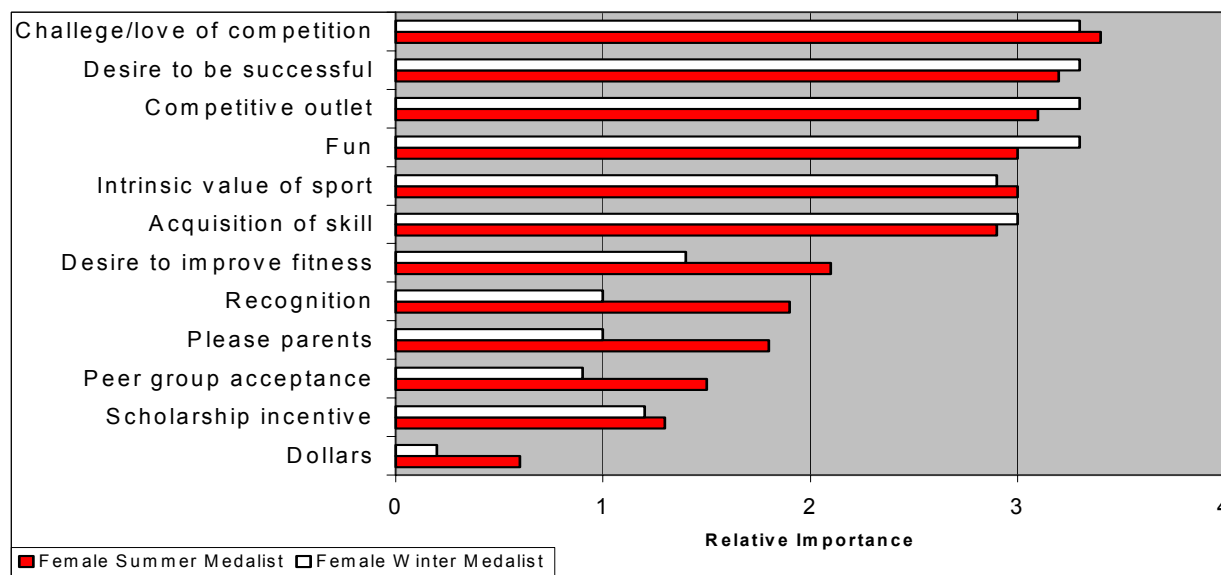
**Conclusions:** The challenge and love of competition, a desire to be successful, the need for a competitive outlet, and fun were the four prominent factors that motivated all Olympians to pursue excellence in their sports. Female Olympians reported more importance in pleasing parents and the acquisition of skills, while male Olympians placed more importance on extrinsic rewards (i.e., obtaining success, gaining recognition). Further, female summer medalists also placed more importance on extrinsic factors (i.e. recognition, pleasing parents, dollars) than female winter medalists.



Several motivational themes were evident throughout the careers of Olympians. Initially, Olympians were directed to a particular sport because of a love of sport, love of activity, and early success in the sport. As the level of competition increased, intrinsic factors such as a challenge and love of competition, a desire to be successful, the need for a competitive outlet, and fun remained the key motives for Olympians to participate and pursue excellence in their sport. In his book, “Developing Talent in Young People” Bloom (1985) noted similar motives were present in people who had achieved world-class success in such diverse fields as art, athletics, music, and academics.



**Figure 8.** Motivational factors in Olympians to pursue excellence in sport (by gender).



**Figure 9.** Motivational factors in female winter and summer Olympic medalists to pursue excellence in sport.

**Question 10: Please indicate the number of sports that you regularly practiced in at each age.** <10 years; 10-14 years; 15-18 years; 19-22 years; >22 years

**Rationale:** Coaches and sport scientists alike have indicated that athletes require a general sports background during youth and early adolescence (age 7-13 years) in order to better prepare them for the vigorous demands of specializing in one sport (Bompa, 1994) and (Harre, 1982). This is often referred to as “multi-lateral development.” Thus, we wanted to know the physical activity of U.S. Olympians from childhood to adulthood.

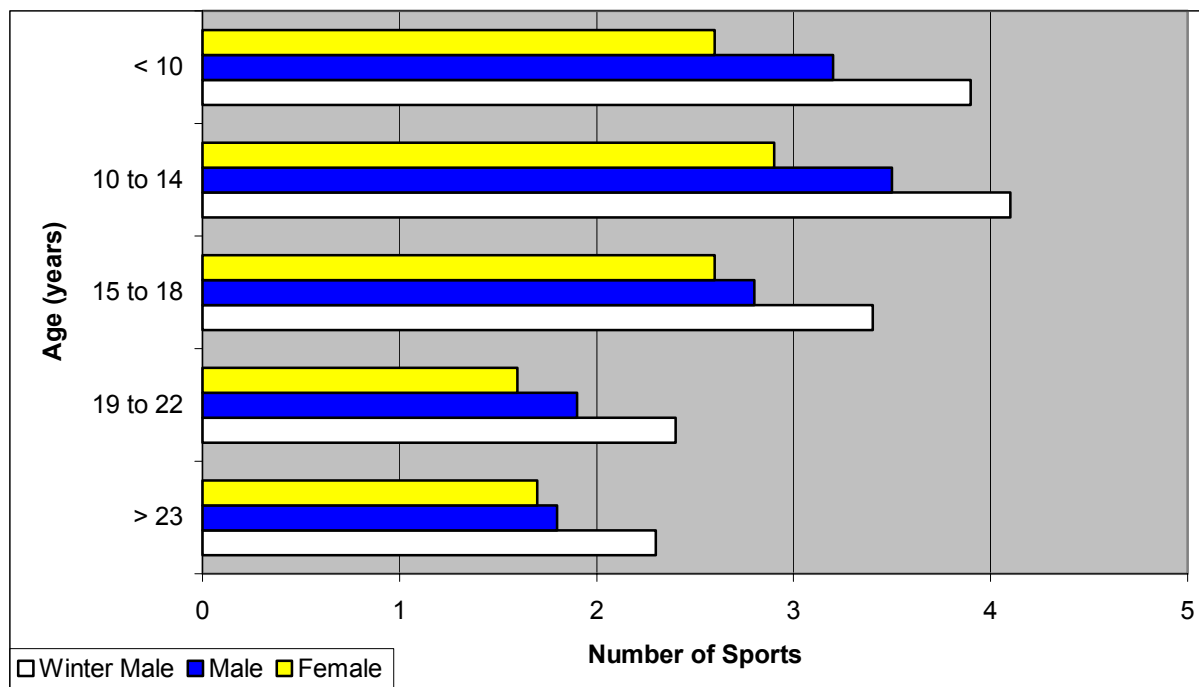
Overall, it appears that U.S. Olympians were very active as children and adolescents. In the age groups encompassing up to 14 years and 10-14 years respondents reported participating in 2.6-3.5 sports (Figure 10). In all age groups, males reported more sport participation than females. This discrepancy may represent the lack of sport opportunities that were available to young women prior to and just after the passing of Title IX in 1972. Consequently, these results would be expected to change over the next 10 years to reflect the increased female participation in sports over the past 15 years.

For all Olympians the number of sports declined with age. Between 15-18 years of age, for example, respondents participated in 2.6-2.8 sports while during the collegiate (19-22 years) and post-collegiate stages (>23 years) the number of sports ranged from 1.6-1.9. This decline in the number of sports may indicate that athletes were specializing in fewer sports. Male winter athletes were observed to have vastly different participation values (Figure 10). Across all age groups, male winter athletes played more sports than male summer athletes, 2.3-4.1 versus 1.8-3.5 sports, respectively. This result may be due to the fact that male winter athletes participated in more sports as part of year-round training. Conversely, it could indicate a lack of sport specialization for winter athletes.

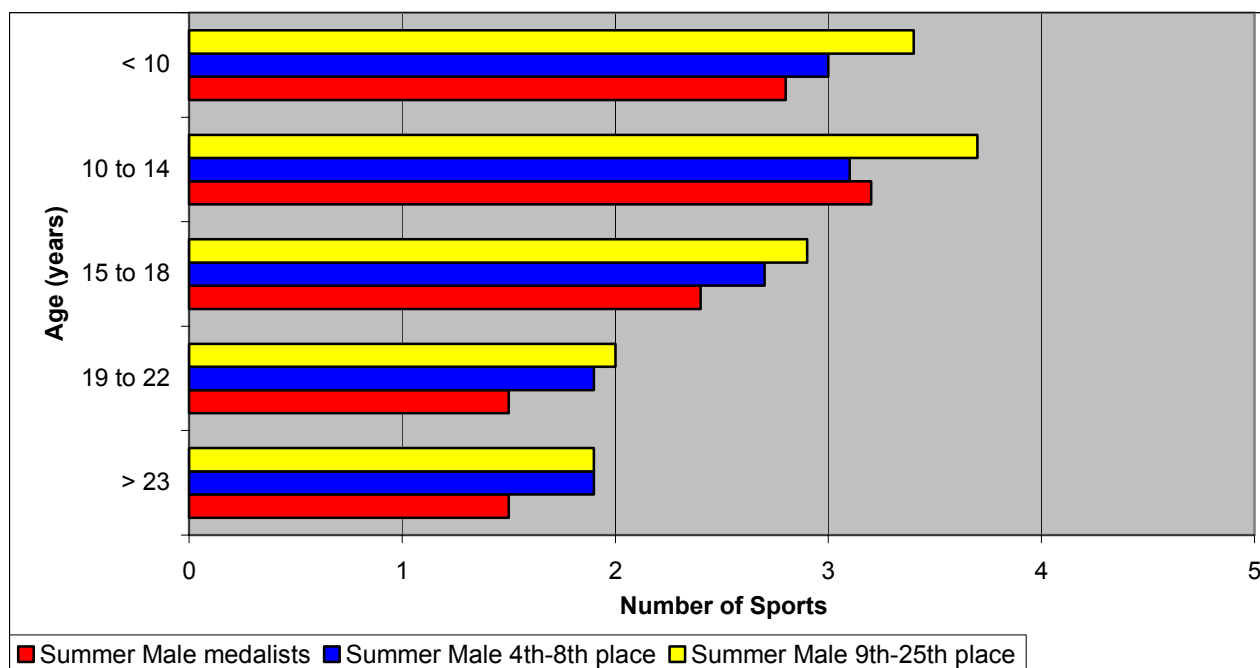
*U. S. Olympians appeared to have been very active in sports as children and adolescents. Female Olympians reported a lower number of sports played possibly reflecting fewer opportunities for sport participation.*

To determine if medalists participated in more sports than non-medalists, an analysis was done based on the finishing place of male summer athletes (Figure 11). Across all age groups, male summer medalists reported a lower number of sports than male summer non-medalists. This could indicate that medalists spent more time in developing skills and specialized in fewer sports than non-medalists.

**Conclusions:** U.S. Olympians appeared to be very active as children and adolescents (age < 14 years), with a range of 2.6-3.5 sports for males and females. For both male and female Olympians, the number of sports participated in declined with age. Several researchers including Ewing and Seefeldt (1990) and Gould and Horn (1984) concur with these findings noting that participation numbers in competitive sport decline with age in the general youth population. Female Olympians reported a relatively lower number of sports played possibly reflecting a lack of opportunity for sport participation.



**Figure 10.** Number of sports played by Olympians from childhood to adulthood.



**Figure 11.** Number of sports played by male summer Olympians, medalists vs. non-medalists.

**Question 11: Activity and sport participation. Please check the frequency of participation at each level listed (days/week).** Elementary school physical education classes; Secondary school physical education classes; Scholastic participation in other sports; Participation in club or community-based program in other sports

**Rationale:** Noted in the rationale for question 10, early sport skill development is necessary to prepare athletes for the demands of sport specialization. We wanted to know what kinds of programs provided physical and sport activity for Olympians early in their development.

Male and female Olympians reported approximately 3.3-3.4 days per week of activity in elementary and secondary physical education (Figure 12). The median and mode of activity were four days per week for both elementary and secondary physical education (Table 2) suggesting that most Olympians were regularly active for most days of the school week. In addition to regular physical education, Olympians reported an average of 3.1 days per week of activity in other scholastic sports and an average of 2.5 days per week in club or community based sport programs. There were no major differences between summer and winter athletes, or between medalists and non-medalists.

**Table 2.** Frequency (days/week) of physical activity in school, club, and community programs.

Variable	Elementary PE	Secondary PE	Scholastic Sports	Club or CBO
Mean	3.4	3.4	3.1	2.5
Median	4	4	4	3
Mode	4	4	4	3

An additional analysis was made of female winter Olympians (Table 3). They reported more activity in scholastic sports and club/community programs than 4<sup>th</sup> to 25<sup>th</sup> place finishers (Figure 13). These results suggest that regular physical activity as a child may have some degree of bearing on success as an athlete.

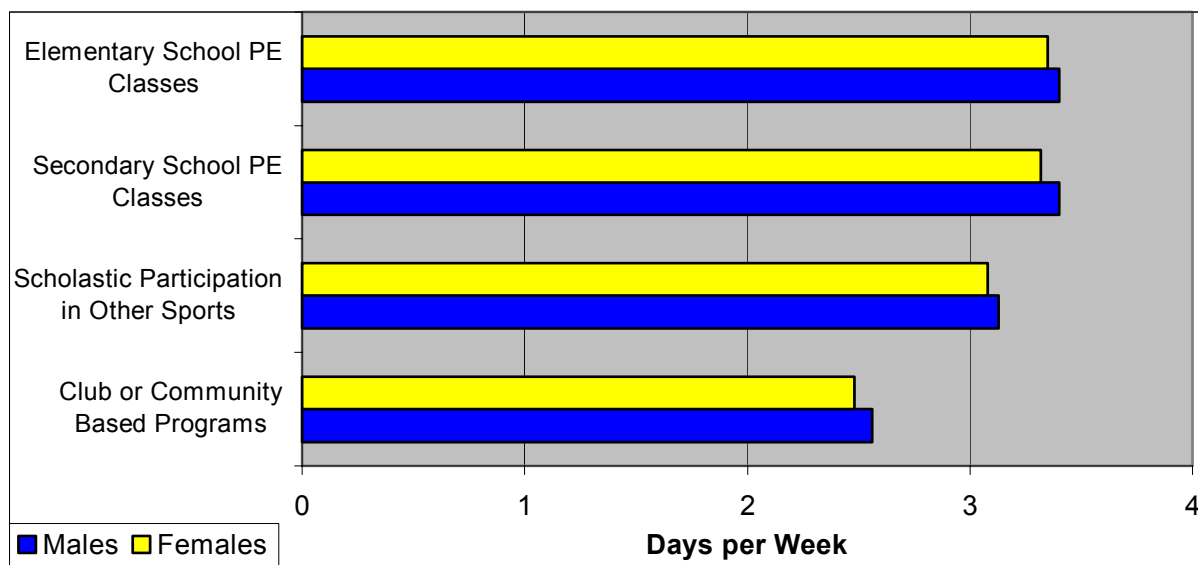
**Table 3.** Frequency (days/week) of physical activity in female winter Olympians.

Female Winter Olympians	Scholastic sports	Club or CBO
Medalists	3.5	3.1
4 <sup>th</sup> to 8 <sup>th</sup> place	3.4	2.7
9 <sup>th</sup> to 25 <sup>th</sup> place	2.7	2.3

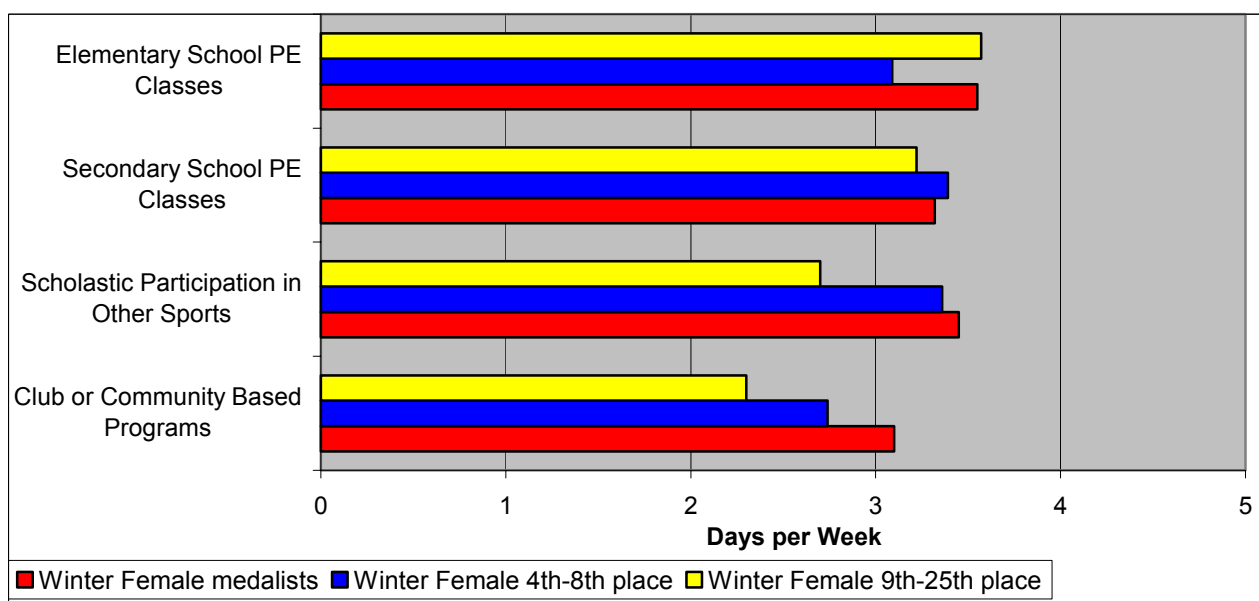
**Conclusions:** These results suggest that most Olympians were regularly participating in physical education for 3 or more days per week. In addition to school physical education, male and female Olympians reported an average of 3 days of training in scholastic sports and an additional average of 2.5 days per week in club/community programs. Female winter medalists reported more physical activity than 4<sup>th</sup> to 25<sup>th</sup> place finishers.

School physical education activities appear to have been an integral part of respondents' development providing general fitness and motor skill development, while sport specific skills were gained in the scholastic or club sport programs. Saltin (1995) and Ingjer (1992) concluded

that a large amount of physical activity during childhood and adolescence was partly responsible for the VO<sub>2</sub>max values (aerobic capacity) of Olympic athletes. The amount and frequency of physical activity found in these Olympians supports the notion of multi-lateral development. Given the fact that participation in school physical education has declined over the last decade (CDC, Youth Risk Behavior Survey, 1991-99) it may be important for the USOC to take a strong leadership role to promote regular physical activity of American children if the United States is to continue being successful in international sport.



**Figure 12.** Frequency of athlete participation for male and female Olympians.



**Figure 13.** Frequency of athlete participation for winter female Olympians, medalists vs. non-medalists.

**Question 12: What type of program were you involved in when you first started participating in your sport?** Family activity; Unstructured activity with friends; Elementary school physical education; Middle school physical education; High school physical education; Parks and recreation program; Community-based program NGB sponsored program; Private or commercial club; high school athletic program; Collegiate athletic program; Other-please list

**Rationale:** Many introductory sport programs exist in the U.S.; therefore we wanted to ascertain the programs where Olympians first started their sport.

The top four types of programs that introduced Olympians to their sports were: “unstructured activity with friends”, “family activity”, “private or commercial club”, and “community based programs” (Figure 14). The most common way in which to introduce male Olympians to sport was through unstructured activity with friends. Female Olympians reported family activity as the most common type of program in which they began involvement in their sport. “High school athletics” and “parks and recreation programs” were ranked as the fifth and sixth most popular methods to introduce respondents to their sport. Interestingly, “physical education programs” were not where most Olympians began their sports. Outside of friends and family, clubs and community based programs were the most popular ways to introduce young athletes to Olympic sport, suggesting that these programs may be more effective in introducing children to Olympic sport than school-based programs or NGB-sponsored programs.

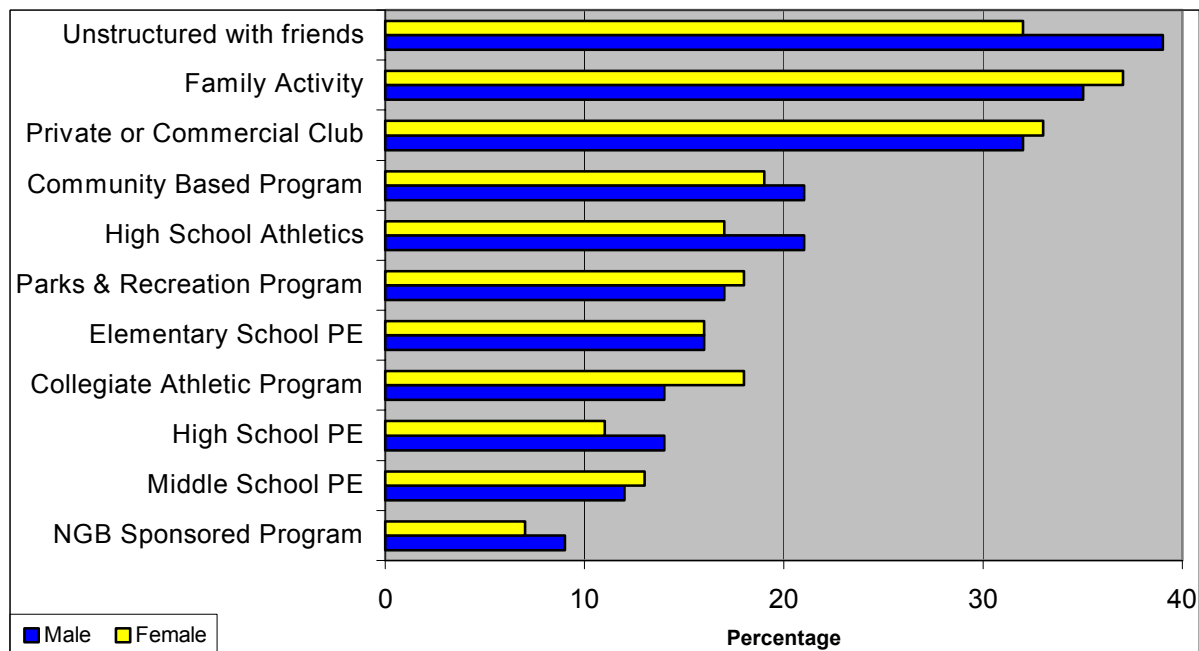
*Outside of friends and family, clubs and community based programs were the most popular ways to introduce respondents to Olympic sport, and may be more effective in introducing children to Olympic sport than school-based programs or NGB-sponsored programs.*

As illustrated in Figure 15, winter Olympians had very different beginnings in their sport than summer Olympians. Female summer Olympians were introduced to their sport primarily through private or commercial clubs followed closely by family activities and unstructured activity with friends. In addition to friends and family, “high school” and “collegiate athletics” were the fourth and fifth most popular type of program that introduced summer female Olympians to sport. Generally speaking, most school programs are able to provide an introduction to summer Olympic sports more easily than winter Olympic sports due to the equipment and facility intensive needs of winter sports.

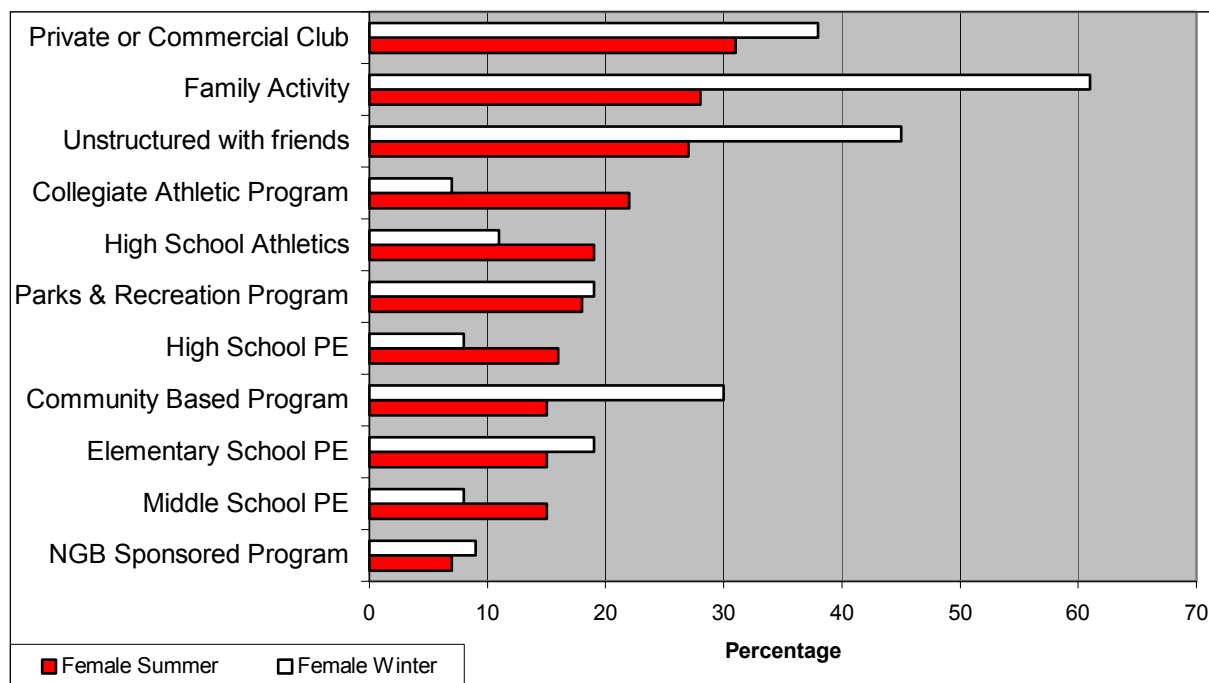
Winter female Olympians were introduced to their sports through family activity, unstructured activity with friends, private clubs, and community based programs. This may be due in part to the location of the athlete’s hometown. Winter sport communities may have well-organized clubs in winter sports. Interestingly, school based programs (whether middle school, high school, or college) contained the lowest percentages of female winter Olympians. It may help winter sport NGBs to design and develop grassroots-level programs to increase their athlete development pool.

**Conclusions:** Friends and family, private and commercial clubs, and community based programs were the most popular ways of introducing young athletes to Olympic sport, suggesting that

these programs may be more effective in introducing children to Olympic sport than school-based programs or NGB-sponsored programs. Families, friends, and clubs introduced female winter Olympians to their sport while female summer Olympians were primarily introduced to sport by private or commercial clubs.



**Figure 14.** Initial program in which male and female Olympians began their sport.



**Figure 15.** Initial program in which female Olympians began their sport.

**Question 13: What types of program were you involved in when you made the commitment to pursue excellence in your sport?** Family activity; Unstructured activity with friends; Elementary school physical education; Middle school physical education; High school physical education; Parks and recreation program; Community-based program NGB sponsored program; Private or commercial club; high school athletic program; Collegiate athletic program; Other-please list

**Rationale:** If we know the type of program in which most Olympians were participating at the time of their decision to pursue excellence, it may provide valuable information to communities, NGBs, and the USOC on how resources, in some cases limited resources, can be used most effectively.

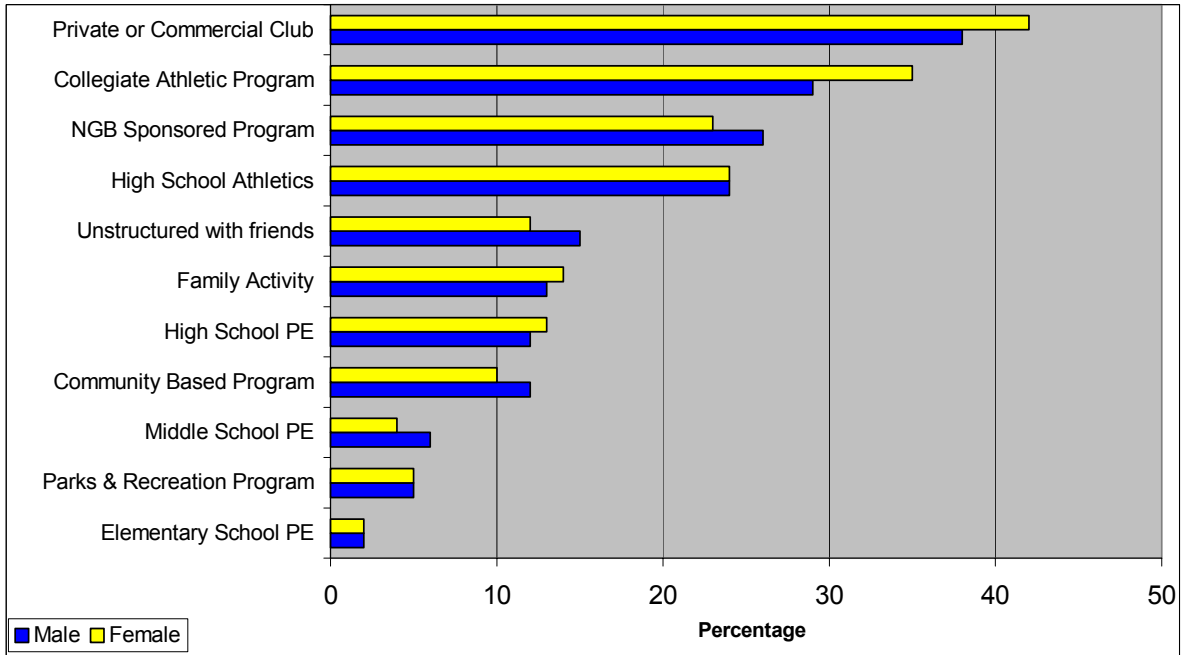
Regardless of gender, the “private or commercial club” was the most common type of program (38% for males and 42% for females) in which Olympians made the decision to pursue excellence (Figure 16). “Collegiate athletics” was the second most common program at 29 and 35 percent for males and females, respectively. Programs sponsored by NGBs and high school athletics trailed at 26 and 23 percent for males and females, respectively.

Singling out our most successful Olympians, U.S. medalists, came from private or commercial clubs (males 36%; females 47%), followed by collegiate programs (males 34%; females 40%) and high school athletic programs (males 30%; females 30%) (Figure 17). For the most part, the private sector and collegiate programs were more important for our female medalists than male medalists. Based upon previous differences with winter athletes, the male winter medalists were included with this group. Male winter medalists came from three distinct areas equally: private or commercial clubs, NGB-sponsored programs, and unstructured activity with friends. Programs that were noticeably absent from the backgrounds of male winter medalists were high school and collegiate sport programs.

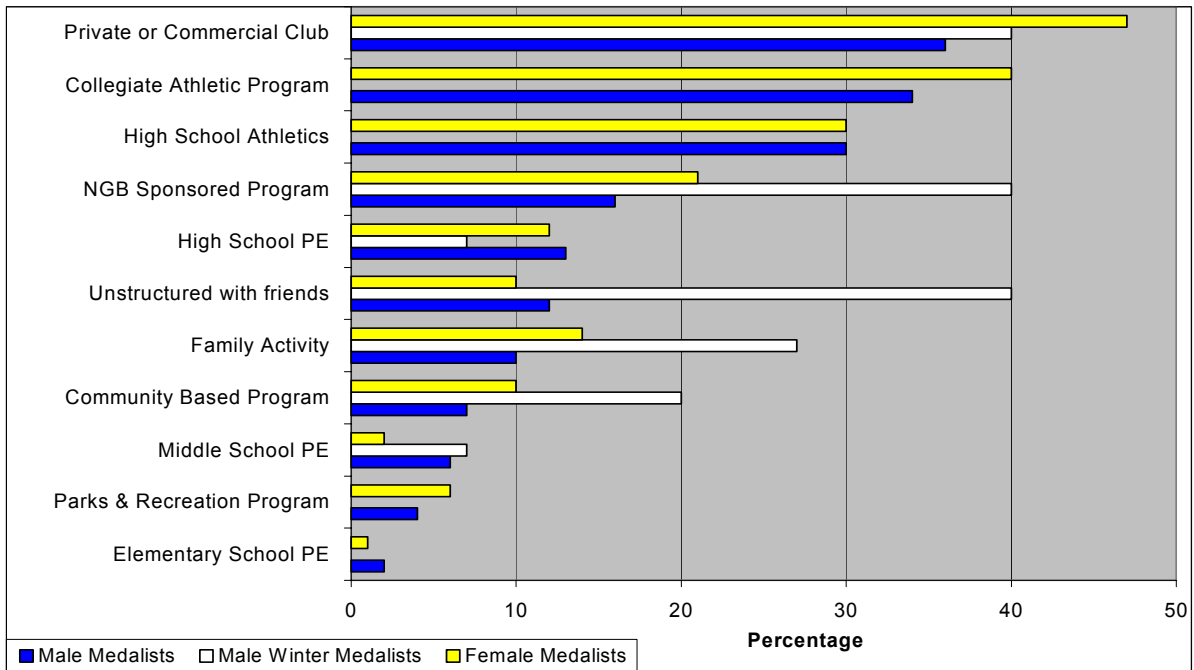
*Questionnaire results suggest that the development of most Olympians is based primarily upon the private/commercial club and community based programs. It would appear that the future of Olympic sport organization within the United States would favor a highly developed club system.*

**Conclusions:** The majority of U.S. Olympians reported that the private/commercial club is where most of their training and development took place. The collegiate athletic system ranks an important second at the time that many Olympians chose to pursue excellence in their sport. High school athletics and NGB sponsored programs were ranked third and fourth, respectively. Male winter medalists used very different programs to pursue excellence such as private and commercial clubs, NGB sponsored programs, and unstructured activity with friends, followed by family activity and community based programs. It would appear that the future of Olympic sport organization within the United States would favor a highly developed club system.





**Figure 16.** Program in which Olympians made the commitment to pursue excellence.



**Figure 17.** Program in which Olympic medalists made the commitment to pursue excellence.

**Question 14: Training and Performance Milestones – Age. What were the stages you went through during your competitive career by age?**

**Rationale:** This question brought forth information in three significant areas. Olympians were asked to list age, months of training per year, and yearly training hours at 13 different stages of development (milestones) from the time they began participating in a sport until they made an Olympic Team. See figures 18 and 19 for specific listing of each milestone. The importance of this information is that it can reveal the training and developmental patterns of the most successful U.S. Olympians.

**Age at each Milestone**

Male and female Olympians demonstrated a similar trend in ages at which they attained each milestone (Figure 18). As a whole, U.S. Olympians began their sports at the average age of 12.0 and 11.5 years old for males and females, respectively. On the average, female Olympians reached each milestone one year earlier (range: 0.5-1.6 years) than male Olympians. The largest difference in age (1.6 years) between females and males occurred at the time of senior competition (“first made senior team”, “first competed as senior”, and “first international success”). The mean, median, and mode age, from the time Olympians began their sport until they made an Olympic team, (referred to as: “developmental period”) was 12.6, 13.0, and 13.0 years, respectively. Standard deviation was 5.6 years, indicating a large variability; however, median and mode values of 13.0 years reinforce the average length of time needed to become an Olympian.

Separating by gender, male and female Olympians required 12.6 and 12.1 years to develop their talent. Male and female medalists reported a longer period of development, an average of 13.0 and 12.8 years, respectively. Most Olympians reported a 12-13 year period of talent development. There are individuals who will transcend the average developmental period; however, these data suggest that a long period of training, education, and nurturing are needed to develop Olympic talent in most American athletes.

In an effort to further determine differences between medalists and non-medalists (4<sup>th</sup> – 25<sup>th</sup> place), male Olympians were analyzed by finish position (Figure 19). Appendices D and E provide a complete listing of the age, months of training, and yearly training hours at each milestone for medalists and non-medalists. From the age male medalists began their sport at 11.0 years old, until their first competitive success at the state level at 14.9 years old, they were younger in age than non-medalists (4<sup>th</sup> – 25<sup>th</sup> place finishers). Differences in age for the first five milestones were between 1-2 years at each milestone, but at the time of making the junior national team these differences were smaller (0.1-0.6 years). These results suggest that, with proper training, beginning at an earlier age may allow for a greater mastery of motor skills. This is supported in fact by the nearly identical age at which all male Olympians first reached the junior national team. Thus, male medalists had more time to develop their skills. Similar trends were observed for female medalists and female Olympians who did not medal.

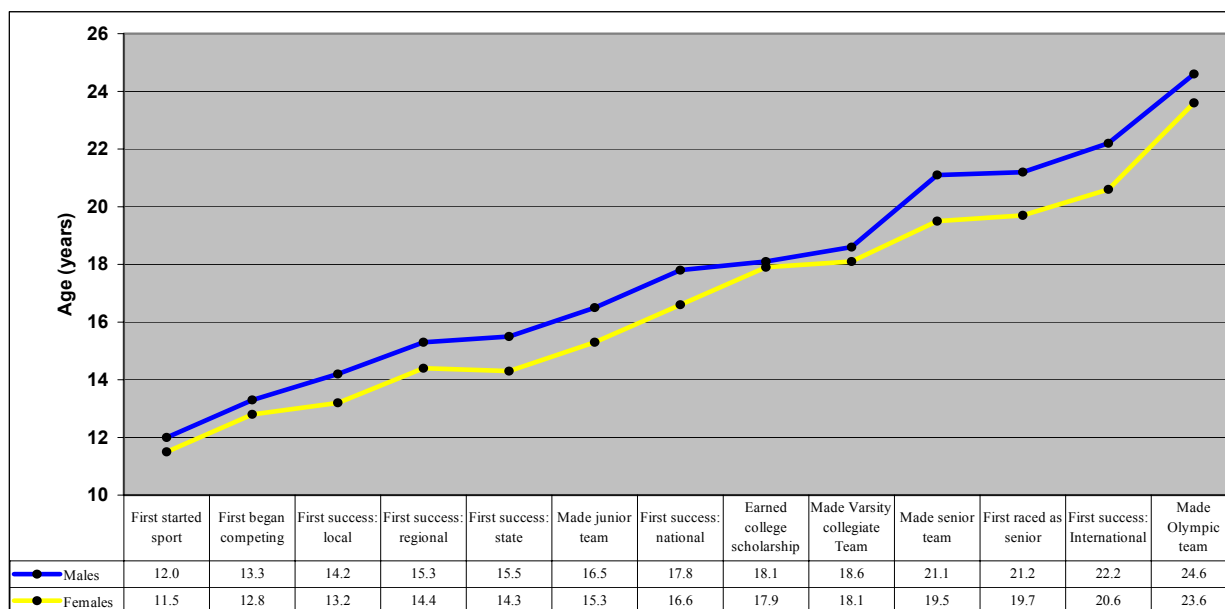


Figure 18. Training and performance milestones by age in female and male Olympians.

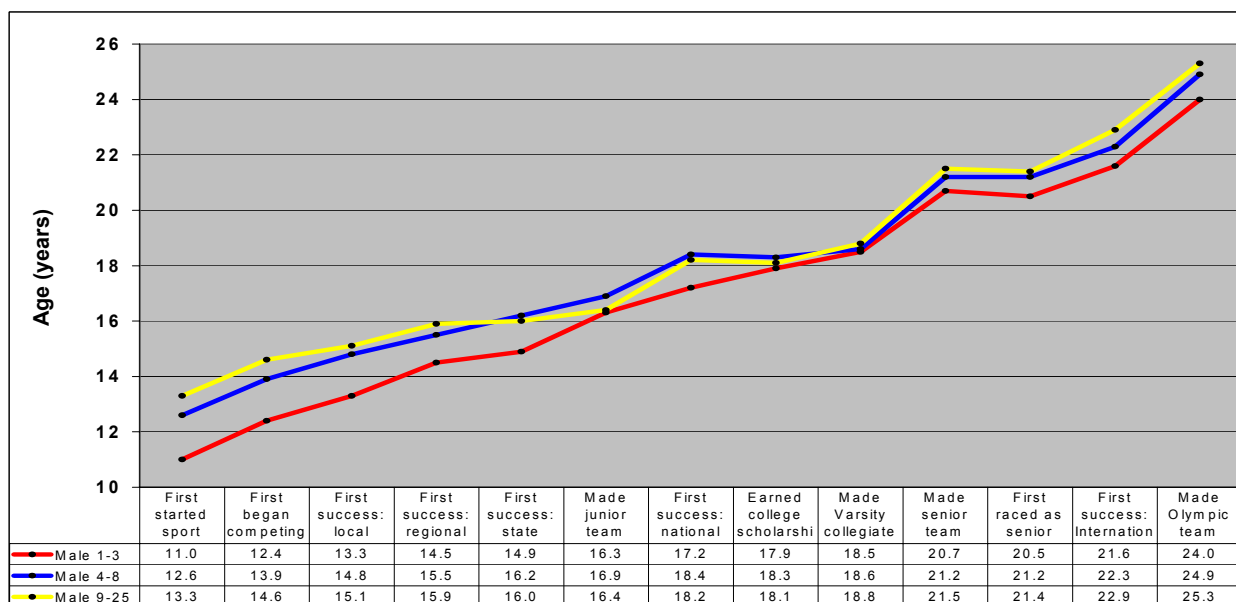


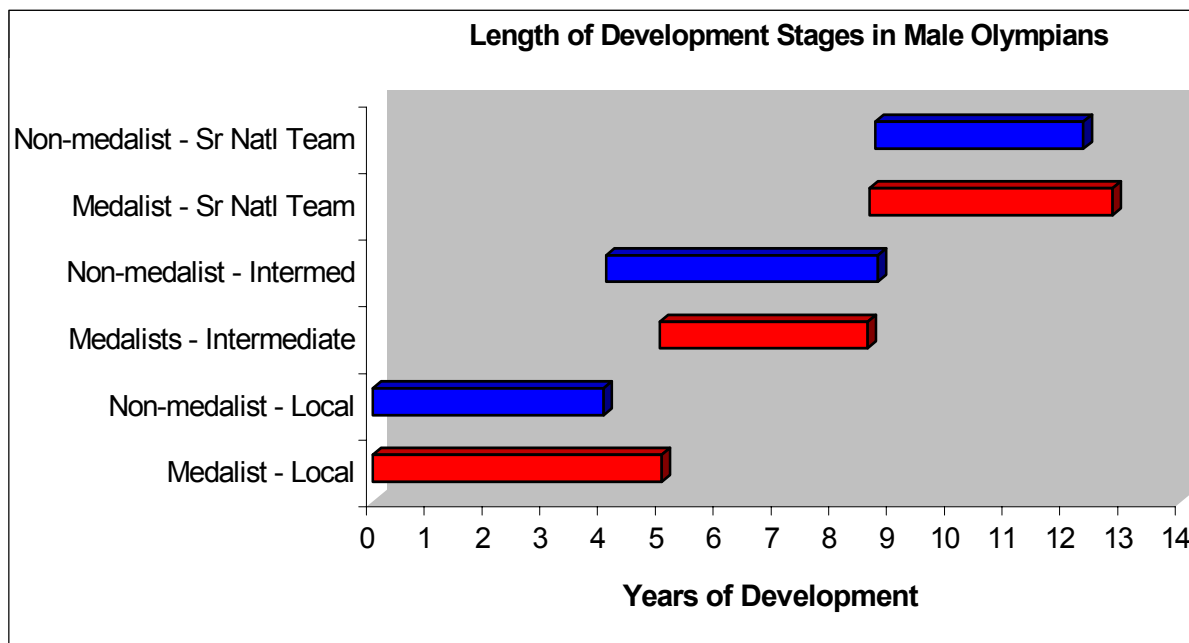
Figure 19. Training and performance milestones by age in male Olympians (finishing place).

**Conclusions:** Most Olympians reported a 12-13 year period of talent development. These findings are supported by the research of Ericsson et al. (1993) and Bloom (1985) who suggest that a minimum of 10 years of intense preparation and deliberate practice is needed in order to become an expert performer within a talent field. Additionally, Ericsson found that it is the accumulation of many hours of deliberate practice and training that is the best predictor of elite performance.

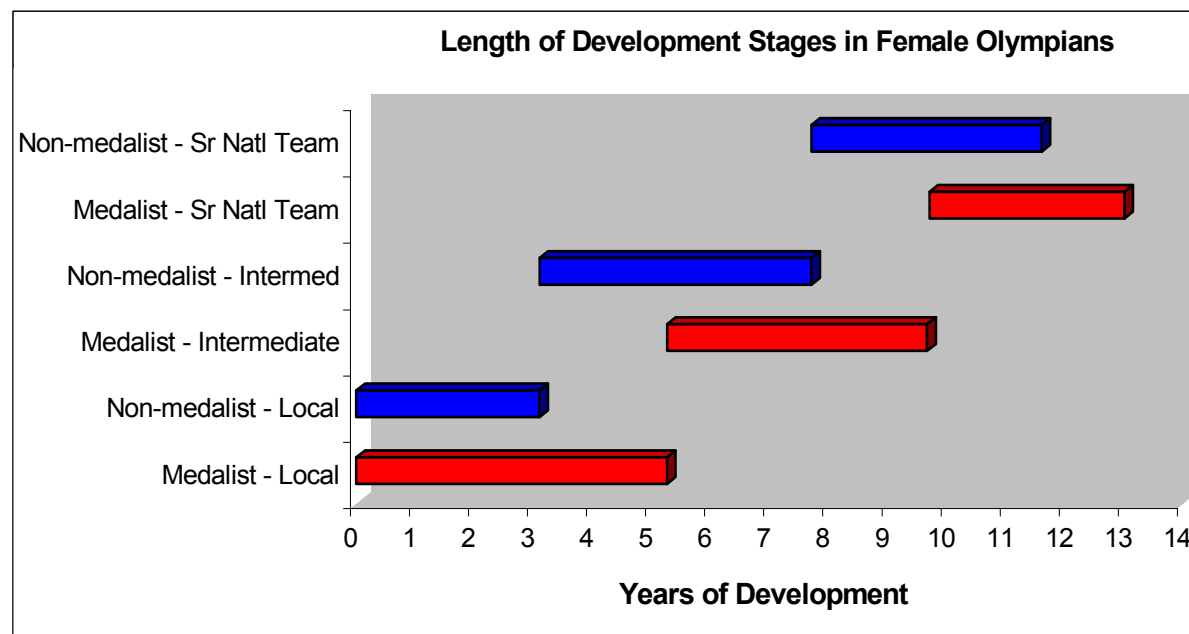
On the average, female Olympians reached each milestone one year earlier (range: 0.5-1.6 years) than male Olympians. U.S. Olympic medalists reported a longer period of development, 0.4 and 0.7 years longer for males and females, respectively. In addition, U.S. Olympic medalists were younger in age (1.3-3.6 years younger) during the first five stages of development. This suggests that physical activity and skill development during these early stages may have been beneficial for the medalists. To examine this further, we used the ages at key milestones, to construct three stages of development. The first stage, local, was measured from an introduction to a sport to making the junior national team. The second stage, intermediate, was from the junior national team to making the senior national team and the third stage, senior national team, was the length of time from making the senior national team to first making an Olympic Team. Average length of each stage was 4.1 years (range: 3.1 – 5.3 years) for medalists and non-medalists in both male and female Olympians (Figures 20 and 21).

As reported earlier, one of the distinguishing marks of these data is that male and female Olympic medalists had a longer local developmental stage by 1-2 years than male and female non-medalists. Most of this can be accounted for by the fact that male and female medalists began their sports at an earlier age by 2-3 years. These results concur with the research of Helsen et al. (1998) and French (1998) who found that international level athletes engaged in more practice time of individual skills, before the age of 15 years, than athletes who did not progress from the national or provincial levels. It is important to distinguish that skill development in the context with other physical activities during childhood and early adolescence is quite different from early specialization in a sport. Early specialization is noted for its large volume of intensive training in one sport at a young age. Early specialization can lead to injury, “psychological burnout,” and a shorter competitive career (Bompa, 1994). These data suggest that a longer local developmental stage may have benefited medalists in contrast to non-medalists because of a greater amount of time spent in physical activity and overall skill development across a variety of sports.

*...The better we appreciate the time involved in learning something (especially learning it well), the greater the likelihood that we will improve our ability to create conditions that encourage long-term, nontrivial growth (Benjamin Bloom, 1985).*



**Figure 20.** Average length of development stages in male Olympians.



**Figure 21.** Average length of development stages in female Olympians

**Question 14: Training and Performance Milestones – Months. What were the stages you went through during your competitive career by yearly training months?**

**Rationale:** Training amounts expressed as daily, weekly or monthly hours are the foundation of a properly designed training plan. Thus, this question determined the number of training months, per year, of all Olympians including medalists and non-medalists.

**Months at each Milestone**

There was a progressive increase in the number of months of training per year over a 12-year period. The number of training months per year throughout the developmental period was similar between male and female Olympians (Figure 22). Additionally, small differences of 3-18 training days per year were evident between male and female Olympians throughout all stages. There was a linear progression in training duration beginning with an average of 6.0 and 6.3 months and ending with 11.1 and 11.3 months of training for males and females, respectively. Attaining junior national team status coincided with 9.1 and 9.7 months of training for male and female Olympians.

*There was a progressive increase in the number of months of training per year (6-11 months) that was accomplished over a 12-year period.*

An evaluation of the data revealed a disparity between female winter and summer Olympians (Figure 23). Interestingly, female winter Olympians reported training a lower number of months per year than female summer Olympians. Differences in training duration ranged from 0.5 to 1.9 months per year. The greatest differences in the number of months of training were during the initial stages of development. This could be due to a number of factors such as a lack of on-snow or on-ice training time or a short training season as dictated by a club or organization. Female winter athletes may benefit by more on-snow or on-ice and dryland training beginning with their first competitive success at the state level, around age 14-15 years old. The most successful winter sport programs at the intermediate level of development (age 14-20 years old) provide nearly nine months of sport-specific training (CODP Report).

**Conclusions:** There was a linear progression in training duration beginning with an average of 6.0 and 6.3 months per year and ending with 11.1 and 11.3 months per year of training for males and females, respectively. The largest disparity regarding training duration occurred between female winter and summer Olympians. Female winter Olympians reported training 1-2 months less per year in all stages of development than female summer Olympians.

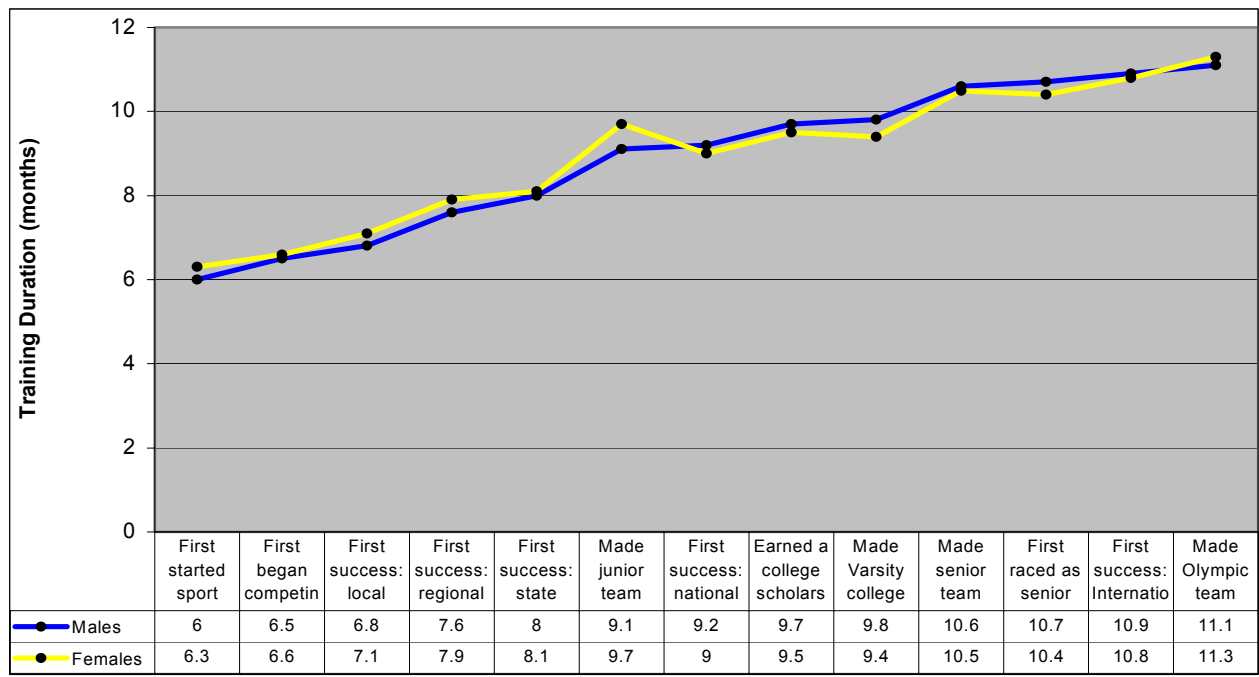


Figure 22. Months of training per year in female and male Olympians.

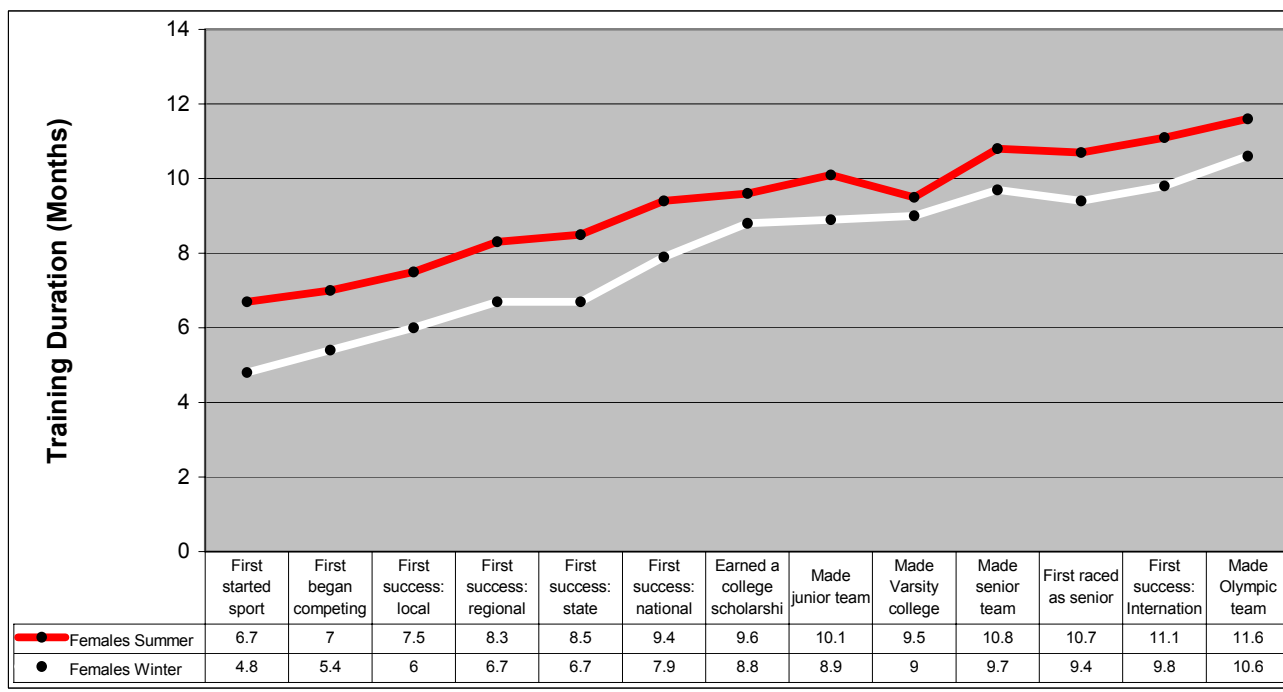


Figure 23. Months of training per year in female winter and summer Olympians.

**Question 14: Training and Performance Milestones – Hours. What were the stages you went through during your competitive career by yearly training hours?**

**Rationale:** The majority of U.S. coaches record training volume in hours. Training amounts expressed as daily, weekly or monthly hours are the foundation of a properly designed training plan. Thus, this question can reveal the yearly training hours of all Olympians including medalists and non-medalists.

**Yearly Training Hours at each Milestone**

Male and female Olympians trained a similar number of hours from the time they began their sport until they made an Olympic team, (referred to as: “developmental period”). Yearly training hours ranged from 250-1130 during the developmental period. See Figure 24. Males generally trained a greater number of yearly hours than females at each milestone; however, this difference (range: 3-49 hours) was very small throughout their athletic careers. There was one exception; females trained a greater number of hours (682 hours) than males (584 hours) during the stage of first making the junior national team. To summarize previous data from this milestone, male and female Olympians reported that at the age of 16.5 and 15.3 years old they were training 9.1 and 9.7 months per year, respectively. To make an Olympic team required an average of another eight years of training while progressively increasing the number of months and yearly hours of training. These data suggest that a progressive increase in training load over a long period is needed in order to reach the top levels of Olympic sport.

**Conclusions:** U.S. Olympians reported that a long, extensive period of training was required to reach the top level in Olympic sport. From the mid-teenage years to the mid-twenties, Olympians reported training 600-1200 hours per year.



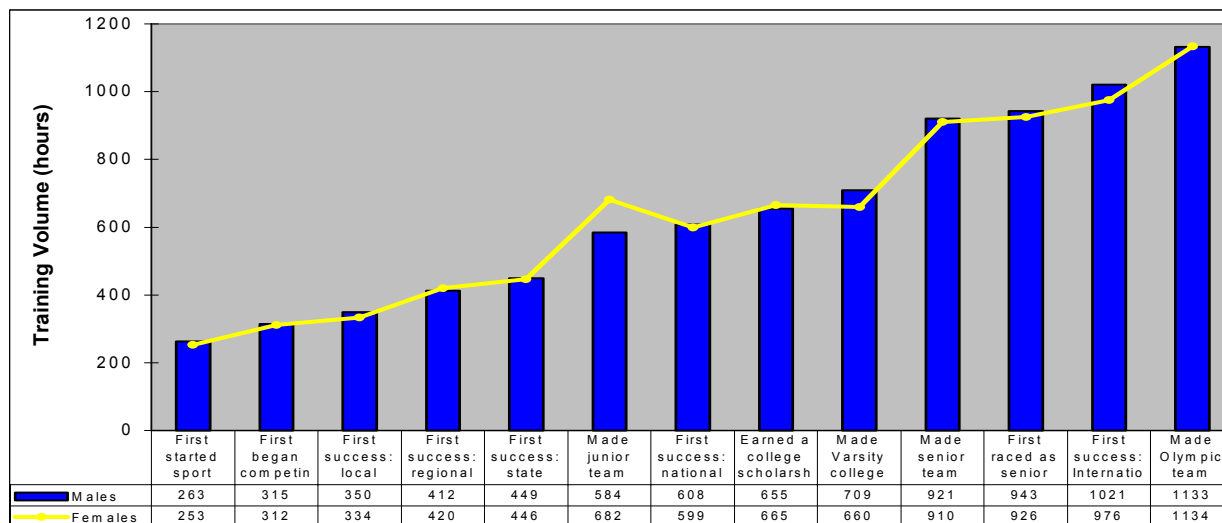


Figure 24. Yearly training hours for female and male Olympians.

**Question 15 is not included here.** Question 15 identified the competitions Olympians felt most helped them prepare for the Olympic experience.

**Question 16: Please rate the relative importance of coaching at the varying stages of your development (1 minor factor to 5 critical).** Initial contact; Skill acquisition phase; Early competitive phase; Regional competitive phase; National competitive phase; International competitive phase

**Rationale:** Coaching is a critical factor for proper development of talented and motivated athletes. Highly successful coaches systematically develop athletes to the highest levels in sport. We wanted to know from Olympians when their coaches played the most important role during their development.

Female Olympians indicated that coaching at the national and international competitive level (age range: 17.4 to 19.5 years) was the most important (Figure 25). Coaching during the skill acquisition phase (age: 13.3 years) was ranked second in importance. Early competitive and regional competitive phases (age range: 13.6-14.7 years) were ranked third and fourth, respectively. The initial contact phase, ranked 2.5 out of 5, was ranked the lowest for relative importance.

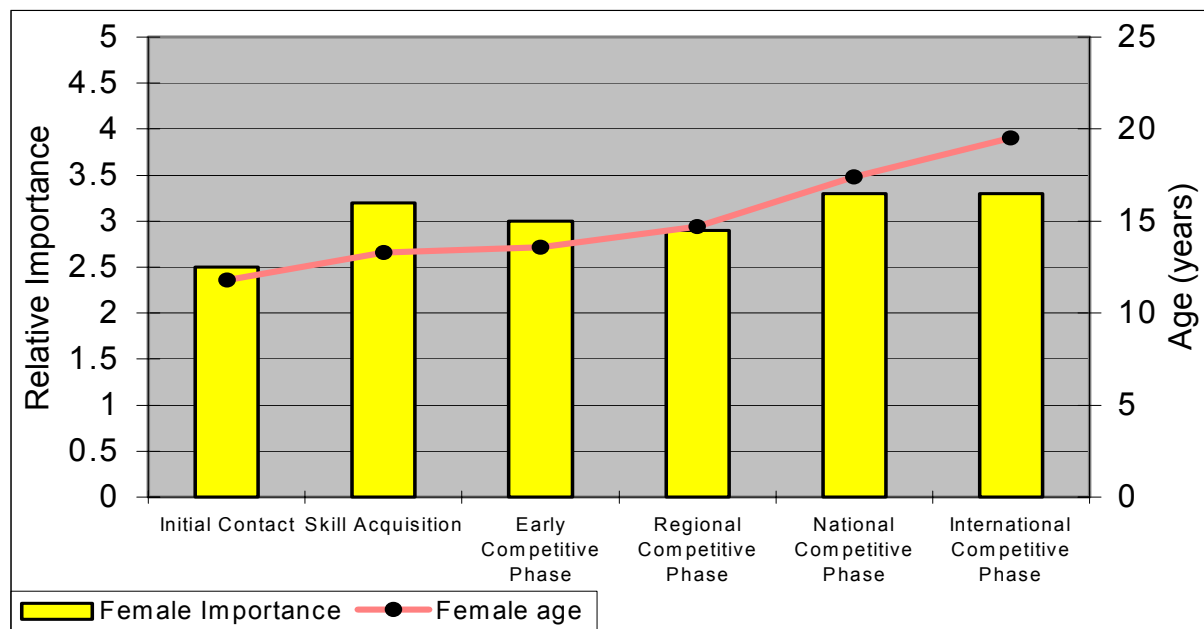
The importance of coaching in all phases was similar in male Olympians. Coaching during the national and international competitive phases (age range: 18.3-20.8 years) was found to be of the highest importance for males (Figure 26). The importance of coaching during skill acquisition, early competitive, and regional competitive phases (age: 13.8, 14.4, and 15.8 years, respectively) were all ranked similarly. Similar to the findings for females, males ranked coaching during the initial contact phase (2.5 out of 5) the lowest. It is important to note that among all Olympians, the mode score (most frequent score) for coaching importance was five. Thus, indicating that the majority of athletes ranked coaching importance with the highest value available at all developmental phases. In fact, 56.5 - 78.8 percent of Olympians ranked the importance of coaching a four or five across all developmental phases (Table 4).

**Table 4.** Percentage of U. S. Olympians ranking the importance of coaching.

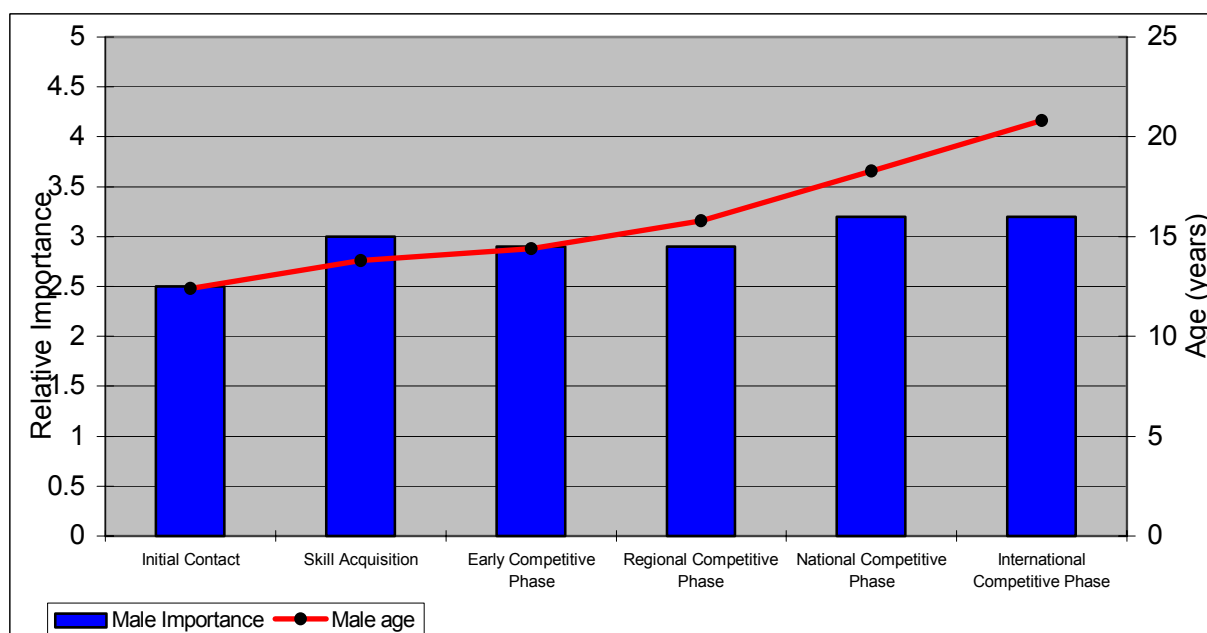
Ranking	Initial Contact Phase	Skill Acquisition Phase	Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
5	41.9%	52.3%	42.7%	37.5%	57.7%	66.8%
4	14.6%	22.7%	25.9%	26.2%	21.0%	12.0%
3	16.7%	14.5%	20.2%	17.7%	11.5%	10.3%
2	8.5%	6.3%	7.0%	6.1%	3.8%	4.3%
1	18.2%	4.9%	4.6%	4.4%	5.6%	6.6%

**Conclusions:** Female and male Olympians placed the importance of coaching highest during the national competitive and international competitive phases. For women and men, this occurred at the respective age ranges of 17.4-19.5 and 18.3-20.8 years. Nearly equal in importance was the coaching that occurred during the skill acquisition phase. These data strongly suggest that Olympians regard coaching as an important factor in their development. Placing successful coaches at the highest ranked phases may yield a better overall development program for NGBs.

The fact that the initial coaches were ranked the lowest from our overall Olympic athlete population should not be considered negative, for it was the initial coach who probably brought out the fun aspect of the sport that is so important to beginning athletes (Figures 1 and 2). As noted earlier, a well-grounded love and enjoyment from the beginning of sport may be important for athletes in order for them to progress to higher levels in sport.



**Figure 25.** Importance of coaching during development for female Olympians.



**Figure 26.** Importance of coaching during development for male Olympians.

**Question 17: Please rate (1 the least important to 5 highest) the qualities of a coach that were important to you.** Teaching ability; Skill competence; Training knowledge; Management and organizational skills; Ability to motivate or encourage; Strategic knowledge of the sport; Personality; Assistance with goal setting; Ability to help you achieve balance in life

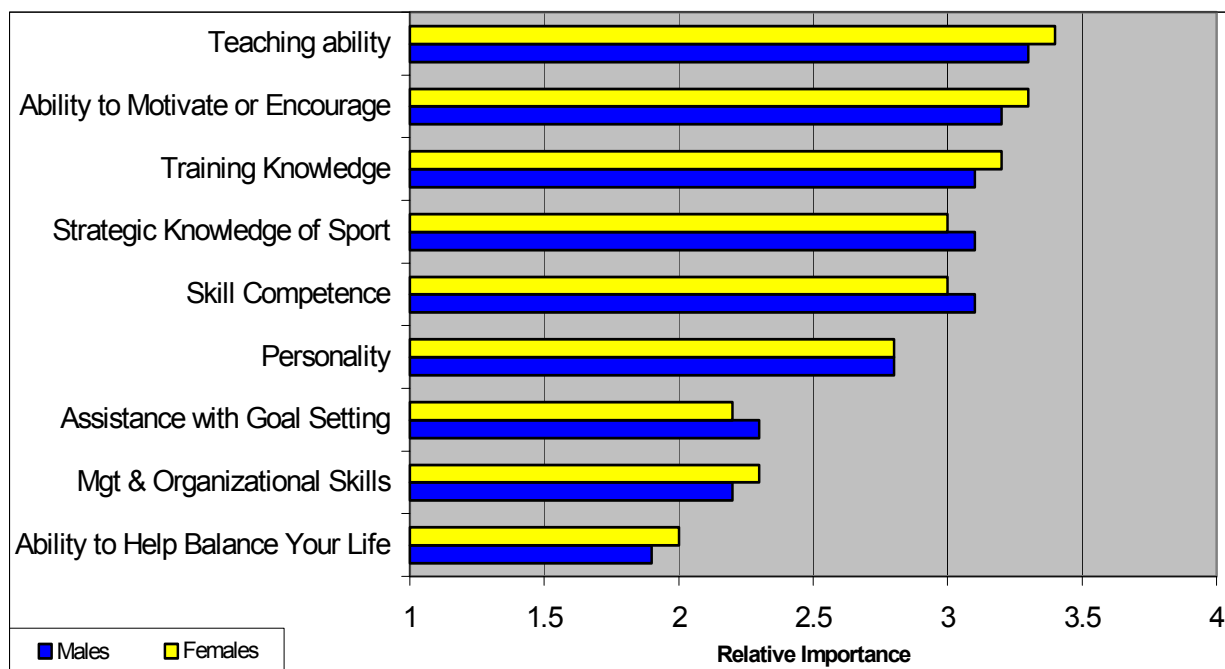
**Rationale:** There are many qualities that make a coach effective. We wanted to determine the qualities that Olympians considered the most important for a coach to possess.

Olympians ranked the “ability to teach” (rankings: 3.3 male, 3.4 female) and “the ability to motivate or encourage” (rankings: 3.2 male, 3.3 female) as the two most important qualities of a coach (Figure 27). The next three qualities were all ranked similarly (ranking: 3.0-3.2) and included “training knowledge”, “skill competence”, and “strategic knowledge of sport”. Interestingly, the qualities reported as least important were “assistance with goal setting”, “management and organizational skills”, and “assistance with balancing the lives of athletes”. Some potential areas of interest with this question would include evaluating individual sports with team sports, more specifically to evaluate the importance of strategic knowledge.

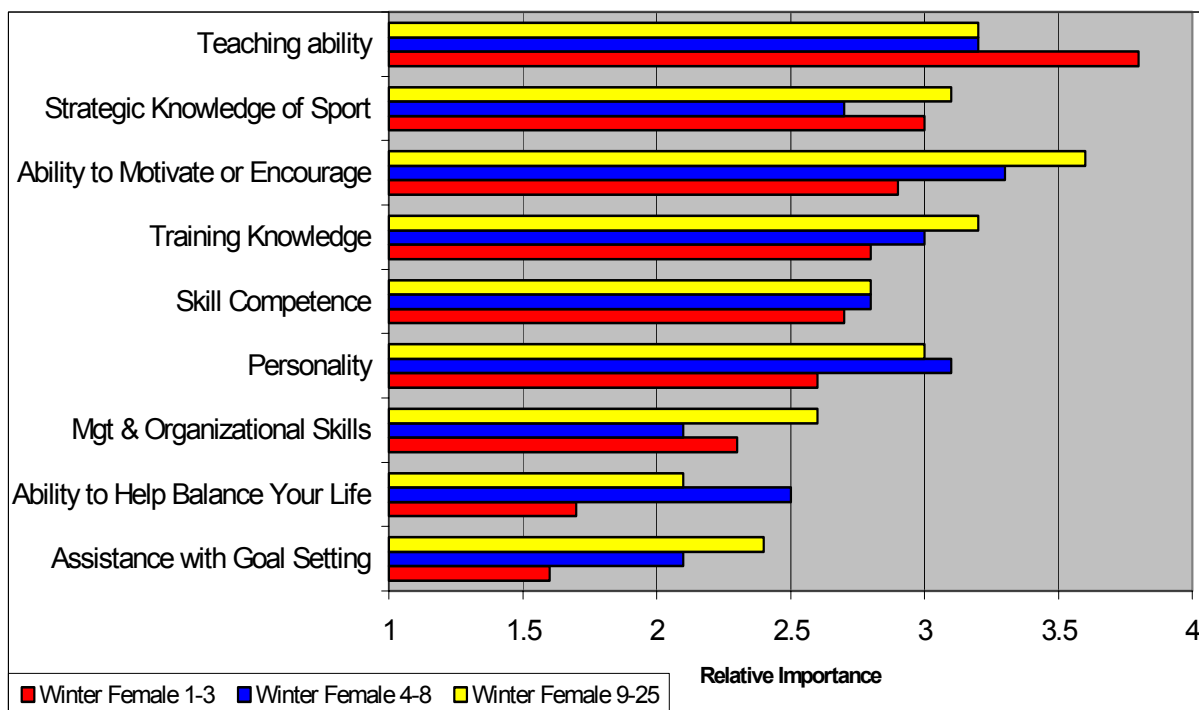
*Olympians ranked the ability to teach and the ability to motivate or encourage as the two most important qualities of a coach*

There were distinct differences in the importance of coaching qualities among female winter Olympians relative to finish place (Figure 28). Female winter medalists placed teaching ability well above all other coaching qualities. Strategic knowledge of the sport, ability to motivate, training knowledge, and skill competence were ranked as the next most important characteristics. Goal setting assistance and help with balancing their lives were ranked the lowest. Non-medalists (4<sup>th</sup> – 25<sup>th</sup> finish position) ranked the ability to motivate or encourage as the most important quality. Additionally, the lowest finishers (9<sup>th</sup> – 25<sup>th</sup> place) ranked the ability to motivate as the highest desired quality. Teaching ability, training knowledge, personality, and strategic knowledge of the sport were ranked the 2<sup>nd</sup> – 5<sup>th</sup> most important coaching qualities in those finishing 9<sup>th</sup> – 25<sup>th</sup> place. This suggests that while more successful female athletes (1<sup>st</sup> – 8<sup>th</sup> place) sought motivational qualities from their coach they likely possessed the ability to motivate themselves more so than less successful athletes.

**Conclusions:** Olympians ranked the ability to teach and the ability to motivate or encourage as the two most important qualities of a coach. Three additional qualities relating to sport-specific information were all highly ranked and included training knowledge, skill competence, and strategic knowledge of sport. Female winter medalists reported more importance on teaching ability and strategic knowledge of sport. Female winter Olympians who did not medal placed more importance on the ability to motivate or encourage, training knowledge, and personality. These data suggest that medalists have the ability to motivate themselves and integrate training knowledge into their training plan. Further, medalist respondents seek the many years of experience and strategic knowledge from a coach regardless of personality.



**Figure 27.** Important qualities of a coach for male and female Olympians.



**Figure 28.** Important qualities of a coach for female winter Olympians by finishing place.

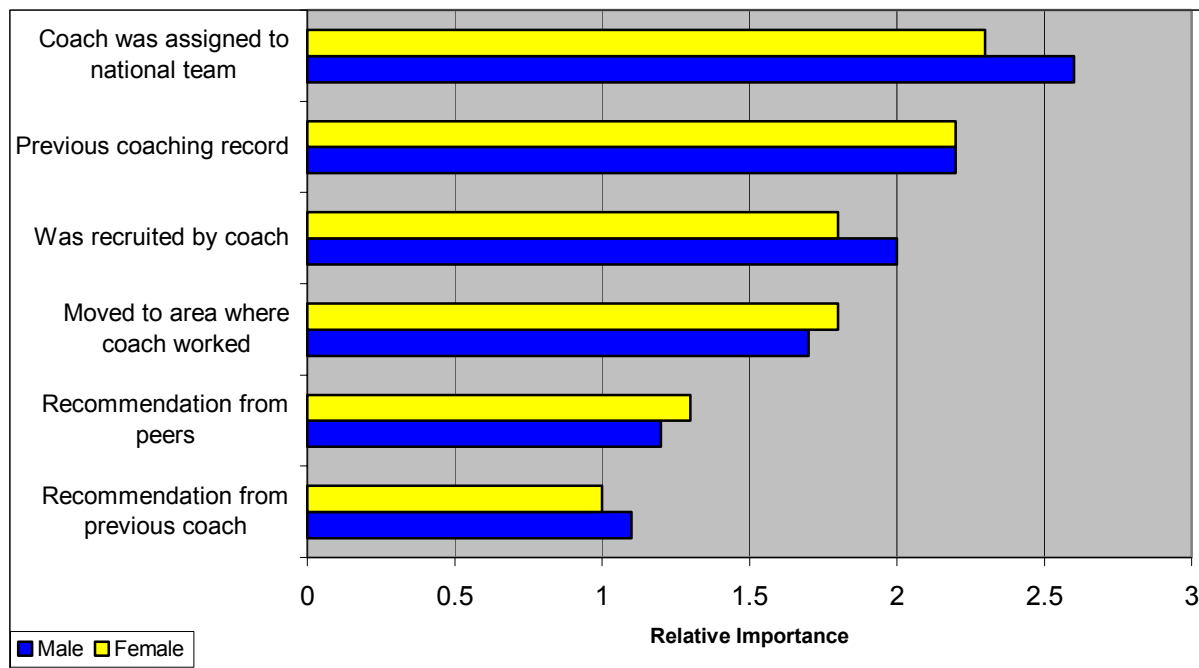
**Question 18: Please rate in order of importance (1 least important to 5 highest) the factors that contributed to your involvement with your coach at the time of achieving your highest competitive success.** Recommendation from peers; Recommendation from previous coach; Previous coaching successes of the coach; Was recruited by the coach; Moved to area where coach worked; Coach was assigned to the national team; Other – please list

**Rationale:** There are many reasons why an Olympian may train under a given coach. We were interested in determining how Olympian became involved with their coach at the point they were achieving their highest success.

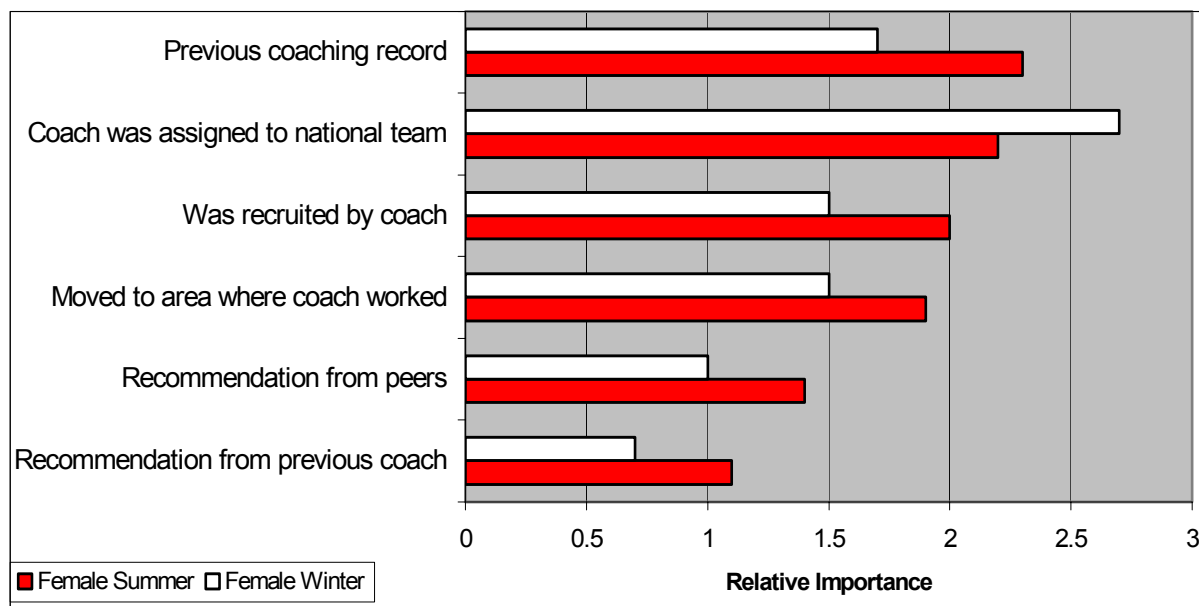
The most common factor for coach involvement with an Olympian was the coach's assignment to the national team (Figure 29). "Previous coaching record" and "recruitment by coach" were ranked second and third. The latter two factors suggest that the coach's abilities were the most important aspects for involvement. The least common methods for coach selection were "recommendations by the previous coach" or "recommendations from peers". Male and female Olympians ranked coach involvement factors similarly.

Several differences emerged between female winter and summer Olympians (Figure 30). Previous coaching record was the most common factor for coach involvement in female summer Olympians. Assignment to the national team was the most important factor for coach involvement for female winter Olympians.

**Conclusions:** As a whole, Olympians ranked "coach was assigned to national team" as the most important factor that contributed to the involvement with their coach. "Previous coaching record" and "recruitment by coach" were ranked second and third. Female summer Olympians ranked "previous coaching record" while female winter Olympians ranked "assignment to national team" as the most important factor. These differences among female winter and summer Olympians may suggest different methods for coach selection by winter and summer NGBs.



**Figure 29.** Factors that contributed to the involvement of U.S. Olympians with their coach.



**Figure 30.** Factors that contributed to the involvement of female Olympians with their coach.

**Question 19: Financial factors may be important for sport development. How did financial factors affect your sport development at different time periods?** Major Limitations: 4 or 5, No Impact: 3, Positive Factor: 1 or 2.

**Rationale:** The financial commitment required to progress to the Olympic Team is thought to be great. We wanted to determine the Olympians' view on how financial factors affected their development.

As Olympians progressed up the developmental track they reported more limitations from financial factors. See Table 5 and Figure 31. Male and female Olympians reported average scores between 3.2-3.4 on a scale of 1 ("positive factor") to 5 ("major limitations") at all developmental phases. Financial factors played the most negative role during the national competitive phase. Interestingly, the mode score (most frequently reported) in the national and international competitive phases was four and five for males and females, respectively. Thus, indicating major limitations from financial factors during that period.

**Table 5.** How financial factors affected male and female Olympians during development.

	Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
<b>Male</b>				
Average	3.2	3.2	3.3	3.2
Mode	3	3	4	5
<b>Female</b>				
Average	3.2	3.3	3.4	3.2
Mode	3	3	4	4

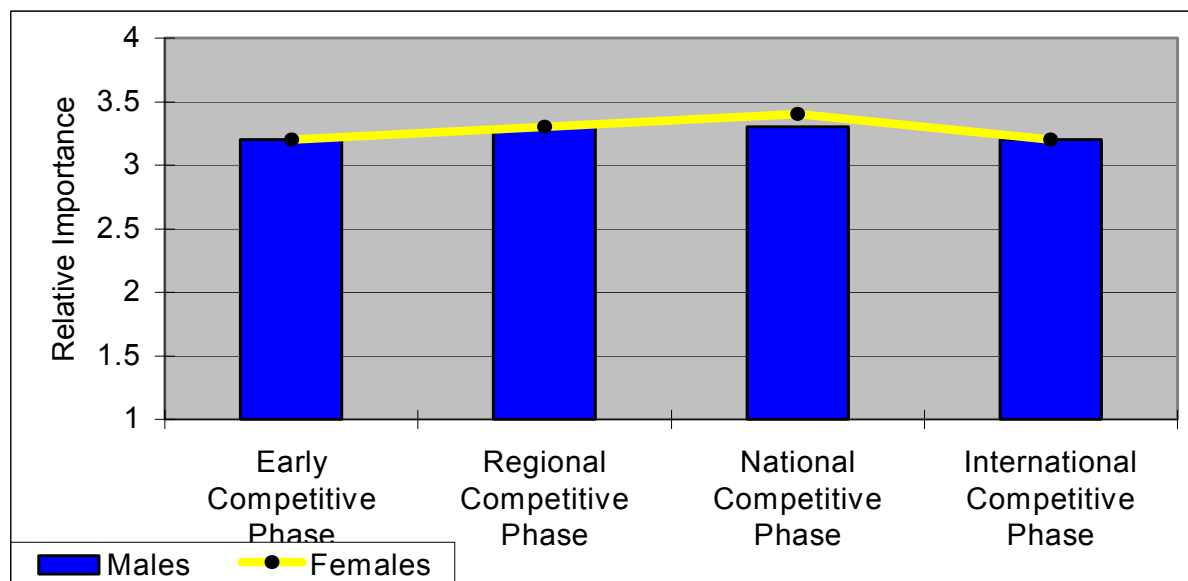
A further evaluation determined that winter and summer Olympians had similar results and ranked the national competitive phase as the most financially negative at 3.4 and 3.3, respectively (Table 6 and Figure 32). Within winter Olympians, financial factors played the most negative role during the regional and national competitive phases (3.4). In summer Olympians, the national and international competitive phases (3.3) had the most negative scores for financial factors. Again, mode score during the national and international competitive phase for both winter and summer Olympians was four (4.0).

**Table 6.** How financial factors affected winter and summer Olympians during development.

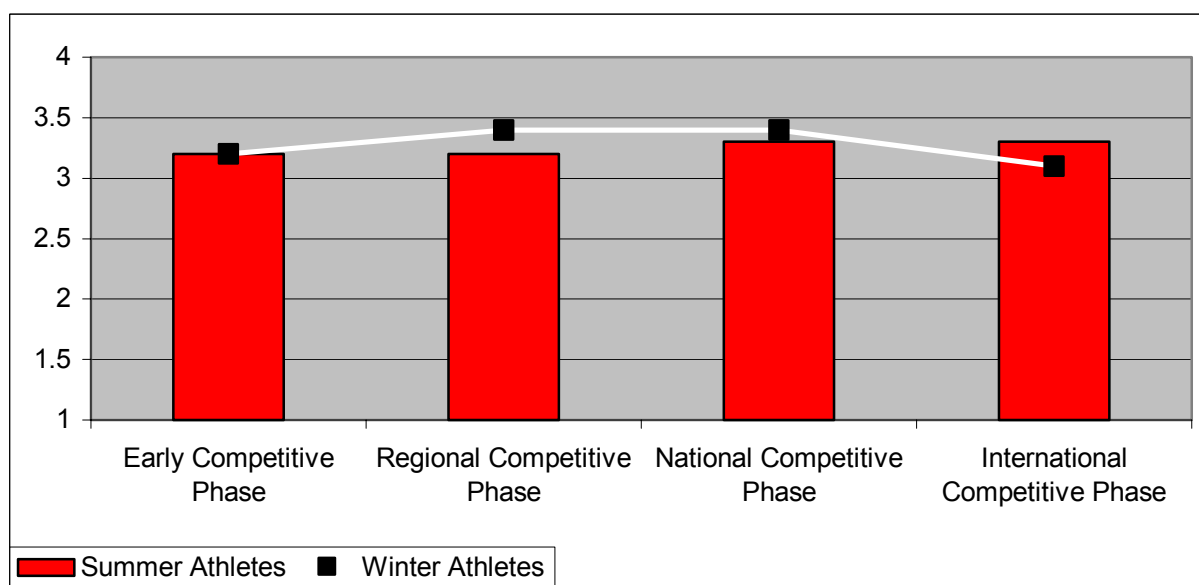
	Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
<b>Winter</b>				
Average	3.2	3.4	3.4	3.1
Mode	3	3	4	4
<b>Summer</b>				
Average	3.2	3.2	3.3	3.3
Mode	3	3	4	4



**Conclusions:** Olympians reported more limitations from financial factors as they progressed up the developmental track. For all Olympians, financial factors played the most negative role during the national competitive phase. The average scores were 3.3 for males and 3.4 for females indicating it fell between “No Impact” and “Major Limitations.” Winter Olympians reported more limitations during the regional and national competitive phases and summer Olympians listed more limitations during the national and international competitive phases. These results suggest possible differences that are associated with the costs of equipment, travel, and programs at the various stages.



**Figure 31.** The role of financial factors during athlete development.



**Figure 32.** The role of financial factors during athlete development.

**Question 20: Did you receive financial support from your NGB for any of the following?**  
Training and Coaching; Equipment; Competitions; Supplemental Stipend.

**Rationale:** Financial assistance to athletes varies from NGB to NGB. We wanted to know how much NGB support was available to athletes, at each stage of development, and which form the support took.

Olympians reported funding from the National Governing Body (NGB) in the categories of “training and coaching”, “equipment”, “competitions”, and “supplemental stipend”. This was reported across four developmental periods and included an early competitive phase, a regional competitive phase, a national competitive phase, and an international competitive phase.

Progressively more Olympians reported receiving NGB funding as their competitive level increased (Table 7 and Figure 33). The international competitive phase had the largest percentage of Olympians indicating funding. Throughout the four competitive phases, the percentage of males and females reporting NGB funding was generally similar. The low number of Olympians reporting funding in the early and regional competitive phases could be due to some type of NGB-sponsored programs. Primarily, NGBs are placing resources at the national and international level. The funding category receiving the largest percentage was competitions.

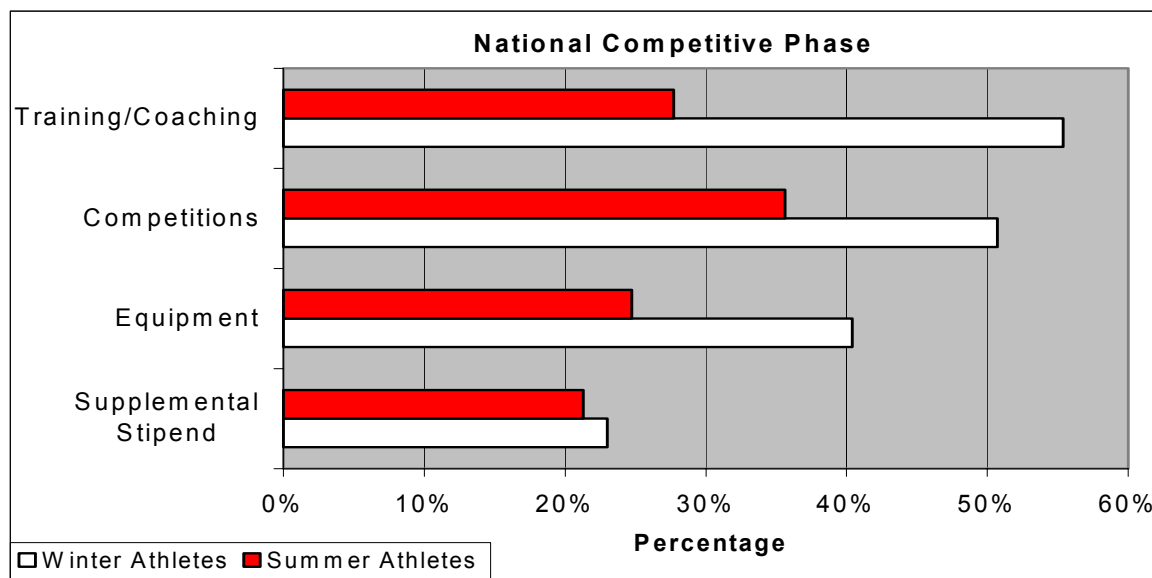
**Table 7.** Percentage of Olympians reporting financial support from the NGB across all competitive phases.

Funding Category		Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
Training/Coaching	Male	4.0%	9.6%	35.8%	56.4%
	Female	4.4%	5.0%	33.7%	58.4%
Equipment	Male	3.1%	8.0%	30.8%	49.9%
	Female	3.5%	5.0%	26.1%	46.9%
Competitions	Male	3.1%	7.8%	40.7%	69.6%
	Female	3.8%	6.5%	38.1%	71.0%
Supplemental Stipend	Male	1.0%	1.9%	23.3%	56.8%
	Female	1.5%	1.5%	19.6%	52.2%

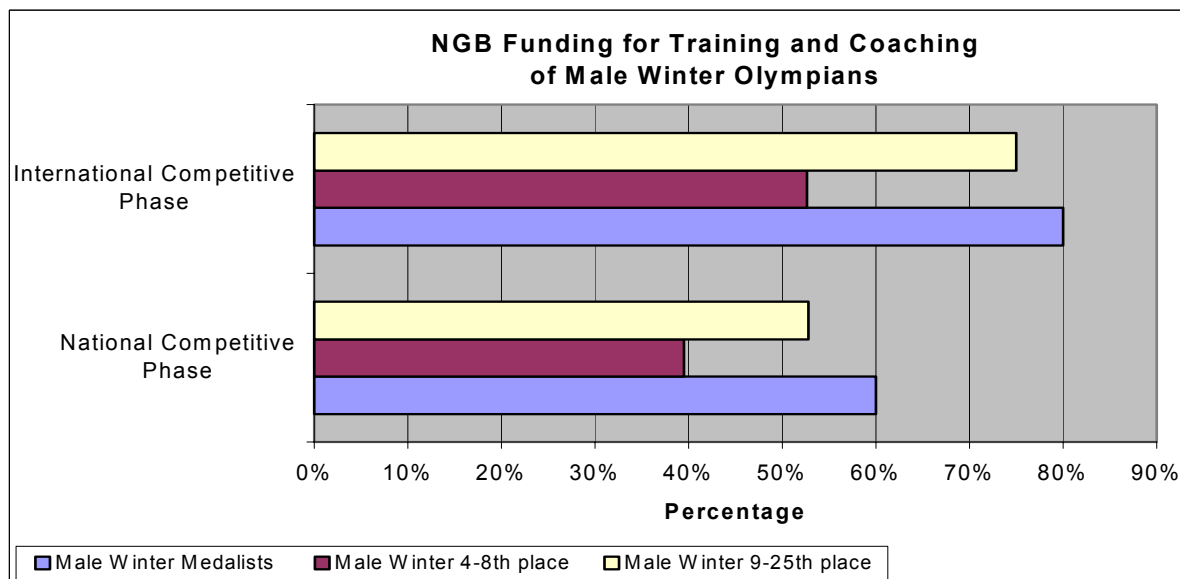
An evaluation between winter and summer sport athletes determined a number of distinct differences (Figure 34). A greater percentage of winter Olympians indicated NGB funding at the national competitive phase for “equipment”, “competitions”, and “training and coaching” than did summer Olympians. This could indicate that winter NGBs primarily use a national team model to develop athletes to a greater degree than summer NGBs. These trends in percentages held true for the international competitive phase.

A further analysis of male winter Olympians revealed discrepancies between medalists and non-medalists (4 – 8<sup>th</sup> and 9 – 25<sup>th</sup> finishes). See Figure 33. As would be expected, male winter medalists reported the highest percentage of NGB funding for training and coaching. Of special interest however, the Olympians who placed between 9<sup>th</sup> and 25<sup>th</sup> represented a group in similar size to the medalists. This group of Olympians may have received funding by placing higher in World Championships and World Cup competitions, but it is not reflected in these Olympic results.

**Conclusions:** The largest percentage of Olympians reported NGB funding at the national and international competitive phases. Male winter Olympians who placed 9<sup>th</sup> – 25<sup>th</sup> represented a group as large as male winter medalists.



**Figure 33.** Percentage of winter and summer Olympians reporting NGB funding.



**Figure 34.** Percentage of male winter Olympians reporting NGB funding for training and coaching at the national and international competitive phases.

**Question 21: Did you receive financial support from the USOC for any of the following?** Training and Coaching; Equipment; Competitions; Supplemental Stipend.

**Rationale:** The USOC awards grant money to top athletes designated by the NGBs as well as athletes who finish in the top eight at designated international competitions such as World Championships. We wanted to determine how many Olympians and medalists had received support from the USOC.

Predictably, the highest percentage of Olympians who indicated they received USOC funding occurred at the national and international competitive phases (Table 8). USOC grants awarded between 1984 and 1998, were given mainly without a declaration of where they would be spent. The reporting here is a reflection of where the athlete used his/her funding from the USOC.

A greater percentage of Olympians reported spending their funding in the categories of competitions and supplemental stipend than in training and coaching or equipment. More male Olympians reported funding for training and coaching than did females. Conversely, more female Olympians listed funding in the areas of competitions and equipment (international phase only) than did males.

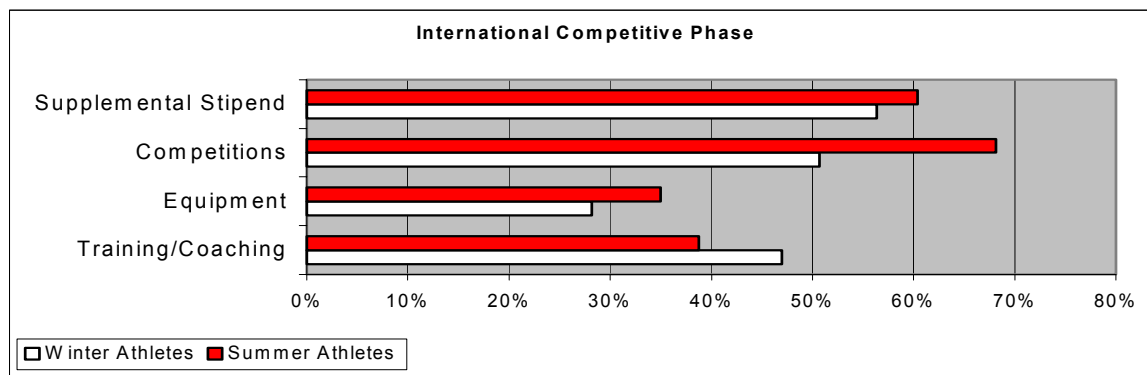
**Table 8.** Percentage of Olympians reporting financial support from USOC across all competitive phases.

Funding Category		Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
Training/Coaching	Male	0.5%	2.8%	22.1%	46.9%
	Female	0.8%	1.8%	15.2%	38.8%
Equipment	Male	0.0%	0.5%	14.1%	28.2%
	Female	0.7%	1.2%	13.4%	35.0%
Competitions	Male	0.0%	0.5%	16.9%	50.7%
	Female	3.8%	7.6%	35.6%	68.2%
Supplemental Stipend	Male	0.5%	0.5%	20.2%	56.3%
	Female	0.5%	0.7%	18.2%	60.4%

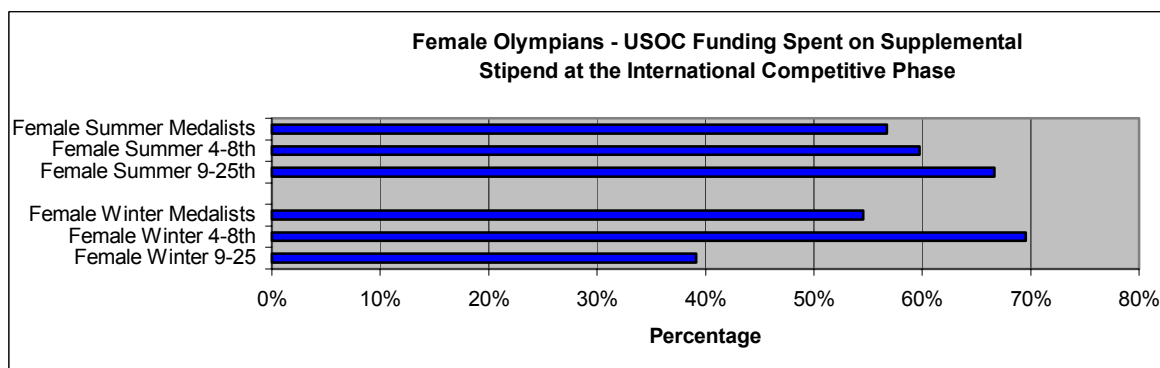
A further analysis between winter and summer Olympians revealed differences among Olympians at the international competitive phase (Figure 35). A greater percentage of summer Olympians indicated funding for supplemental stipend, competitions, and equipment. More winter Olympians reported financial support in the area of training and coaching.

In the specific area of supplemental stipend, female Olympic medalists (winter and summer athletes) had similar percentages that reported USOC funding at the international competitive phase (Figure 36). The largest percentage of Olympians that indicated support with supplemental stipends was the non-medaling Olympians, specifically those that placed 4<sup>th</sup> – 8<sup>th</sup> in the winter Olympics and 4<sup>th</sup> – 25<sup>th</sup> in the summer Olympics. This trend of a greater percentage of non-medaling Olympians indicating financial support also held true for male Olympians (Figure 37). Male winter athletes who placed 9<sup>th</sup> – 25<sup>th</sup> and male summer athletes who placed 4<sup>th</sup> – 25<sup>th</sup> had a greater percentage that reported funding from the USOC than did winter or summer medalists. These results indicate that a larger percentage of non-medaling Olympians received financial support from the USOC than did medalists.

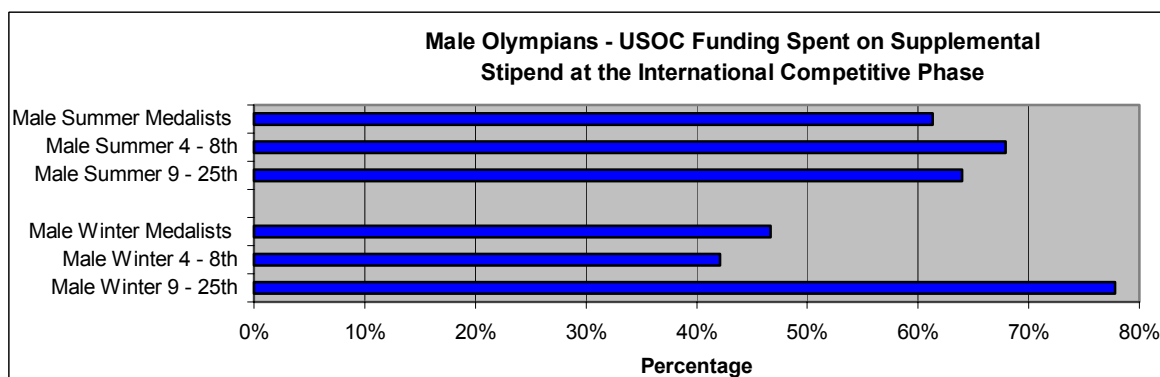
**Conclusions:** At the international competitive phase, 58.9 percent of Olympians reported spending their funding in the areas of competitions and supplemental stipend. The largest percentage of Olympians that indicated support with supplemental stipends was the non-medaling Olympians, specifically those that placed 4<sup>th</sup> – 25<sup>th</sup>. The competitive histories of the non-medalists at World Championships and World Cup competitions are unknown. They may have placed higher in those competitions than the Olympic results shown here.



**Figure 35.** Percentage of Olympians reporting USOC funding awarded at the international competitive phase.



**Figure 36.** Percentage of female Olympians reporting USOC funding spent on supplemental stipend at the international competitive phase.



**Figure 37.** Percentage of male Olympians reporting USOC funding spent on supplemental stipend at the international competitive phase.

**Question 22: Did you receive financial support from sponsors for any of the following?** Training and Coaching; Equipment; Competitions; Supplemental Stipend.

**Rationale:** It is commonly thought that most Olympians receive sponsorships. We sought to determine if this was true. Additionally, we wanted to find out where sponsorship resources were being applied.

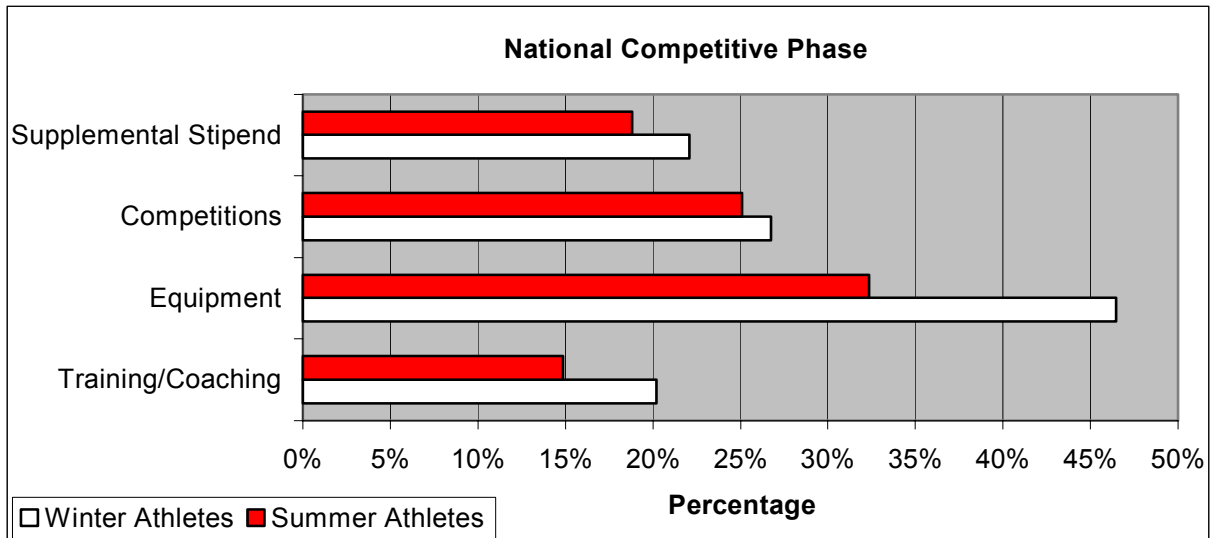
Less than half of the Olympian respondents reported financial support from sponsors. The largest percentage of Olympians who received support from a sponsor occurred at the national and international competitive phases. The average percentage of Olympians reporting funding from sponsors at the national competitive phase was 24.3 percent and at the international competitive phase, 37.3 percent. See Table 9. At the international competitive phase, the largest percentage of male and female Olympians received support for equipment, followed by supplemental stipend, competitions, and finally training and coaching. Similar percentages of male and female Olympians indicated support at all categories.

**Table 9.** Percentage of Olympians reporting financial support from sponsors across all competitive phases.

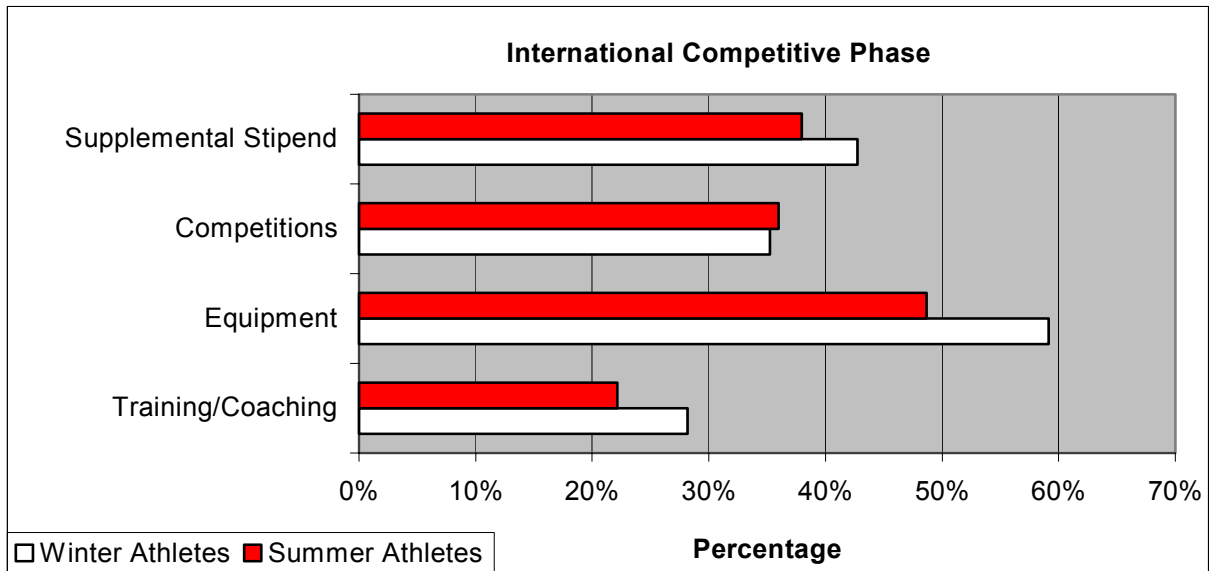
Funding Category		Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
Training/Coaching	Male	3.4%	6.1%	16.8%	24.7%
	Female	2.9%	5.0%	15.5%	22.3%
Equipment	Male	8.2%	13.8%	36.5%	52.2%
	Female	6.7%	13.8%	35.5%	50.4%
Competitions	Male	5.0%	8.8%	27.5%	37.7%
	Female	3.2%	6.5%	22.9%	33.1%
Supplemental Stipend	Male	1.9%	4.0%	19.5%	40.7%
	Female	1.8%	2.9%	19.9%	37.2%

Figures 38 and 39 show the percentage of winter and summer Olympians who indicated they received financial support from sponsors at the national and international competitive phases, respectively. At nearly all categories across both competitive phases, a greater percentage of winter Olympians reported funding from sponsors than did summer Olympians. Summer Olympians demonstrated a larger percentage in competitions at the international competitive phase.

**Conclusions:** Less than half of the Olympian respondents reported financial support from sponsors. The average percentage of Olympians reporting funding from sponsors at the national competitive phase was 24.3 percent and at the international competitive phase, 37.3 percent. A greater percentage of Winter Olympians reported funding from sponsors than did summer Olympians. This may reflect different equipment needs of winter and summer Olympians.



**Figure 38.** Percentage of Olympians who reported financial support from sponsors at the national competitive phase.



**Figure 39.** Percentage of Olympians who reported financial support from sponsors at the international competitive phase.

**Question 23: What percentage of your total athletic needs was funded by external sources (NGB, USOC, or Sponsors)?**

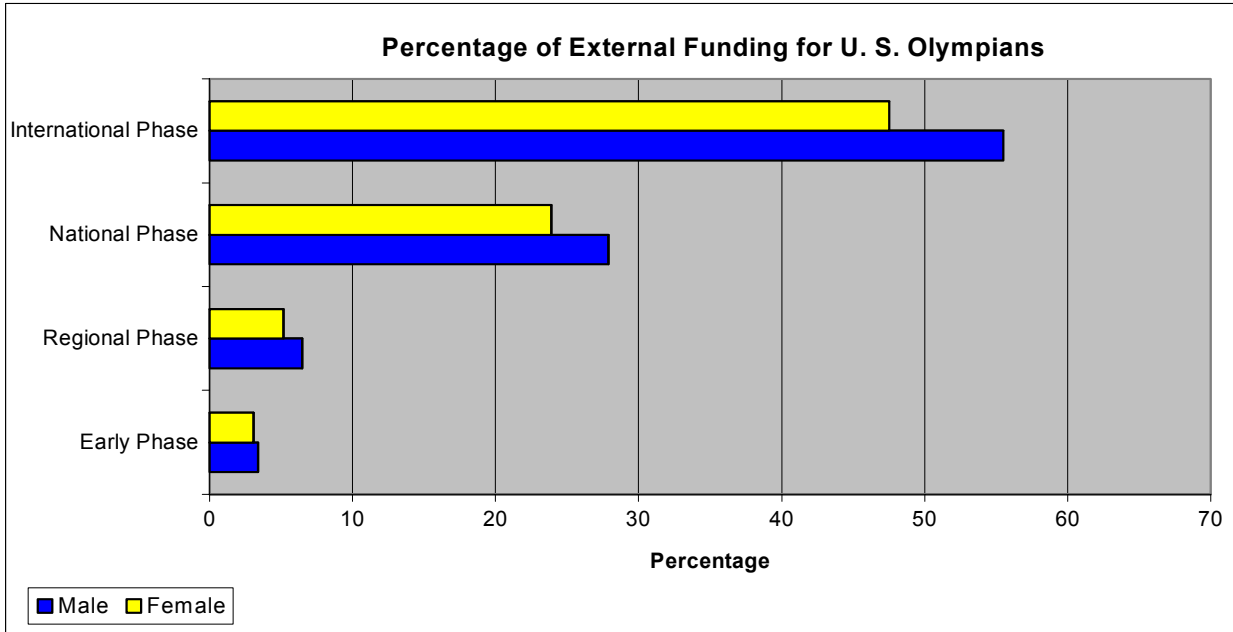
**Rationale:** In total, we wanted to determine the overall percentage of outside support Olympians received.

As Olympians moved from the early to the international competitive phase, a greater percentage of funding came from external sources. This ranged from three percent at the earliest competitions to nearly 50 percent at the international competitive phase (Figure 40). Male Olympians reported a larger percentage coming from external sources at all competitive phases. At the national competitive phase, males reported 27.9 percent originating from external funding and females 23.9 percent. A greater disparity occurred at the international competitive phase, males citing 55.5 percent coming from outside funding sources and females 47.5 percent.

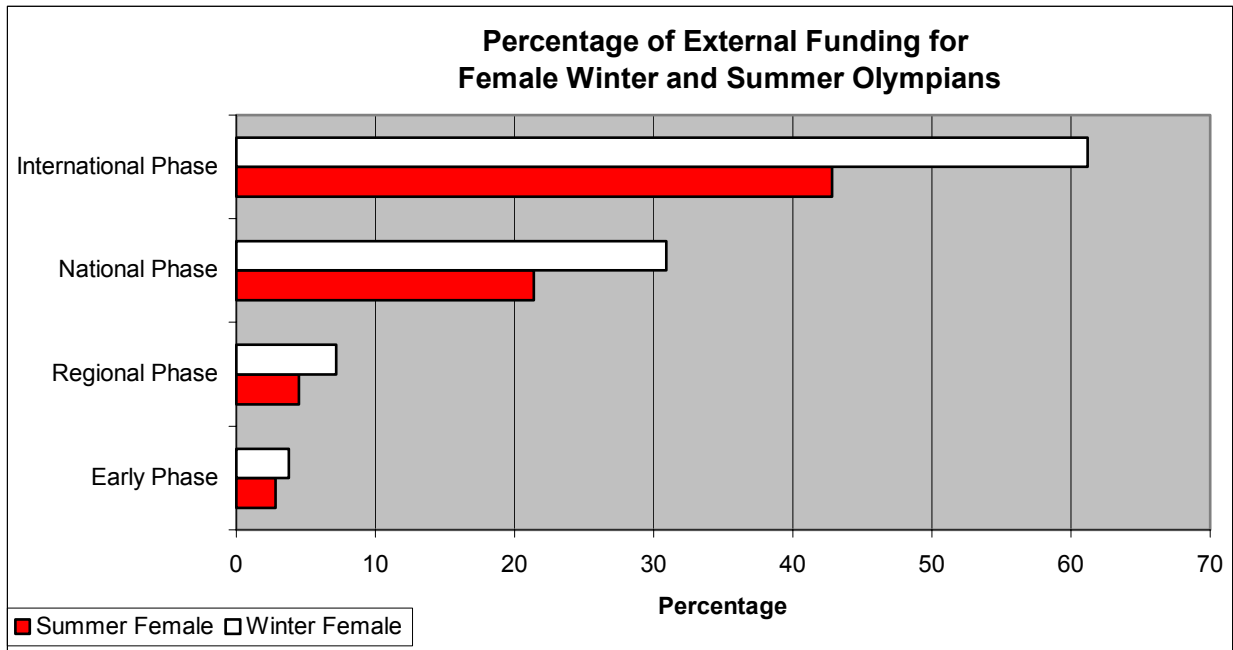
Figure 41 illustrates the percentage of external funding in female winter and summer Olympians. At all competitive phases, female winter Olympians listed a greater percent of external funding than did female summer Olympians. The differences between the two groups became larger at the highest competitive levels. Female winter Olympians reported 30.9 percent of funding originating from external sources at the national competitive phase versus 21.4 percent for female summer Olympians. At the international competitive phase, female winter Olympians reported 61.2 percent and female summer Olympians 42.8 percent of financial support coming from external sources. These data possibly reflect greater sponsor support for female winter Olympians.

**Conclusions:** A greater percentage of funding came from external funding as Olympians moved from the early to the international competitive phase. This ranged from three percent at the earliest competitions to nearly 50 percent at the international competitive phase. Female winter Olympians listed a greater percent of external funding than did female summer Olympians at all competitive phases. At the international competitive phase, female winter Olympians reported 61.2 percent and female summer Olympians 42.8 percent of financial support coming from external sources. These results suggest possible differences that are associated with the costs of equipment, travel, and programs between winter and summer Olympic sports.





**Figure 40.** Percentage of external funding for U. S. Olympians.



**Figure 41.** Percentage of external funding for female Olympians, summer vs. winter.

**Question 24: Please rate the impact of the following factors on your long-term performance progression (1 is the least important to 5 the most important). Factors include:**

Dedication/Commitment; Mental Focus; Competitive success; Competitive failure; Financial incentive; Financial reward; Coaching; Training Partners; Training Environment; Education about Training; Work Commitments; Medical Support; Family; NGB Support; Other.

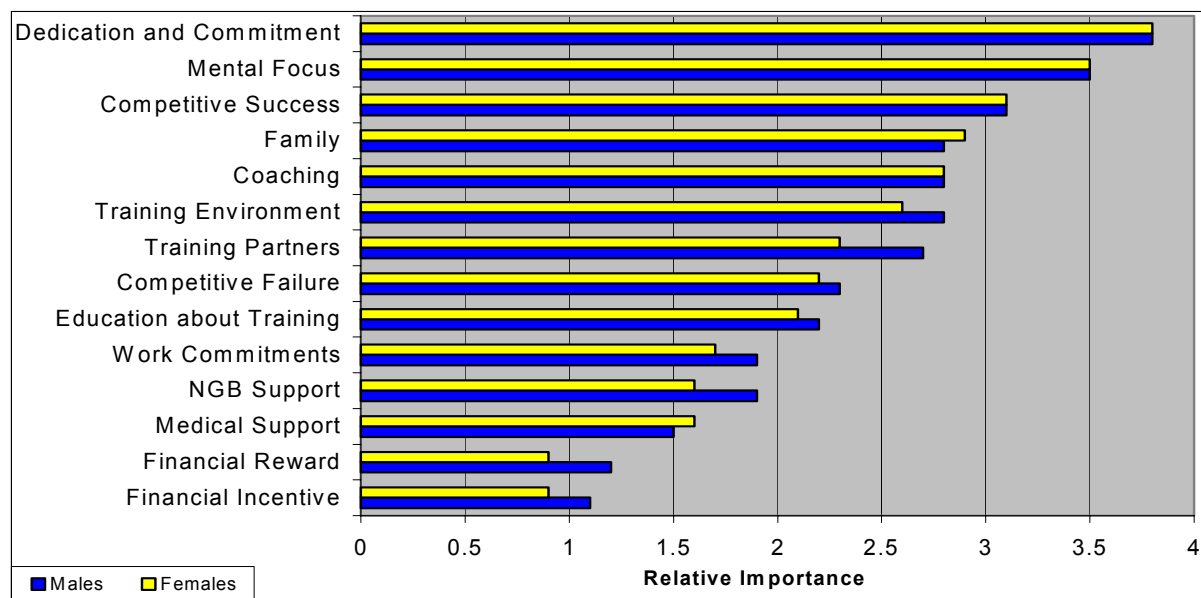
**Rationale:** The long term commitment and desire to pursue excellence in sport requires a great deal of sacrifice on the part of the athlete. Thus, in an effort to find out what athletes thought were the most important factors in their long-term success, a wide range of factors was provided.

Olympians ranked “dedication and commitment” as the number one factor for long-term performance progression (Figure 42). “Mental focus” and “competitive success” were ranked second and third, respectively. Essentially, this suggests that the most important factors were coming from the individual athlete. Both male and female Olympians ranked the first three factors identically. A second set of factors, which focused on supportive individuals and groups included “family”, “coach”, and “training environment”, ranked in that order. A third set of factors included “training partners”, “competitive failure”, and “education about training”. Male Olympians ranked “training environment” and “training partners” more often than female Olympians. Interestingly, “financial incentive and reward” were ranked the least important for long-term performance progression. Similar to previous findings (Figures 6 and 7 “motivational factors”), males also thought that the financial incentives were more important than did females.

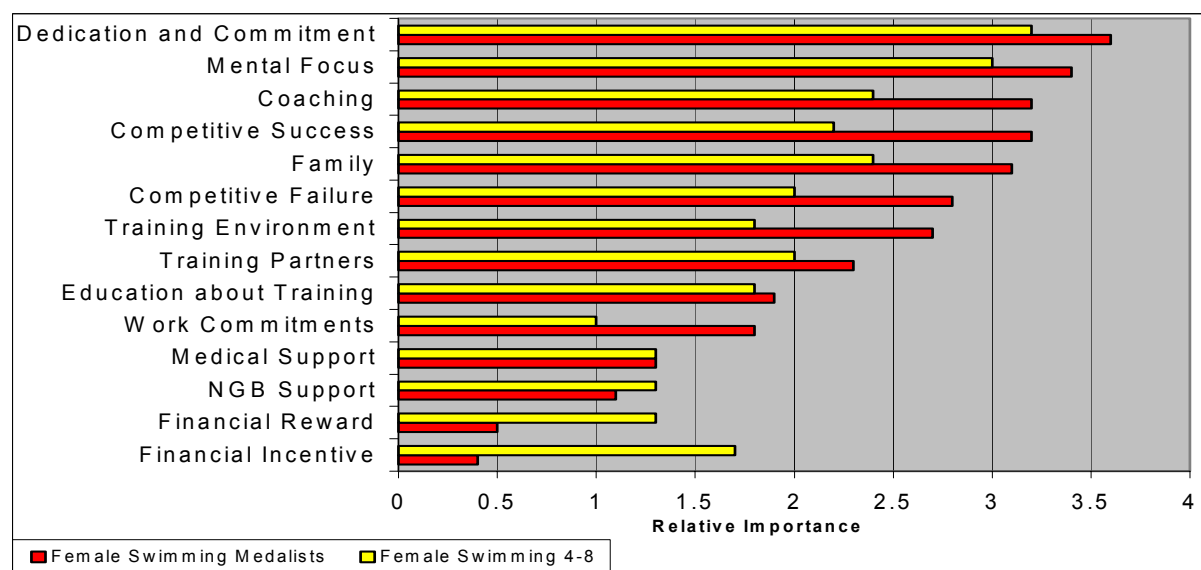
*Throughout this report, we have not presented data from an individual sport. The following information on female Olympic swimmers is shown as an example of the significant information that lies within these data.*

What distinguished the long-term performance progressions of medalists and non-medalists? Female swimmers were divided into two groups, medalists and non-medallists (4<sup>th</sup> – 8<sup>th</sup> place), in order to determine what they thought was important in their long-term performance progression (Figure 43). The general trend was similar for these two groups of females; however, the ranking of relative importance was quite different between the two. The most important factors for both groups were “dedication and commitment” followed by “mental focus”. Medalists ranked these factors higher than non-medalists. The next set of factors included “coaching”, “competitive success”, “family”, “competitive failure”, “training environment”, and “training partners”. Female medalists in swimming ranked the second set of factors an average of 0.8 higher in relative importance than did non-medaling female swimmers. These results demonstrate that female medalists in swimming placed more importance on social interaction, support, and the training environment than non-medalists. In the area of monetary gain, non-medaling female swimmers ranked “financial reward” and “financial incentive” much higher in importance than did female medalists in swimming. In addition, “coaching” was ranked third in female swimmers 1<sup>st</sup> – 8<sup>th</sup> place, but in all female Olympians it was ranked fifth (Figure 42). Both “competitive success” and “competitive failure” received a higher ranking among the top eight female swimmers than among overall female Olympians. These differences, observed between medalists and non-medalists suggests that changes could be brought about to assist the long-term progression of performance in potentially, non-medaling Olympians (4<sup>th</sup> place and lower).

**Conclusions:** Dedication and commitment ranked as the number one factor for the long-term progression of performance in Olympians. The most important factors were coming from the individual athlete followed by a second set of factors, which focused on supportive individuals and groups. Financial incentive and reward were ranked the least important for long-term performance progression in all Olympians. Female medalists in swimming placed more importance on social interaction, support, and the training environment than non-medalists. These results suggest that in U.S. Olympians a complex set of factors contribute to the long-term progression of performance.



**Figure 42.** Factors for long-term performance progression in male and female Olympians.



**Figure 43.** Factors for long-term performance progression in female Olympic swimmers by finishing place.

**Question 25: Please rate the factors (1 the lowest to 5 the highest) that you feel contributed most to your peers discontinuing participation in your sport. Factors include: Injury; Time Pressure; Lack of Peer Support; Parental Pressure; Financial Pressures; Conflict with other Life Pursuits; Conflict with Work; Lack of Fun; Family Issues; Age; Overly Competitive Focus of Program; Failure to Improve or Competitive Plateau; Other.**

**Rationale:** Many youth sport programs in the United States have high dropout rates (Ewing and Seefeldt, 1990) (Tuffey, 1997). In addition, many potential Olympians are dropping out before achieving international excellence. In order to assist NGBs and the USOC to better manage dropout within sport, Olympians were asked why their peers dropped out.

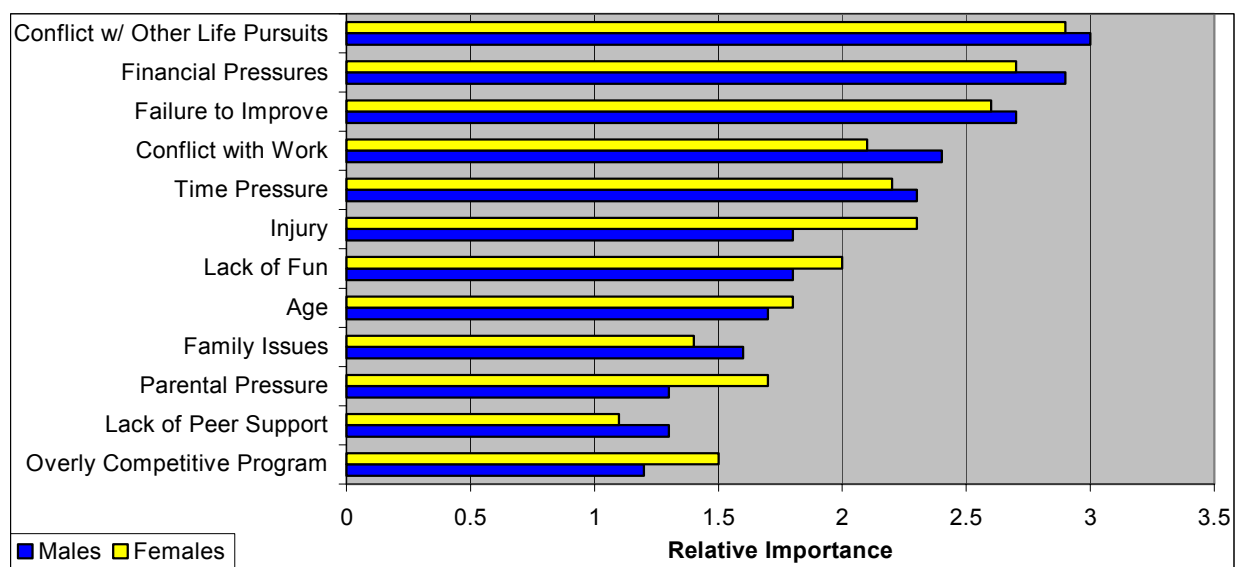
Olympians cited “conflict with other life pursuits” as the most common reason why their peers discontinued sport participation (Figure 44). “Financial pressures” and “failure to improve” followed closely. Male Olympians ranked these three factors slightly higher than did female Olympians. Additional factors included “conflict with work” and “time pressure”. The factors least likely for dropping out were an “overly competitive program” for males and “lack of peer support” for females. The largest differences between males and females were in the areas of “injury”, “parental pressure”, and “overly competitive program” all of which were reported higher by female Olympians than male Olympians. The differences observed in sport dropout between male and female Olympian peers suggest some gender-specific issues. Possible causes of dropout include misdirected attitudes and philosophy of parents, coaches, and programs. In addition, Olympians listed “financial incentive” and “financial reward” as the least important factors for long-term progression, but ranked “financial pressures” as the second most important factor for why their peers discontinued sport participation. While this seems contradictory, it shows that most Olympians aren’t looking to get rich, but would like to have some sense of financial security during their time as an athlete.

*Olympians cited conflict with other life pursuits, financial pressures, and failure to improve as the reasons why their peers discontinued sport participation.*

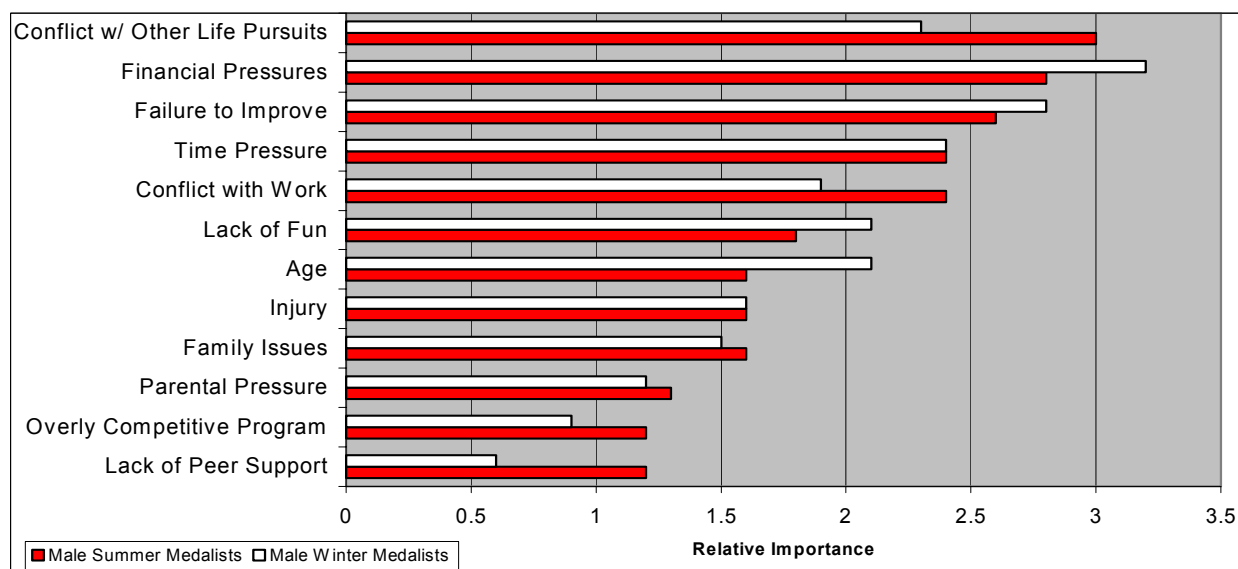
To better understand why athletes dropped out, summer and winter male medalists were further analyzed (Figure 45). Summer male medalists ranked “conflict with other life pursuits” as the most common reason (similar to all male Olympians) and “financial pressures” as the second most common reason. Winter male medalists ranked “financial pressures” as the number one reason and “failure to improve” as the number two reason. Both, “lack of fun” and “age” were ranked higher in relative importance by winter male medalists than summer male medalists.

**Conclusions:** Olympians listed conflict with other life pursuits, financial pressures, and failure to improve as the top three reasons as to why their peers dropped out of sport. In the previous question, Olympians listed financial incentive and financial reward as the least important factors for long-term progression, but ranked financial pressures as the second most important factor for why their peers discontinued sport participation. The apparent dichotomy in the responses to the two financial questions could be explained that while athletes aren’t motivated by money, a lack

of money can be a detriment to continuing in a sport. Future analysis should include an evaluation of individual sports by gender to gain valuable information for NGB coaches and staff to prevent sport dropout.



**Figure 44.** Factors thought to be the cause of dropout in the peers of Olympians.



**Figure 45.** Factors thought to be the cause of dropout in the peers of male Olympic medalists summer vs. winter.

**Question 26: Are you still active in your sport?** Recreational participant; Competitor; Coach; Administrator.

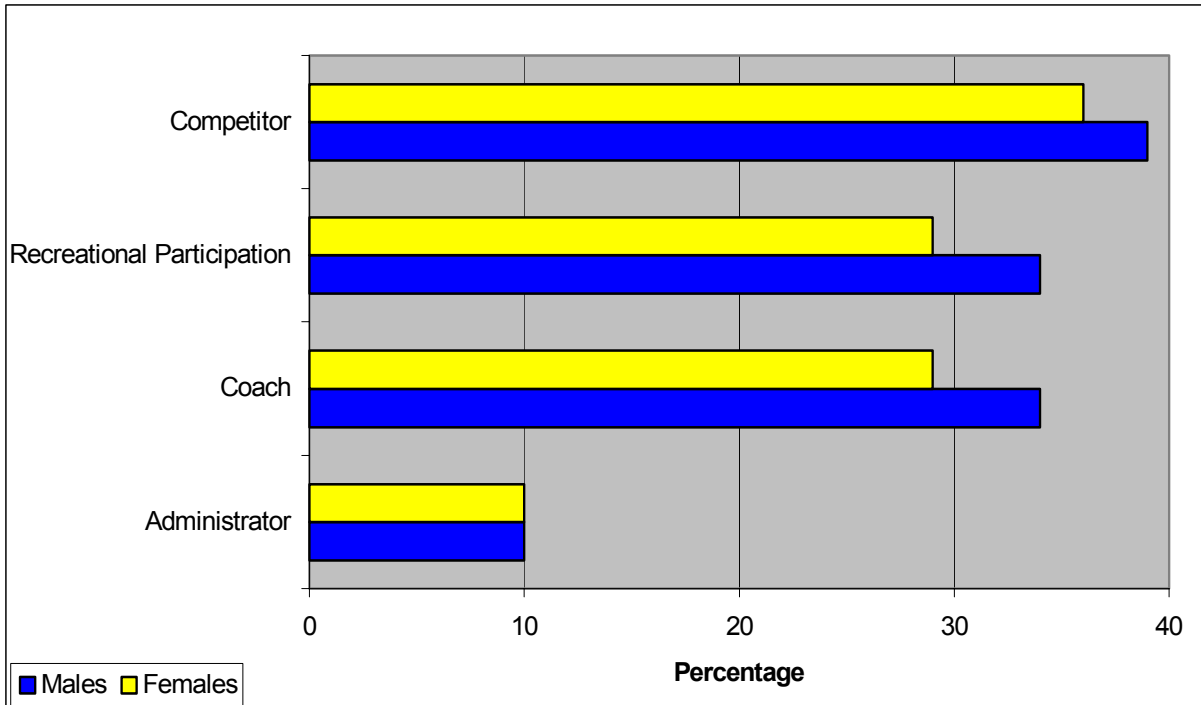
**Rationale:** We wanted to determine the level Olympians remained active in their sport.

The largest percentage of Olympians were actively competing at the time this survey was Conducted - 39% and 36% for males and females, respectively (Figure 46). “Coaching” and “recreational participation” had similar results for both males and females at 34% and 29% percent, respectively. The least common activity was as an “administrator” - 10% for both male and female. These results suggest that Olympians continue to participate in their sport in some form; however, they are least likely to continue as an administrator.

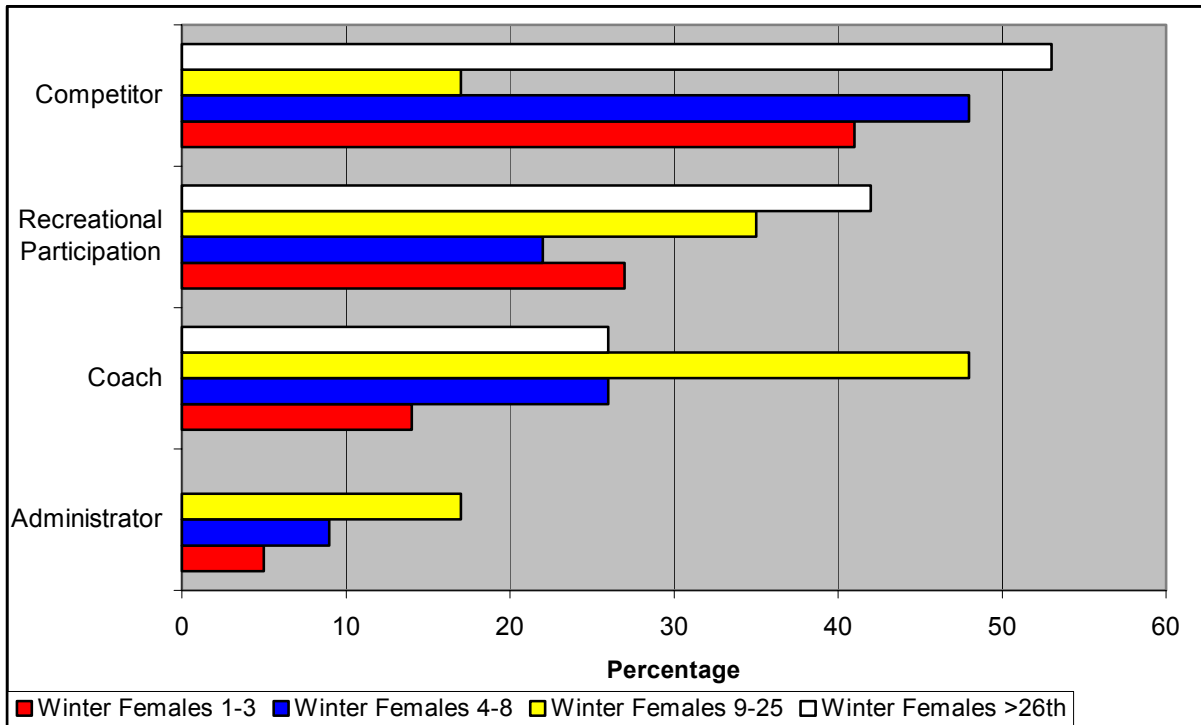
A closer examination of female winter Olympians revealed distinct differences by finishing place (Figure 47). An interesting finding from this analysis was that the female Olympians who were more likely to become coaches (53 percent) or administrators (17 percent) were those athletes that placed between 9<sup>th</sup> and 25<sup>th</sup> place. Athletes that finished between 4<sup>th</sup> and 8<sup>th</sup> place were also more prone to continue in a staff role as a coach or administrator than were medalists. Medalists are more likely to continue as competitors or recreational participants than as coaches or administrators. Generally, a lower finish position (4<sup>th</sup> – 25<sup>th</sup> place) demonstrated greater percentages across all categories.

*Medalists are more likely to continue as competitors or recreational participants than as coaches or administrators. Generally, a lower finish position (4<sup>th</sup> – 25<sup>th</sup> place) demonstrated a greater percentage of participation across all categories.*

**Conclusions:** Nearly one-third of Olympians were actively competing at the time this questionnaire was completed. Coaching and recreational participation were ranked second for male and female Olympians. Generally, a lower finish position (4<sup>th</sup> – 25<sup>th</sup> place) demonstrated greater percentages across all categories.



**Figure 46.** Recent activity of U. S. Olympians.



**Figure 47.** Recent activity of female winter Olympians by finishing place.





## V. GENERAL DISCUSSION

### Major Findings

Benjamin Bloom, researcher in expert performance, has succinctly captured the essence of long-term talent development with this statement in his book “Developing Talent in Young People” (1985), “...no matter what the initial characteristics of the individuals, unless there is a long and intensive process of encouragement, nurturance, education, training, the individuals will not attain extreme levels of capability in the particular fields.” U.S. Olympians reported a similar process. Success at the Olympic level is the culmination of a complex, long-term process involving not only the athlete, but also a support cast of individuals and organizations. The major findings presented here reflect the main categories of the questionnaire.

#### Olympic Dream

Questionnaire responses indicated that U. S. athletes first dreamed of becoming an Olympian at the time they achieved local competitive success. One of the strongest trends was the short period of time, 1.7 years, between the decision to become an Olympian and the belief that it was possible. On the average, 8.5 years transpired from an introduction to a sport to the belief it was possible to become an Olympian. **For many Olympians, the development of the Olympic dream occurred in programs at the local and community level, thus emphasizing the importance of these programs to provide opportunities in Olympic sport.**

#### Motives for Participation and the Pursuit of Excellence in Sport

Several themes of motivation were evident throughout the careers of Olympians. Initially, these athletes were directed to a particular sport because of a love of sport, love of activity, and early success in the sport. Parents and coaches also had moderate influence in directing these Olympians as children to sport. Once they were introduced to a sport, the challenge and love of competition, fun, and a desire to be successful were the dominant factors that motivated these Olympians to continue to participate in their sport. As the level of competition increased, intrinsic factors such as the challenge and love of competition, a desire to be successful, the need for a competitive outlet, and fun remained the key motives for Olympians to pursue excellence in their sport. In addition, female winter Olympians appeared to place more importance on intrinsic rewards over female summer Olympians who valued extrinsic rewards to a greater degree. **These results suggest that youth sport programs that emphasize fun, enjoyment, and love of sport provide a springboard for athletes to continue their development upward.**

### **Regular Sport Participation and Frequency of Physical Activity**

Overall, it appears that these U. S. Olympians were very active in a variety of activities as children and adolescents. In the age groups, <10 years old and 10-14 years old there was a range of 2.6-3.5 sports for all respondents. In elementary and secondary school physical education, Olympians reported an average of 3.3-3.4 days per week of activity. In addition, respondents reported an average of 3.1 days per week of activity in other scholastic sports and an average of 2.5 days per week in club or community based programs. In all age groups, males reported more sport participation than females. This may represent the lack of sport opportunities that were available to young women from 1960 – 1985. In all Olympians the number of sports declined with age. This decline in the number of sports may indicate that athletes were specializing in one sport. **These results suggest that sport-specific training was sought in the scholastic, club, or community-based sport programs. The frequency of physical activity of these Olympians suggests that school-based physical education programs were an integral part of their development providing general fitness and skill development.**

### **Type of Program – Initial Participation and Commitment to Pursue Excellence in Sport**

The top four programs that introduced Olympians to their sports were: unstructured activity with friends, family activity, private or commercial club, and community based programs. Interestingly, NGB-sponsored programs ranked the lowest in introducing Olympians to sport. Of equal interest, physical education programs did not introduce most Olympians to their sports. For all respondents, the private or commercial club was the most common type of program in which Olympians made the decision to pursue excellence; collegiate sport programs were second in popularity. U. S. Olympic medalists came from private or commercial clubs followed by collegiate programs, high school athletic programs, and finally NGB-sponsored programs. Programs that were noticeably absent from the backgrounds of male winter medalists were high school and collegiate sport programs. **The results of this questionnaire suggest that the development of most Olympians is based primarily upon the private/commercial club and community-based programs. It would appear that the future of Olympic sport organization within the United States would favor a highly developed club system.**

### **Age at Developmental Milestones**

As a whole, U. S. Olympians began their sport participation at the average age of 12.0 and 11.5 years old for males and females, respectively. On the average, female respondents reached each developmental milestone one year earlier than male respondents. Most Olympians reported a 12-13 year period of talent development from their sport introduction to making an Olympic team. In addition, Olympic medalists were younger in age (1.3-3.6 years) during the first five stages of development than non-medalists suggesting that medalists were receiving motor skill development and training at an earlier age. This finding suggests that physical activity and motor skill development during childhood and early adolescence may be an important part of an Olympian's overall development. **These results suggest that an average of 12-13 years of training and development is needed in order to develop Olympic talent in most American athletes.**

### **Monthly and Yearly Training at Developmental Milestones**

Most Olympians demonstrated a progressive increase in the number of months of training per year over a 12-year period. There was a linear progression in training duration beginning with an average of 6.0 and 6.3 months at sport introduction to 9.1 and 9.7 months when first making the junior national team to 11.1 and 11.3 months of training upon making an Olympic team for males and females, respectively. Male and female respondents trained a similar number of hours during the developmental period (range: 250-1130 yearly hours). Males generally trained a greater number of yearly hours than females at each milestone; however this difference (range: 3-49 hours) was very small throughout their athletic careers. There was one exception: females trained a greater number of hours (682 hours) than males (584 hours) during the stage when they first made the junior national team. At this stage, male and female respondents reported that at 16.5 and 15.3 years old they were training 9.1 and 9.7 months per year, respectively. To make an Olympic team required an average of another eight years of training while progressively increasing the number of months and yearly hours of training. **Results suggest that a progressive increase in training load over a long period is needed in order to reach the top levels of Olympic sport.**

### **The Importance of Coaching at Various Stages of Development**

Female and male Olympian respondents rated the importance of coaching highest during the national and international competitive phases of development. For women and men, this occurred at the average age ranges of 17.4-19.5 and 18.3-20.8 years, respectively. Nearly equal in importance was the coaching that occurred during the skill acquisition phase. **These data strongly suggest that Olympians regard coaching as an important factor over the course of their development. Placing successful coaches at the highest ranked development phases may yield a better overall development program for NGBs.**

### **Important Qualities of a Coach and Methods for Selection**

Olympian respondents ranked the ability to teach and the ability to motivate or encourage as the two most important qualities in their coach. The next three qualities were all ranked similarly and included training knowledge, skill competence, and strategic knowledge of sport. Interestingly, the qualities reported as least important were assistance with goal setting, management and organizational skills, and assistance with balancing the lives of athletes. Further, medalists sought the many years of experience and strategic knowledge from a coach regardless of personality. The most common factor for a specific coach involvement for Olympians was the coach's assignment to the national team. Previous coaching record and recruitment by the coach were the next higher rankings. The least common methods for coach selection were recommendations by the previous coach or recommendations from peers. **These data suggest, along with the data from the other coaching questions, that national coaches who possess the qualities that Olympians value such as an ability to teach, an ability to motivate, training knowledge, and strategic knowledge of a sport may yield better performance results.**

### **Effect of Financial Factors during Development**

As Olympians progressed up the developmental track they reported more limitations from financial factors. Respondents rated the effect of financial factors on a scale of 1 – 5 with one representing a positive factor and five a major limitation. They reported average scores for financial factors between 3.2-3.4 through all developmental phases. Financial factors played the most negative role during the national competitive phase. Within the winter Olympian group, financial factors played the most negative role during the regional and national competitive phases (3.4). In the summer Olympian group, the national and international competitive phases (3.3) had the most negative scores for financial factors. **These results suggest possible differences that are associated with the costs of equipment, travel, and programs between winter and summer Olympic sports.**

### **Financial Support from NGBs**

Progressively more Olympians reported receiving NGB funding as their competitive level increased, with funding levels peaking at the international competitive phase. Primarily, NGBs are placing resources at the national and international level. The area of funding receiving the largest percentage was competitions.

An analysis of male winter Olympians revealed discrepancies between medalists and non-medalists (4 – 8<sup>th</sup> and 9 – 25<sup>th</sup> finishes). As would be expected, male winter medalists had the highest reporting percentage of NGB funding for training and coaching. At the international competitive phase of development, 75 percent of male winter respondents who placed between 9<sup>th</sup> and 25<sup>th</sup> reported that they received NGB funding for training and coaching. Similarly, 80 percent of male winter medalists reported that received NGB funding in the same area. **These results suggest that a large percentage of NGB resources for training and coaching were placed on athletes who placed between 9<sup>th</sup> and 25<sup>th</sup>.** One must also consider factors such as this group of respondents, 9<sup>th</sup> – 25<sup>th</sup> place, may have placed higher in World Championships and World Cup competitions prior to the Olympic results listed here.

### **Financial Support from the USOC**

Predictably, the highest percentage of Olympian who indicated they received USOC funding occurred at the national and international competitive phases. **Similar to NGB funding, results regarding USOC funding indicate that a larger percentage of non-medalists received financial support from the USOC than did medalists.**

### **Financial Support from Sponsors**

The largest percentage of Olympians who received financial support from a sponsor occurred at the national (range: 15.5-36.5 percent) and international competitive phases (range: 22.3-52.2 percent). At the international competitive phase, the largest percentage of male and female respondents received support for equipment, followed by supplemental stipend, competitions, and finally training and coaching. Male and female respondents indicated similar support at all categories. At nearly all categories across both national and international competitive phases a greater percentage of winter Olympian respondents reported funding from

sponsors than did summer Olympian respondents. Summer Olympian respondents demonstrated a larger percentage of sponsors funding for competitions at the international competitive phase.

### **Percentage of External Funding for Sport**

As Olympians moved from the early to the international competitive phase, a greater percentage of funding came from all sources (external sources) other than the athlete or his/her family. This external funding ranged from three percent at the earliest competitions to nearly 50 percent at the international competitive phase. Male Olympian respondents reported a larger percentage coming from external sources at all competitive phases. At the national competitive phase, males reported 27.9 percent originating from external funding and females 23.9 percent. A greater disparity occurred at the international competitive phase, males citing 55.5 percent coming from outside funding source and females 47.5 percent.

Female winter Olympian respondents reported 30.9 percent of funding originating from external sources at the national competitive phase versus 21.4 percent for female summer Olympian respondents. At the international competitive phase, female winter Olympians reported 61.2 percent and female summer Olympians 42.8 percent of financial support coming from external sources. These data possibly reflect greater sponsor support for female winter Olympians.

### **Factors for Long-Term Performance Progression**

Olympian respondents ranked dedication and commitment as the number one factor for long-term performance progression. Mental focus and competitive success were ranked second and third, respectively. These results suggest that the most important factors were coming from the individual athlete. The next set of factors, ranked fourth through sixth focused on supportive individuals and groups and included family, coach, and training environment. The last set of factors, ranked seventh through ninth, included training partners, competitive failure, and education about training.

*Throughout this report, we have not presented data from an individual sport. The following information on female Olympic swimmers is shown as an example of the significant information that lies within these data.* Female medalists in swimming placed more importance on social interaction, support, and the environment of training than female swimmers who finished in 4 – 8<sup>th</sup> place. Both competitive success and competitive failure received a higher ranking among the top eight female finishers in swimming than among the data set of female Olympians as a whole. **These results suggest that key individual factors and several layers of support are important for the long-term progression of performance in Olympians.**

### **Factors that Contributed to Dropout in Sport**

Olympian respondents cited conflict with other life pursuits as the most common reason why their peers discontinued participation in sport. Financial pressures and failure to improve followed closely. Male Olympians ranked these three factors, among their peers, slightly higher than did female Olympians. The factors least likely for peers dropping out were an overly competitive program for males and lack of peer support for females. Possible causes of dropout include misdirected attitudes and philosophy of parents, coaches, and programs. In addition,

respondents listed financial incentive and financial reward as the least important factors for long-term progression, but ranked financial pressures as the second most important factor for why their peers discontinued sport participation. **The apparent dichotomy in the responses to the two financial questions suggests that while athletes aren't motivated by money, a lack of money can be a detriment to continuing in a sport.**

## Recommendations

Many complex factors account for an athlete's performance at the international level. There may never be a perfect system to train an athlete or ensure the best athlete will in fact even make the Olympic Team. The U. S. can increase its potential however, if collaboration exists between all entities responsible for sports. The following are some specific recommendations based on the results shared by Olympian respondents.

### Sport Program Collaboration

**The USOC should take a leadership role in promoting relationships between community-based organizations, private sports clubs, scholastic and collegiate athletic programs and NGBs to ensure a seamless system of athlete development in Olympic sports.** Credit should be given to each entity responsible for an Olympian's success (Type of Program – Initial Participation and Commitment to Pursue Excellence in Sport; Pages 30-33).

### Talent Identification Summit

Information from the Olympian Questionnaire provides a case for talent identification programs. First, Olympian respondents rated the importance of coaching at the skill acquisition phase very high, an important time of athlete development, and an important time to identify talent (The Importance of Coaching at Various Stages of Development, pages 42-43). Second, Olympians reported that NGBs spend a large percentage of their athlete funding at the national and international competitive phases. NGB funding could be effectively placed just below the national competitive phase to identify and recruit talented and motivated athletes. Third, male winter Olympians who placed from 9<sup>th</sup> – 25<sup>th</sup> represented a group in similar size to male winter medalists (Financial Support from NGBs, pages 50-51) receiving NGB. These points provide an argument that it may be cost effective for NGBs, especially those with limited resources, to implement talent identification programs to increase the probability that specific athletes will have success at the highest levels. **In order to provide NGBs a more effective way of developing talented and motivated athletes it is recommended that the USOC convene a Talent Identification Summit for NGB coaches and program directors. At this summit, the knowledge of the most successful international and domestic talent identification programs could be shared.**

### Multi-Lateral Development

**In order for potential Olympic medalists to acquire the physical training and motor skills necessary to succeed in sport, the USOC and NGB coaching programs should promote the benefits of multi-lateral development (participation in a variety of sports) during the early stages of athletic development.** (Frequency of Physical Activity and Sport Participation; Pages 28-29).

### Coaching Programs

**For coaching at all levels to be most effective, the USOC and/or NGBs should institute an "endorsement" or seal of approval program for the various coaching certification and physical education programs that meet selected criteria.** Among other important facets, listed by this study's respondents, endorsed coaching programs should highlight and promote the advantages of multi-lateral development, talent identification programs, and the qualities of coaches that U. S. Olympians found important (Regular Sport Participation, Pages 26-27). Our findings indicate that most Olympians and medalists worked with a coach because that coach was the national team coach; therefore, in order to maximize performance, national team coaches who possess the qualities valued by Olympians should be selected by the NGBs.

### **Promotion of Physical Activity in School Children**

Results from the questionnaire suggest that U. S. Olympians were regularly participating in physical education for 3.0 or more days per week at the elementary and secondary school level. In addition, they reported an average of 3.0 days per week of training in scholastic sports and an additional average of 2.5 days per week in club and community-based sport programs (Frequency of Physical Activity and Sport Participation, pages 28-29). This high level of physical activity suggests that school physical education was an integral part of an Olympian's development providing general fitness and skill development, while sport specific skills were sought in the scholastic, club, or community-based sport programs. **Due to the recent decline in physical activity of school-aged children over the last decade (CDC, Youth Risk Behavior Survey, 1991-99) it is recommended that the USOC join forces with national organizations to promote funding and interest for more physical activity in schools and grassroots programs.** Currently, the American College of Sports Medicine; the American Alliance for Physical Education, Health, Recreation, and Dance; PE 4 Life; and the Centers for Disease Control and Prevention have a coordinated national effort underway to educate the general public and U. S. legislators on the benefits of physical activity.

### **Review of Funding**

While it can be extremely hard to predict who may win a medal at the Olympics, the USOC's recent implementation of the International Results Database should help them better target funding to potential medal winners at the Olympics. **NGBs and the USOC should re-evaluate their funding criteria for athletes at the National Competitive phase since funding impact was listed as the most negative in that area (Effect of Financial Factors during Development; Pages 48-49).** In reviewing the funding issues at this phase, the NGBs may be able to retain athletes who could be potential medal winners but don't necessarily have the resources to continue training.

**Since this report focused only on Olympic performance, it may be important to consider U. S. athletes who perform well at World Championships, World Cups and other Olympic quota competitions. Resources targeting these athletes may well contribute to Olympic success.**



## Strengths and Limitations

This study had several strengths and limitations, which must be considered when interpreting the results. One of the most significant strengths of the study was the large sample size ( $n = 816$ ) of the Olympian respondents. Due to the large sample size, strong and distinct trends emerged and allowed us to generalize about non sport-specific questions.

A second strength of the study was that one-third of the respondents were Olympic medalists ( $n = 283$ ). A sample of this size allowed us to compare and contrast the development of Olympians who medalled and those who were less successful. This information can be important to NGBs and coaches who are interested in recruiting, training, and retaining the most talented athletes.

A third strength of the study was the broad scope of the questionnaire. The questionnaire had 28 general questions with up to 36 sub-categories for some questions. This added up to 285 separate pieces of information that could be answered by one respondent with categories ranging from performance, training, coaching, motives for participation, and financial factors. In addition to the large amount of information that was asked, the questionnaire documented the career span of each respondent from childhood to adult.

One of the major limitations of this study was the retrospective design. Respondents were asked to remember specific information from 20-25 years ago and this may have influenced recall.

A second limitation was the non-scientific design of the study. This prevents the use of statistical methods to clarify cause and effect relationships. The general patterns and trends of the respondents were identified; however the cause of those trends could not be determined.

A third limitation was the small number of respondents per sport. While the return rate of all Olympians was high (816), the number of respondents per sport ranged from 3 – 91. If sample sizes were greater than 30 for each sport, then the strength of the data would allow us to make generalizations about the training and development of respondents in a given sport. From this information we could generate a model of development of the most successful Olympians in each sport.

## Future Research and Reports

There is much to be learned from a general perspective; however, the real powers of these data need to be extracted in the form of an individual report for each Olympic sport. A sport-by-sport analysis would provide valuable guidance toward critical age checkpoints and required time commitments to reach international success. Unfortunately, many sports lack an adequate number of athletes who have completed the questionnaire to effectively perform a sport-by-sport breakdown (see Appendices B and C). It would be beneficial for this questionnaire to be distributed after each Olympiad in order to increase the size of the database, thus providing valid and reliable data, on which to base conclusions for each sport.

Two of the most important questions have not been analyzed. These questions asked U.S. Olympians to list five factors that contributed most to their achievement of success and list five obstacles that they had to overcome to achieve success in their sport. This information is currently being analyzed and will be put into a report in the next six months.

## VI. REFERENCES

- Bloom, B. S. 1985. Developing Talent in Young People. New York: Ballantine Books. (Out of print)
- Bompa, T. 1994. From Childhood to Champion Athlete. Veritas Publishing.
- Bompa, T. 1985. Training Theory and Methodology. Dubuque, Iowa: Kendall.
- Csikszentmihalyi, M. 1993. Talented Teenagers: The roots of success and failure. New York: Cambridge University Press.
- Centers for Disease Control and Prevention. Youth Risk Behavior Study 1991-99. Atlanta: U. S. Department of Health and Human Services, Public Health Service, National Center for Chronic Disease Prevention and Health Promotion.
- Ericsson, K.A., Krampe, R.T., and Tesch-Romer, C. 1993. The role of deliberate practice in the acquisition of expert performance. Psychological Review, 100(3), 363-406.
- Ewing, M. E. and Seefeldt, V. (1990). American Youth and Sport Participation. Lansing, MI: Youth Sports Institute of Michigan State University.
- Gibbons T. 2000. Summary Report: Evaluation of the Performance and Training of Athletes in the Community Olympic Development Program. United States Olympic Committee publication. Colorado Springs, CO.
- Harre, D. 1982. Sport Teaching in Schools. Berlin, GDR: Sportverlag.
- Helsen, W.F., Starkes, J.L., and Hodges, N.J. 1998. Team sports and the theory of deliberate practice. Journal of Sport and Exercise Psychology, 20, 12-34.
- Ingjer, F. 1992. Development of maximal oxygen uptake in young elite male cross-country skiers: A longitudinal study. Journal of Sports Sciences, 10: 49-63.
- Sahr, R. 2001. Political Science Department. Oregon State University, Corvallis, OR. Website: [www.orst.edu/Dept/pol\\_sci/sahr/sahrhome.html](http://www.orst.edu/Dept/pol_sci/sahr/sahrhome.html)
- Saltin, B. et al. 1995. Aerobic exercise capacity at sea level and at altitude in Kenyan boys, junior and senior runners compared with Scandinavian runners. Scandinavian Journal of Medicine and Science in Sports, 5: 209 – 221.
- Tuffey, S. 1996. Why Do Kids Quit? Structuring the training environment to prevent swimming dropout. Splash! Dec. 1997

## Appendix A. Talent Identification and Development Questionnaire

The USOC and its member NGBs are constantly attempting to improve the quality and the effectiveness of their programs in the area of talent identification and talent development. These areas are becoming increasingly important as the level of competitiveness increases and there are changing patterns by which youth are introduced to Olympic sports within the United States. The purpose of this questionnaire is to obtain a comprehensive view of the factors that have been significant in the areas of athlete identification and development for U.S. Olympians who were members of Olympic teams from 1984 through 1998. These data will be invaluable in helping a variety of organizations design and implement programs for the development of future Olympians.

1. Gender:  Male  Female

2. Sport(s)

Event(s)

3. What was the socioeconomic status of your family at the time you began participating in sport?

0-\$20,000, \$20,000-\$40,000, \$40,000-\$60,000, \$60,000-\$80,000, \$80,000 +

4. Performance: Please check all appropriate lines.

1984	1988	1992	1994	1996	1998
<input type="radio"/> Medalist	<input type="radio"/> Medalist	<input type="radio"/> Medalist	<input type="radio"/> Medalist	<input type="radio"/> Medalist	<input type="radio"/> Medalist
<input type="radio"/> 4th-8th	<input type="radio"/> 4th-8th	<input type="radio"/> 4th-8th	<input type="radio"/> 4th-8th	<input type="radio"/> 4th-8th	<input type="radio"/> 4th-8th
<input type="radio"/> Top 25	<input type="radio"/> Top 25	<input type="radio"/> Top 25	<input type="radio"/> Top 25	<input type="radio"/> Top 25	<input type="radio"/> Top 25
<input type="radio"/> Team Member	<input type="radio"/> Team Member	<input type="radio"/> Team Member	<input type="radio"/> Team Member	<input type="radio"/> Team Member	<input type="radio"/> Team Member
<input type="radio"/> Trials	<input type="radio"/> Trials	<input type="radio"/> Trials	<input type="radio"/> Trials	<input type="radio"/> Trials	<input type="radio"/> Trials
<input type="radio"/> Not on Team	<input type="radio"/> Not on Team	<input type="radio"/> Not on Team	<input type="radio"/> Not on Team	<input type="radio"/> Not on Team	<input type="radio"/> Not on Team

5. Residence: Please list the city and state where you lived at each developmental stage.

City

State

Introduced to sport

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--

Development to national level

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--

Made the Olympic team

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--

6. Please indicate the age at which you reached each of the following stages of development within your sport.

--	--

Introduced to the sport

--	--

Actually started making decisions that would contribute to actualizing that dream

--	--

Achieved local competitive success

--	--

Believed it was possible to become an Olympian

--	--

First dreamed of becoming an Olympian

7. Rate the relative importance (1 the lowest to 5 highest) of the following factors that directed you toward your sport.

<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>
<input type="checkbox"/>	Parental influence	<input type="checkbox"/>	Early success	<input type="checkbox"/>	Coaches recruitment
<input type="checkbox"/>	Encouragement from a physical education teacher	<input type="checkbox"/>	Intrinsic love of activity	<input type="checkbox"/>	Other – please list
<input type="checkbox"/>	Peer recruitment	<input type="checkbox"/>	Love of the sport	_____	
<input type="checkbox"/>	Sibling recruitment			_____	

8. Please rate the importance (1 the lowest to 5 highest) of the following factors in motivating your participation in your sport.

<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>
<input type="checkbox"/>	Dollars	<input type="checkbox"/>	Scholarship incentive	<input type="checkbox"/>	Competitive outlet
<input type="checkbox"/>	Recognition	<input type="checkbox"/>	Fun	<input type="checkbox"/>	Challenge/love of competition
<input type="checkbox"/>	Desire to be successful	<input type="checkbox"/>	Intrinsic value of the sport	<input type="checkbox"/>	Other – please list
<input type="checkbox"/>	Acceptance in a peer group	<input type="checkbox"/>	Acquisition of skill	_____	
<input type="checkbox"/>	Pleasing parents	<input type="checkbox"/>	Desire to improve fitness	_____	

9. Please rate the motivation (1 the lowest to 5 highest) for your decision to pursue excellence in your sport.

<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>	<u>Rating</u>	<u>Factor</u>
<input type="checkbox"/>	Dollars	<input type="checkbox"/>	Scholarship incentive	<input type="checkbox"/>	Competitive outlet
<input type="checkbox"/>	Recognition	<input type="checkbox"/>	Fun	<input type="checkbox"/>	Challenge/love of competition
<input type="checkbox"/>	Desire to be successful	<input type="checkbox"/>	Intrinsic value of the sport	<input type="checkbox"/>	Other – please list
<input type="checkbox"/>	Acceptance in a peer group	<input type="checkbox"/>	Acquisition of skill	_____	
<input type="checkbox"/>	Pleasing parents	<input type="checkbox"/>	Desire to improve fitness	_____	

10: Please indicate the number of sports that you regularly practiced or competed in at each age.

Age	<10 years	10-14 years	15-18 years	19-22 year	>22 years
# of Sports	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

11. Activity and sport participation. Please check the frequency of participation at each level listed.

	<i>Days of week you participated</i>			
Elementary school physical education classes	<input type="radio"/> 4-5	<input type="radio"/> 2-3	<input type="radio"/> 1-2	<input type="radio"/> 0
Secondary school physical education classes	<input type="radio"/> 4-5	<input type="radio"/> 2-3	<input type="radio"/> 1-2	<input type="radio"/> 0
Scholastic participation in <u>other</u> sports	<input type="radio"/> 4-5	<input type="radio"/> 2-3	<input type="radio"/> 1-2	<input type="radio"/> 0
Participation in club or community -based program in <u>other</u> sports	<input type="radio"/> 4-5	<input type="radio"/> 2-3	<input type="radio"/> 1-2	<input type="radio"/> 0

12. What type of program were you involved in when you first started participating in your sport (check all that apply)?

<input type="checkbox"/>	Family activity	<input type="checkbox"/>	Parks and recreation program	<input type="checkbox"/>	Collegiate athletic
<input type="checkbox"/>	Unstructured activity with friends	<input type="checkbox"/>	Community-based program	<input type="checkbox"/>	Other-please list
<input type="checkbox"/>	Elementary school physical education	<input type="checkbox"/>	NGB sponsored program	_____	
<input type="checkbox"/>	Middle school physical education	<input type="checkbox"/>	Private or commercial club	_____	
<input type="checkbox"/>	High school physical education	<input type="checkbox"/>	High school athletic program		

13. What types of program were you involved in when you made the commitment to pursue excellence in your sport? (check all that apply)?

<input type="checkbox"/>	Family activity	<input type="checkbox"/>	Parks and recreation program	<input type="checkbox"/>	Collegiate athletic
<input type="checkbox"/>	Unstructured activity with friends	<input type="checkbox"/>	Community-based program	<input type="checkbox"/>	Other-please list
<input type="checkbox"/>	Elementary school physical education	<input type="checkbox"/>	NGB sponsored program	_____	
<input type="checkbox"/>	Middle school physical education	<input type="checkbox"/>	Private or commercial club	_____	
<input type="checkbox"/>	High school physical education	<input type="checkbox"/>	High school athletic program		

14. The table below lists a number of steps or stages that your competitive career may have gone through. For step applicable please indicate your age, number of months/year you were involved in the sport at that time and estimate the hours/year spent training in your sport.

Milestone	Age		Months per year		Training hours per year			
Started participation in your sport	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Began competing	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competitive success – local	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competitive success – regional	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competitive success – state	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competitive success – national	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Made the varsity scholastic team	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Made a junior national team	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Earned a college scholarship	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Made the varsity collegiate team	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Made a senior national team	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competed at senior level – internationally	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
First competitive success at senior level – internationally	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Made the Olympic team	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

15. Which competition helped you most in preparing for the Olympic experience?

\_\_\_\_\_

\_\_\_\_\_

**COACHING**

16. Please rate the relative importance of coaching at the varying stages of your development (1 minor to 5 critical factor).

Factor	Age	Factor	Age
<input type="checkbox"/> Initial Contact	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Regional Competitive Phase	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Skill acquisition phase	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> National Competitive Phase	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Early competitive phase	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> International Competitive Phase	<input type="checkbox"/> <input type="checkbox"/>

17. Please rate (1 highest to 5 least important) the qualities of a coach that were important to you.

<input type="checkbox"/> Teaching ability	<input type="checkbox"/>	<input type="checkbox"/> Ability to motivate or encourage	<input type="checkbox"/> Ability to help you achieve balance if life
<input type="checkbox"/> Skill competence	<input type="checkbox"/>	<input type="checkbox"/> Strategic knowledge of the sport	<input type="checkbox"/> Other-please list
<input type="checkbox"/> Training knowledge	<input type="checkbox"/>	<input type="checkbox"/> Personality	_____
<input type="checkbox"/> Management and organizational skills	<input type="checkbox"/>	<input type="checkbox"/> Assistance with goal setting	_____

18. Please rate in order of importance (1 least important to 5 highest) the factors that contributed to your involvement with your coach at the time of achieving your highest competitive success.

<input type="checkbox"/> Recommendations from peers	<input type="checkbox"/> Coach was assigned to the national team
<input type="checkbox"/> Recommendations from previous coach	<input type="checkbox"/> Other-please list
<input type="checkbox"/> Previous coaching successes of the coach	_____
<input type="checkbox"/> Was recruited by the coach	_____
<input type="checkbox"/> Moved to the area where the coach worked	

**FUNDING**

19. Financial factors may be important for sport development. How did financial factors affect your sport development at different time periods? Please complete the following grid by filling the appropriate circles.

	Major Limitations		No Impact	Positive Factor	
Early Competitive Phase	<input type="radio"/> 5	<input type="radio"/> 4	<input type="radio"/> 3	<input type="radio"/> 2	<input type="radio"/> 1
Regional Competitive Phase	<input type="radio"/> 5	<input type="radio"/> 4	<input type="radio"/> 3	<input type="radio"/> 2	<input type="radio"/> 1
National Competitive Phase	<input type="radio"/> 5	<input type="radio"/> 4	<input type="radio"/> 3	<input type="radio"/> 2	<input type="radio"/> 1
International Competitive Phase	<input type="radio"/> 5	<input type="radio"/> 4	<input type="radio"/> 3	<input type="radio"/> 2	<input type="radio"/> 1

20. Did you receive financial support from your NGB for any of the following? Please complete the following grid by checking all that apply.

	Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
Training and Coaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplemental Stipend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Did you receive financial support from the USOC for any of the following? Please complete the following grid by checking all that apply.

	Early Competitive Phase	Regional Competitive Phase	National Competitive Phase	International Competitive Phase
Training and Coaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Supplemental Stipend

**22. Did you receive financial support from sponsors for any of the following? Please complete the following grid by checking all that apply.**

	<i>Early Competitive Phase</i>	<i>Regional Competitive Phase</i>	<i>National Competitive Phase</i>	<i>International Competitive Phase</i>
Training and Coaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplemental Stipend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**23. What percentage of your total athlete needs were funded by the above external sources (NGB, USOC, or sponsors)?**

Early Competitive Phase %    Regional Competitive Phase %    National Competitive Phase %    International Competitive Phase %

**24. Please rate (1 most important to 5 least important) the impact of the following factors on your long-term performance progression?**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Dedication/commitment | <input type="checkbox"/> Coaching                 | <input type="checkbox"/> Family            |
| <input type="checkbox"/> Mental Focus          | <input type="checkbox"/> Training partners        | <input type="checkbox"/> NGB Support       |
| <input type="checkbox"/> Competitive success   | <input type="checkbox"/> Training environment     | <input type="checkbox"/> Other-please list |
| <input type="checkbox"/> Competitive failure   | <input type="checkbox"/> Education about training | _____                                      |
| <input type="checkbox"/> Financial incentive   | <input type="checkbox"/> Work commitments         | _____                                      |
| <input type="checkbox"/> Financial reward      | <input type="checkbox"/> Medical support          |  |

**25. Please rate the factors (1 the highest to 5 the lowest) that you feel contributed most to your peers discontinuing participation in your sport.**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Injury               | <input type="checkbox"/> Conflict with other life pursuits | <input type="checkbox"/> Overly competitive focus of program       |
| <input type="checkbox"/> Time Pressure        | <input type="checkbox"/> Conflict with work                | <input type="checkbox"/> Failure to improve or competitive plateau |
| <input type="checkbox"/> Lack of Peer Support | <input type="checkbox"/> Lack of fun                       | <input type="checkbox"/> Other-please list                         |
| <input type="checkbox"/> Parental Pressure    | <input type="checkbox"/> Family issues                     | _____  |
| <input type="checkbox"/> Financial Pressures  | <input type="checkbox"/> Age                               | _____  |

**26. Are you still active in your sport? (Please fill in all that apply)**

- Recreational participant     Competitor     Coach     Administrator.

**27. Please list 5 factors (personal characteristics, abilities, programs, other people, etc.) you believe have contributed most to your achievement of success.**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**28. What do you believe were the 5 most significant obstacles that you had to overcome to achieve success in your sport?**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_





**Appendix B.** The number of Winter Olympian respondents and total number of Winter Olympians from 1984-98.

<b>Olympic Winter Sports</b>	<b>Male Respondents</b>	<b>Female Respondents</b>	<b>Total Respondents</b>	<b>Number of Olympians (1984-98)</b>	<b>Return Rate (%)</b>
Alpine Skiing	15	15	30	72	41.7%
Biathlon	7	5	12	33	36.4%
Bobsled	15		15	30	50.0%
Cross Country Skiing	12	11	23	38	60.5%
Curling	3	4	7	17	41.2%
Figure Skating	7	10	17	58	29.3%
Freestyle Skiing	9	6	15	24	62.5%
Ice Hockey	14	12	26	117	22.2%
Luge	11	3	14	30	46.7%
Nordic Combined	4		4	13	30.8%
Ski Jumping	9		9	21	42.9%
Speed Skating Long Track	13	11	24	52	46.2%
Speed Skating Short Track	4	9	13	24	54.2%
Snowboarding	2	2	4	14	28.6%
<b>TOTAL</b>			<b>213</b>	<b>543</b>	<b>42.4%</b>

**Appendix C.** The number of Summer Olympian respondents and total number of Summer Olympians from 1984-96.

<b>Olympic Summer Sports</b>	<b>Male Respondents</b>	<b>Female Respondents</b>	<b>Total Respondents</b>	<b>Number of Olympians (1984-96)</b>	<b>Return Rate (%)</b>
Archery	4	4	8	18	44.4%
Athletics	43	46	89	340	26.2%
Badminton	1	3	4	7	57.1%
Baseball	13		13	80	16.3%
Basketball	1	6	7	77	9.1%
Boxing	5		5	47	10.6%
Canoe/Kayak	23	9	32	62	51.6%
Cycling	20	2	22	67	32.8%
Diving	4	5	9	24	37.5%
Equestrian	3	5	8	40	20.0%
Fencing	16	6	22	42	52.4%
Field Hockey	11	19	30	72	41.7%
Gymnastics	6	14	20	57	35.1%
Judo	6	7	13	29	44.8%
Modern Pentathlon	3		3	10	30.0%
Rowing	49	42	91	185	49.2%
Sailing	14	5	19	93	20.4%
Shooting	23	6	29	78	37.2%
Soccer	17	6	23	89	25.8%
Softball		6	6	15	40.0%
Swimming	22	24	46	135	34.1%
Synchronized Swimming		3	3	17	17.6%
Taekwondo	2	4	6	20	30.0%
Team Handball	11	17	28	77	36.4%
Tennis	1	2	3	22	13.6%
Volleyball	14	12	26	78	33.3%
Water Polo	11		11	35	31.4%
Weightlifting	8		8	32	25.0%
Wrestling	19		19	58	32.8%
<b>TOTAL</b>			<b>603</b>	<b>1906</b>	<b>32.3%</b>

**Appendix D.** Training and performance milestones (age, months of training, yearly training hours) of female Olympians.

**FEMALE SUMMER ATHLETES**

	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>
Medalists (n = 104) Non-medalists (n = 83)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Started participation in your sport	10.4 (4.7)	14.9 (4.9)	6.7 (3.8)	5.8 (4.2)	222 (216)	329 (372)
Began competing	11.5 (4.7)	15.3 (4.8)	7.1 (3.9)	6.3 (3.8)	290 (300)	422 (410)
First competitive success - Local	12.1 (4.1)	15.0 (4.5)	7.7 (3.7)	6.8 (3.7)	299 (248)	466 (355)
First competitive success - Regional	13.7 (3.7)	16.2 (4.2)	8.7 (3.2)	7.6 (3.6)	442 (335)	454 (323)
First competitive success - State	13.7 (3.7)	15.6 (3.8)	8.8 (3.3)	7.8 (3.7)	485 (327)	481 (352)
First competitive success - National	15.6 (4.0)	18.2 (4.2)	9.5 (3.1)	9.2 (3.2)	670 (402)	680 (441)
Made Varsity Scholastic Team	14.4 (1.2)	15.1 (2.3)	7.1 (3.7)	7.3 (4.0)	482 (435)	412 (362)
Made Junior National Team	14.8 (2.1)	17.0 (3.4)	9.4 (3.8)	9.2 (3.5)	783 (429)	813 (530)
Earned a College Scholarship	17.8 (1.0)	18.1 (2.1)	9.9 (2.7)	8.8 (3.1)	848 (405)	600 (377)
Made Varsity Collegiate Team	18.0 (0.9)	18.3 (1.5)	9.2 (3.0)	9.5 (2.6)	712 (365)	679 (317)
Made Senior National Team	18.4 (3.6)	21.0 (3.2)	10.5 (2.4)	10.9 (2.3)	971 (433)	1049 (436)
First competed at Sr. National level	18.4 (3.5)	21.2 (3.4)	10.5 (2.5)	10.8 (2.2)	1018 (461)	1048 (428)
First competitive success – Intl.	19.4 (3.9)	22.0 (3.3)	10.7 (2.4)	11.3 (1.6)	1025 (452)	1157 (404)
Made Olympic Team	22.7 (5.1)	24.9 (3.8)	11.5 (1.2)	11.8 (0.5)	1182 (440)	1323 (461)

**FEMALE WINTER ATHLETES**

	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>
Medalists (n = 22) Non-medalists (n = 24)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Started participation in your sport	7.5 (4.7)	8.4 (5.2)	5.6 (1.8)	4.9 (2.6)	153 (225)	112 (135)
Began competing	8.8 (4.6)	12.0 (6.3)	6.3 (2.4)	4.7 (2.4)	322 (367)	188 (244)
First competitive success - Local	10.8 (4.6)	12.0 (5.5)	6.2 (2.3)	5.2 (2.7)	430 (411)	166 (240)
First competitive success - Regional	13.1 (4.5)	12.3 (4.7)	6.7 (2.5)	5.8 (2.9)	293 (287)	293 (287)
First competitive success - State	13.1 (4.5)	12.6 (5.3)	7.0 (2.7)	5.6 (2.7)	216 (278)	216 (278)
First competitive success - National	15.5 (2.7)	15.8 (5.1)	7.5 (2.4)	6.8 (3.3)	439 (345)	439 (345)
Made Varsity Scholastic Team	14.5 (0.8)*	15.0 (0.0)**	6.7 (2.9)*	3.0 (0.0)**	230 (26)*	52.5 (10.6)**
Made Junior National Team	15.3 (2.1)	14.8 (1.6)	8.0 (2.4)	8.2 (2.9)	706 (476)	567 (254)
Earned a College Scholarship	17.6 (0.5)	21.0 (6.1)	7.6 (1.6)	7.5 (6.4)	366 (203)	350 (353)
Made Varsity Collegiate Team	17.9 (0.3)	18.5 (0.7)	8.2 (1.8)	7.5 (6.4)	534 (456)	350 (354)
Made Senior National Team	18.8 (2.6)	17.8 (3.3)	8.6 (2.7)	9.4 (2.2)	860 (532)	778 (291)
First competed at Sr. Nationals level	18.9 (2.2)	18.8 (3.8)	9.1 (1.9)	8.4 (3.3)	835 (551)	734 (334)
First competitive success – Intl.	19.4 (2.0)	19.8 (3.8)	9.1 (2.5)	9.1 (2.7)	972 (518)	759 (348)
Made Olympic Team	22.2 (3.7)	21.4 (3.9)	10.5 (1.7)	9.6 (2.4)	1101 (662)	882 (422)

NOTE: \* denotes a group with only 3-6 people

NOTE: \*\* denotes a group with only 2 people

**Appendix E.** Training and performance milestones (age, months of training, yearly training hours) of male Olympians.**MALE SUMMER ATHLETES**

	<b>Medalist</b>	<b>Non-medalists</b>	<b>Medalist</b>	<b>Non-medalists</b>	<b>Medalist</b>	<b>Non-medalists</b>
Medalists (n = 142)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Non-medalists (n = 82)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Started participation in your sport	11.3 (4.5)	13.4 (5.9)	5.7 (3.5)	6.8 (3.7)	251 (262)	315 (320)
Began competing	12.5 (4.2)	14.5 (5.5)	6.0 (3.3)	7.2 (3.5)	283 (289)	371 (358)
First competitive success - Local	13.4 (4.0)	15.4 (5.1)	6.8 (3.3)	7.5 (3.4)	337 (315)	402 (363)
First competitive success - Regional	14.6 (3.4)	16.2 (4.7)	7.5 (3.2)	8.4 (3.3)	392 (331)	470 (358)
First competitive success - State	15.0 (3.3)	16.7 (4.7)	8.1 (3.0)	8.8 (3.1)	454 (357)	509 (355)
First competitive success - National	17.3 (3.5)	18.5 (5.0)	9.1 (2.8)	9.5 (2.7)	600 (439)	605 (361)
Made Varsity Scholastic Team	15.5 (1.6)	15.9 (2.4)	7.8 (3.2)	8.2 (3.4)	493 (320)	456 (334)
Made Junior National Team	16.3 (1.9)	16.8 (1.9)	9.2 (2.8)	9.9 (2.8)	578 (351)	605 (375)
Earned a College Scholarship	17.9 (1.1)	18.4 (1.3)	9.4 (2.8)	10.1 (2.2)	679 (420)	702 (380)
Made Varsity Collegiate Team	18.5 (1.0)	18.8 (1.5)	9.9 (2.3)	9.9 (2.4)	755 (407)	711 (403)
Made Senior National Team	21.0 (3.5)	21.4 (4.5)	10.9 (1.9)	10.4 (2.3)	955 (443)	869 (485)
First competed at Sr. Natl. level	21.0 (3.4)	21.5 (4.7)	10.8 (2.1)	10.7 (2.1)	965 (465)	910 (452)
First competitive success - International	21.6 (3.4)	22.7 (4.7)	11.1 (1.9)	11.0 (1.8)	1064 (432)	974 (462)
Made Olympic Team	24.2 (4.1)	25.3 (5.6)	11.1 (1.9)	11.4 (1.0)	1211 (494)	1124 (583)

**MALE WINTER ATHLETES**

	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>	<b>Medalists</b>	<b>Non-medalists</b>
Medalists (n = 15)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Non-medalists (n = 39)	Age (sd)	Age (sd)	months/yr (sd)	months/yr (sd)	hours/yr (sd)	hours/yr (sd)
Started participation in your sport	9.0 (4.9)	10.8 (7.0)	3.5 (2.2)	6.0 (3.0)	115 (124)	327 (425)
Began competing	11.5 (4.3)	12.6 (6.3)	4.7 (2.5)	6.6 (3.1)	278 (286)	348 (343)
First competitive success - Local	12.3 (3.8)	13.5 (6.1)	5.2 (2.1)	6.1 (2.9)	388 (422)	386 (362)
First competitive success - Regional	13.2 (4.5)	13.7 (5.2)	5.4 (2.1)	6.8 (2.7)	427 (447)	473 (406)
First competitive success - State	13.5 (4.9)	14.9 (5.9)	5.4 (2.0)	7.3 (2.7)	460 (423)	529 (360)
First competitive success - National	16.0 (3.6)	18.2 (5.5)	6.3 (2.5)	8.2 (2.9)	555 (411)	841 (456)
Made Varsity Scholastic Team	0.0 (0.0)	15.5 (1.4)	0.0 (0.0)	7.2 (2.7)	0.0 (0.0)	395 (280)
Made Junior National Team	16.3 (1.7)	17.2 (1.8)	6.2 (2.4)	9.2 (2.4)	501 (437)	1033 (531)
Earned a College Scholarship	0.0 (0.0)	18.2 (0.6)	0.0 (0.0)	9.1 (2.2)	0.0 (0.0)	810 (368)
Made Varsity Collegiate Team	0.0 (0.0)	17.8 (0.6)	0.0 (0.0)	9.9 (2.1)	0.0 (0.0)	992 (165)
Made Senior National Team	17.6 (1.7)	20.5 (3.6)	8.0 (2.4)	9.8 (2.3)	920 (525)	1145 (455)
First competed at the Sr. Natl. level	18.0 (1.3)	20.6 (3.4)	9.6 (1.9)	10.0 (2.2)	1067 (594)	1152 (449)
First competitive success - International	20.8 (2.6)	21.5 (3.3)	9.5 (2.2)	10.2 (2.2)	1180 (647)	1218 (450)
Made Olympic Team	22.1 (5.2)	24.0 (4.4)	9.7 (2.0)	10.7 (1.5)	1165 (583)	1450 (493)