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Predicting competitive involvement of masters swimmers age 55 and over

Laurel S. Hill
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PREDICTING COMPETITIVE INVOLVEMENT OF
MASTERS SWIMMERS AGE 55 AND OVER

A Thesis

Presented to

the Faculty of the

Psychology Department

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Laurel S. Hill

May 1999

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ABSTRACT

PREDICTING COMPETITIVE INVOLVEMENT OF
MASTERS SWIMMERS AGE 55 AND OVER

By Laurel S. Hill

The purpose of this study was to determine the predictive ability of several variables on the competitive involvement of United States Masters Swimming (USMS) members. The three main hypotheses were: 1) the Participation Motivation Questionnaire (PMQ; Brodtkin & Weiss, 1990) items identifying health/fitness, social, and competitive motivations would be the best predictors of involvement in competition; 2) those with higher Revised Trait Sport Confidence Inventory (RTSCI) and Health Promoting Lifestyle Profile (HPLP) scores would be more likely to compete than their lower scoring peers; and 3) those who have been swimming longer, after controlling for age, would be more likely to respond that they have participated in competition sometime during the year as opposed to those who have just reentered (or joined for the first time) a regular competitive environment. The PMQ has a subscale called *characteristics of competitive swimming*. This subscale has four competition-relevant items which could be considered independent predictors. Therefore, discriminant analyses were done with and without these items.

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Predicting Competitive Involvement of
Masters Swimmers Age 55 and Over

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Abstract

The purpose of this study was to determine the predictive ability of several variables on the competitive involvement of United States Masters Swimming (USMS) members. The three main hypotheses were: a) the Participation Motivation Questionnaire (PMQ; Brodtkin & Weiss, 1990) items identifying health/fitness, social, and competitive motivations would be the best predictors of involvement in competition; b) those with higher Revised Trait Sport Confidence Inventory (RTSCI) and Health Promoting Lifestyle Profile (HPLP) scores would be more likely to compete than their lower scoring peers; and c) those who have been swimming longer, after controlling for age, would be more likely to respond that they have participated in competition sometime during the year as opposed to those who have just reentered (or joined for the first time) a regular competitive environment. The PMQ has a subscale called *characteristics of competitive swimming*. This subscale has four competition-relevant items which could be considered independent predictors. Therefore, discriminant analyses were done with and without these items.

Predicting Competitive Involvement of Masters Swimmers Age 55 and Over

O'Brien and Conger (1991) note the irony in wanting to live long enough to see old age, yet not necessarily wanting to be old. There are both stereotypes and truths that can make aging seem like an evil that we must endure following a youthful, fruitful life. After reviewing the literature, O'Brien and Conger (1991) identified seven reasons why we fear the aging process; fear of physical suffering, fear of non-being, fear of cowardice and humiliation, fear of failing to achieve important goals, fear of the impact one's death will have on one's survivors, fear of religious punishment, and the fear of deaths of others we love. Prior to the early 1980's, much of the research on aging investigated the pathology of aging; why older adults were not aging 'well', perhaps because little was known about what constitutes normative aging. Pender (1982) remarked, "Mortality and morbidity have been the traditional methods used by public health and medicine for defining and measuring the level of health within a given population" (p. 23). The medical profession spends so much time studying how to treat pathology that research regarding how people are maintaining optimal health simply is not as prominent. With the second 'coming of age' by the Baby Boomers, many older adults are changing the way health professionals and society at large define and analyze the meaning of aging. Fontane (1996) defined aging well as the "self-initiated promotion of good health, philosophical well-being, and selection of opportunities that support achieving and maintaining a personally satisfying quality of life" (p. 288). If we wish to know how to age well, then it is time to use those who are doing so as models for research. It is imperative that we study

populations engaged in healthy aging, not the worst case scenarios and those who are subscribing to stereotypes regarding age-determined attitudes, behaviors, and lifestyles. It is the purpose of this study to examine how the dimensions of healthy-lifestyles, sport self-efficacy, and participation motives relate to involvement in competitive swimming among United States Masters Swimming (USMS) members. Although a swimmer is eligible to become a USMS member at age 19, only those 55 and over were chosen to participate in this study because they are representative of older people engaging in efforts to age successfully.

Lifestyle Based Research

Pender (1982) identified the need for research based on health-as-lifestyle and developed the Health Promotion Model (HPM) (see Figure 1). This model was based on Becker's (1974) Health Belief Model (HBM). Becker's framework outlined factors which lead to health-protecting/illness-avoidance behaviors. Pender's model differs as it describes how and why perceptions concerning the importance of health and related aspects, such as self-esteem and the desire for competence, lead to the likelihood of *health promoting* behaviors. Note that Pender specifically refers to health-promoting not simply health-protecting behavior. Health promoting behaviors are those that are "self-initiated actions on the part of individuals that enhance health status in the absence of a specific health threat" (1982, p. 76). They are behaviors performed to elevate one past the point of physical and psychological status quo and are generally part of a person's

Figure 1. Pender (1982) Health Promotion Model (HPM)

lifestyle. Fontane (1996) did not label the distinction between promotion and prevention but focused rather on an individual's *voluntary decision* to "use available resources to achieve or maintain a desired quality of health" (p. 291). Nevertheless, both researchers were investigating a facet of healthy aging as opposed to simply the aging process.

Stabilizing and actualizing tendencies. Pender named health-promoting behaviors 'actualizing tendencies' and health-protecting behaviors 'stabilizing tendencies' (Pender, 1982). Humans generally seek actualization to some degree through new experiences that increase their tension level in a positive manner and that are challenging and offer opportunities for increased control, achievement, and fulfillment. It is through these types of experiences that we are best able to flourish and grow physically (as in strength or speed), emotionally, psychologically, and spiritually. When an individual is seeking to remain status quo or in steady state, she/he is said to be stabilizing. The driving force behind stabilizing tendencies is to prevent illness or protect one's "as-is" level of health. This can be accomplished by reducing excess negative stress such as loud noises or extremely bright lights to an acceptable standard. Stabilizing may also be achieved by increasing stimulation if it lacking from the environment. Examples of inadequate stimulation are sensory deprivation and non-challenging tasks.

Sport and exercise psychologists have begun to address the fact that a greater number of older Americans than ever before are participating in regular exercise programs and competitive sports activities. Fontane (1996) gave a definition of exercise that encompasses Pender's actualizing/stabilizing concept: "Exercise is usually regular,

patterned leisure time activity pursued to achieve desirable outcomes, such as improved level of general health or physical performance” or “...prevention or slowing of deterioration of the body’s physiological capacities due to disuse and/or aging” (p. 78). He also defined *competitive health* as the drive that pushes very healthy older people to remain more healthy than their peers. These individuals take pride in the fact that they can swim faster and farther than their peers or have a blood pressure and cholesterol level lower than someone 30 years their junior. There are many of these people out there as is evidenced by events such as 1998 Nike World Masters Games held in Portland, OR. The organizers of the Games expected 25,000 athletes ages 35 and over to participate in 29 sports ranging from track and field to bowling, swimming and diving to rugby, table tennis, and weightlifting (International Masters Games Association, 1996).

Dimensions of a healthy lifestyle. Psychologists have attempted to identify different dimensions such as practicing good nutrition or exercising that serve as motivators of healthy behaviors and activities. The likelihood that an individual aged 50 or older will partake in health promoting behaviors is influenced by many factors. There is no single factor that leads a person to a healthy lifestyle and successful aging. Many researchers have investigated how beliefs and attitudes toward health, locus of control, social support, self-esteem and perceived competence influence the likelihood of participating in healthy behaviors. Ferrini, Edelstein, and Barrett-Conner (1994) investigated the relationship between health-related attitudes and health behavioral changes in an upper middle-class elderly population. They found that those participants who believed a healthy lifestyle was

important were more likely to follow through with corresponding behaviors. Those who reported confusion about what “being healthy” entailed were less likely to exercise and spend money on health-related products. Potts, Hurwicz, Goldstein, and Berkanovic (1992) studied the effect of social support on engaging in healthy behaviors among the elderly. Their results showed that those with a greater support network were more likely to practice health promoting behaviors such as taking vitamins and minerals, exercising, and limiting intake of red meat. They theorized that the “something to live for” phenomenon was taking place, as well as “impositions of sanctions for unhealthy behaviors and the promotion of norms for healthy behaviors” (Potts, et al., 1992, p.436).

Huck and Armer (1996) investigated elderly Catholic nuns, “a little-studied subpopulation of the elderly” (p. 82), and their health perceptions, health-promoting behaviors, and motivations for participating in these behaviors. Not surprisingly, many of the nuns indicated a desire to be able to continue serving others in the religious community as one of their primary motivations to stay well or improve the current level of health. Staying well or improving health was done through daily physical activity, nutrition, and regular visits to a health care provider. Speake, Cowart, and Stephens (1991) investigated the difference between rural and urban elderly finding that the rural elderly generally have a worse health status than their urban counterparts. According to Speake et al. (1991), place of residence was less predictive of better health status than was education and income (urban elderly generally have greater levels of both).

An individual's perceived competence within a given task as compared to his/her peers is correlated with the likelihood of continued exercise. According to Mobily et al., (1993), "Adaptation to aging is partly a matter of maintaining or enhancing competence, thereby retaining self-determination through a repertoire of leisure activities" (p. 87). For example, an individual may enjoy (bike) road racing, however, a chronic knee injury now prevents him/her from continuing the exercise because of the pain and eventual diminished perceived competence. There is the feeling of "I'm no good at this anymore," therefore, the intrinsic need for competence drives the individual to replace biking with another physical activity that offers similar mind/body health benefits. Cousins (1996) and McAuley (1993) also found a positive relationship between late life exercise and self-efficacy (perceived performance competence), social support, and internal locus of control (feeling like control over a situation lies within rather than outside of oneself).

Duffy and MacDonald (1990) and Duffy (1993) studied the relationship between health promoting behaviors (based on Pender's HPM) and locus of control, self-esteem, and perceived health. As might be expected, internal locus of control and self-esteem were positively related to participation in health-promoting behaviors. A caveat here is the mediating role "perceived health" played in these studies. According to Duffy (1993), self-esteem did not predict a healthier lifestyle if the individual (mainly males) had the perception that their health was poor.

Walker, Sechrist, and Pender (1986), using Pender's Health Promotion Model (HPM) as a theoretical framework, identified self-actualization, health responsibility,

exercise, nutrition, interpersonal support, and stress management as dimensions of healthy living through the development of the Health-Promoting Lifestyle Profile (HPLP). Those who score higher on the HPLP scales are said to be leading a healthier lifestyle. Most of the behaviors in the HPLP appear to be actualizing tendencies (maintain meaningful relationships, seek information, and meditation/relaxation) while others seem to be stabilizing tendencies (check cholesterol level, eat three meals a day). However, one must be careful not to label the items before asking individuals what specific reasons are given for engaging in a particular behavior or activity. The same behavior, cross-country skiing for example, may have a Zen-like quality (actualizing) for one person where another may simply be exercising to avoid another heart attack (stabilizing).

Motives. What are the motivations and backgrounds of these mature athletes? Brodtkin and Weiss (1990) in their developmental study (age range 9 - 74 years), found seven factors that identified motivations to participate in competitive swimming. They included health/fitness, characteristics of competitive swimming, social status, affiliation, energy release, significant others, and fun. Masters and Ogles (1995) investigated marathon runners' motivations for participation, and like Brodtkin and Weiss, they found that although the dimensions differed across skill level, motives were similar and were classified as psychological (self-esteem, psychological coping, life meaning), physical (health orientation, weight concern), social (affiliation, social recognition) and achievement (competition, personal goal achievement). Fontane and Hurd (1992) surveyed 1375 senior Olympians at the 1989 National Senior Olympics. Athletes

participated in one or more of 15 athletic events. Interestingly, 76% of the men and 82% of the women reported having begun some fitness activity after age 50. The top six reasons that the athletes gave for participation were health, personal challenge, recreation, social, competition, and public recognition. Although personal challenge, recreation, social, and competition motives varied by gender, both groups indicated that living healthy was the most important motivation and public recognition for their athletic achievement was the least important for taking part in an athletic/fitness program. Fontane (1996) found similar results. The most important reasons older persons exercised regularly were due to stabilizing tendencies such as maintenance of self-perceived good health and prevention of debilitating health conditions. However, he also reported actualizing tendencies such as goal setting and enhancing meaningful social relationships as motivators for participation in physical exercise. For beginning or novice exercisers, the intellectualized health benefit facts may not be enough to motivate aging individuals to exercise. Sometimes increased quality of life issues, such as being able to “play more with their grandchildren” (“Motivating the elderly”, 1995) and meeting new friends serve as an impetus when first starting to exercise

Brodkin and Weiss (1990) used the Participation Motivation Questionnaire (PMQ; Gill, Gross, & Huddleston, 1983), modified for swimming by Gould, Feltz, and Weiss (1985), to examine participation motivation from a lifespan developmental perspective. Corresponding with Fontane and Hurd’s (1992) research, older adults listed concern for

health and fitness, fun, and being with friends as the most important reasons for swimming.

Many of the motivations that athletes gave for participating (both stabilizing and actualizing in nature) coincide with Pender's HBM "Individual Perceptions" and "Modifying Factors." No matter what the motivations, the end result may be the same; for example, a feeling of greater competence and control in a society where the aged and aging are not exactly embraced with open arms. Motivations become intertwined with the psychological dimensions discussed above. Sports psychologists have noted in particular that the desire for competence (also called self-efficacy) and healthy self-esteem, are part of a complex web of why we like to compete at any age. Twenty years ago, Bandura (1977), first described self-efficacy as a belief in one's ability to successfully complete a given task. Vealey (1986) brought Bandura's work into the sports arena when she created the Trait Sport-Confidence Inventory (TSCI). Vealey defined trait sport-confidence (or sport self-efficacy) as the belief or degree of certainty individuals possess about their ability to be successful in a sport. It is influenced by a person's general disposition and past successful experiences and was found to be positively and significantly related to perceived physical ability, physical self-presentation-confidence, and self-esteem. McAuley (1993) reviewed self-efficacy research and concluded that physical activity is positively related to personal efficacy. As one who has worked with swimmers of all ages (6-84 years), it is apparent to this writer that an athlete must be motivated to participate (for

whatever reasons) and feel confident about his or her doing so in order to receive optimal satisfaction from the activity.

The Present Study

The purpose of this study is to examine the dimensions of healthy-lifestyles, sport self-efficacy, and participation motives of swimmers ages 55 and over as they relate to involvement in *competitive* swimming. Of particular interest is how combinations of Trait Sport Confidence Inventory (TSCI) Scores, Health Promoting Lifestyle Profile (HPLP) scores, Participation Motivations Questionnaire (PMQ) responses, and demographics (age, gender, number of years affiliated USMS, and number of years swimming) are able to correctly predict participation in competition.

First, it is hypothesized that those with higher trait sport confidence (as measured by the TSCI) and who endorse a more healthy promoting lifestyle (as measured by the HPLP) will be more likely to compete than their lower scoring peers. This is mainly because those who are more confident with their abilities and who have made being healthy a part of their lives may not feel, as their primary focus, the need to stabilize their health. They may however, want to further elevate their health other than in a purely physical way (psychologically, socially, or spiritually) perhaps through competition. A second hypothesis is that those who have been swimming longer, after controlling for age, will be more likely to respond that they have participated in competition sometime during the year as opposed to those who have just reentered (or joined for the first time) a regular competitive environment. For example, a man who is 65 and has been swimming for 20

years probably has different motivations for doing so than his peer who never swam before but who had a heart attack 6 months earlier. Lastly, based partly on the work of Potts et al., (1992), Fontane and Hurd (1992), Mobily et al., (1993), Masters and Ogles (1995), and Brodtkin and Weiss (1990), it is hypothesized that the PMQ (participation motivations) items identifying health/fitness, social, and competitive motivations will be the best predictors of competitive involvement.

Method

Participants

Five hundred United States Masters Swimming (USMS) members whose addresses were randomly selected from a list of members aged 55 and over were mailed a questionnaire packet. A return rate of 65.3% was achieved as a result of 326 completed surveys being returned. This high return rate was probably due to at least two factors. Many of the participants in this group may be retired, therefore, generally having more time. Also, the researcher herself is a USMS member and coach, and this status may have elicited a feeling of camaraderie or "helping one of our own." Perhaps these people are proactive in general and were highly motivated to share their lives and in turn help to promote their sport.

Measures

Healthy Promotion Lifestyle Profile (HPLP). Walker, et al. (1986) developed this 4-point summated rating scale designed to measure the regularity with which individuals participate in a pattern of actions and perceptions that serve to maintain or enhance levels

of wellness, fulfillment, and self-actualization. The 48-item HPLP scale (Appendix A) was developed using responses of 952 adults in Midwestern communities. From the responses of this sample, six factors of a healthy lifestyle were revealed and accounted for 47.1% of the variance. Factor 1, self-actualization, contained 13 items pertaining to fulfillment and purpose in life. Factor 2, health responsibility, was made up of 10 items that dealt with general health practices and use of the health care system. Factor 3, exercise, had 5 items focused on regular patterns of physical/recreational activity. Factor 4, nutrition, contained 6 items about food choices and meal patterns of the participants. Factor 5, interpersonal support, incorporated 7 items regarding important intimate relationships with others. Factor 6, stress management, contained 7 items that focused on managing stress and sleep. Cronbach's alpha (1951) is a statistic often used to measure a scale's internal reliability and consistency. Walker, et al. (1986) obtained an alpha for the entire scale of .92, while the alphas for the subscales were .84 for self-actualization; .78 for health responsibility; .64 for exercise; .72 for nutrition; .70 for interpersonal support; and .63 for stress management.

Swim Motives Scale. The Participation Motivation Questionnaire (PMQ; Gill, et al., 1983) modified by Gould, et al. (1985) for swimming, was used to identify participants' reasons for swimming (Appendix B). Past factor analyses by Brodtkin and Weiss (1990) derived seven subscales from the 35-item 5-point survey (1 = not at all important to 5 = extremely important). The seven subscales were characteristics of competitive swimming (15 items), health/fitness motives (5 items), social status motives (5

items), affiliation motives (2 items), energy release motives (4 items), wanting to please significant others (2 items), and a desire to have fun (2 items). When analyzed for internal consistency, Brodtkin and Weiss found the subscales' respective alphas to be .95, .87, .88, .55, .67, .53, and .70.

Sport-Specific Self-Efficacy Measures. To measure an individual's self-efficacy within the sport-specific context of swimming, Vealey's (1986) revised 13-item 5-point Trait Sport-Confidence Inventory (RTSCI) was used (Appendix C). Higher scores reflected more confidence (range of 0-65). Vealey's TSCI was chosen for its high internal reliability and concurrent validity (Cronbach's alpha = .93). Trait sport confidence is defined by Vealey (1986) as the belief or degree of certainty *individuals usually possess about their ability* to be successful in sport. This, of course, is based on past successes (as defined by the individual), other personality traits, and general feelings about swimming competence. The inventory was modified for this study to reflect the participant's feelings about him or herself rather than a comparison of the participant to the best, fastest, most talented swimmers. This was done in an attempt to avoid social comparison which is especially likely in a competitive type of environment.

Demographics. Demographic variables (Appendix D) included in the study were age, gender, amount of time swimming (in years), whether they compete or not, and if yes, how many times per year, as well as had they ever competed at the national level (a meet for which qualifying times must be met).

Procedures

Participants' names and addresses were randomly selected from the USMS membership database, and they were subsequently contacted via mail. A cover letter was sent explaining who the author was, the purpose of the study, and what they could expect from the study. The HPLP, PMQ, RTSCI, and demographics surveys were sent in the packet along with a return envelope.

Results

The primary research question was how well a set of predictor variables, the HPLP, PMQ, RTSCI scales, and demographics could correctly classify the involvement of participants in competition. Descriptive analyses, Pearson product-moment correlations, t-tests and chi-square tests were performed prior to a stepwise discriminant analysis, a multivariate technique which allows classification of group membership based on a set of predictors.

Demographic descriptives

USMS groups its members by gender and by age in 5 year increments, for example, 55-59, 60-61...., and so forth. Of the respondents ($N=326$), 45.1% ($n=147$) were women and 54.9% ($n=179$) were men. Figure 2 shows the eight consecutive age groups identified. The younger adults, aged 55-59, comprised the group with the most members (32.8%, $n=107$) and, the oldest adults, aged 90-94 comprised the group with the least number of members (.6%, $n=2$). Figure 3a depicts that over two-thirds of the sample

Figure 2. Age Group Distribution

Figure 3a. Number of Competitors and Non-competitors

acknowledged that they compete at least one time per year (68.7%, $n=224$), while the remainder (31.3%, $n=102$) replied that they used to compete but do not compete at present, or they have never competed. Figure 3b shows that, of the 224 participants who considered themselves to be involved in competition, 42.4% ($n=95$) were women and 57.6% ($n=129$) were men. Furthermore, as seen in Figure 4, of those who compete, 49.3% said they competed 1-4 times in the past year, while 39.8% swam in 5-9 competitions, and 10.9% raced 10 or more times in the past year.

Participants were also asked how long they had been registered as a USMS member and how long they had been swimming in general. The range of years registered with USMS fell between 0-29 ($M=11.5$, $SD=8.3$, $N=320$), while the number of years that participants said they had been swimming in general seemed to span lifetimes in many instances as the range stretched from 0-85 years ($M=27.9$, $SD=21.0$, $N=317$), essentially “just beginning” to “always have”. See the histograms in Figures 5a and 5b for more details.

Scale summaries

Because there was very little missing data (range=.01% for the PMQ fun subscale to 12% for the RTSCI total score, $M=4.7\%$), the item average for the sample was used to replace questions which were not answered. There were no particular items which were singled out as confusing, although a small number of participants noted that they were not sure what constituted “stress control methods” or “supervised programs” on the Health Promoting Lifestyle Profile (HPLP). Also, 22 participants in the Non-competitor group

Figure 3b. Percentage of Male and Female Competitors

Figure 4. Average number of competitions per year

Figure 5a. Years Registered with USMS

Figure 5b. Total Number of Years Swimming

did not fill out the RTSCI scale because it asks questions regarding their confidence within a competitive setting and they did not feel that these items pertained to them. The three scales were chosen partly for their internal reliability and consistency which refers to the “consistency of information across stimuli presumed to measure the same thing” (Leong & Austin, 1996, p. 240). Cronbach’s (1951) alphas from this study neared previous findings as they were similar for each survey, HPLP (alpha = .80), Participation Motivations Questionnaire (PMQ) (alpha = .83), and Trait Sport Confidence Inventory - revised (RTSCI) (alpha = .96).

Correlations

A Pearson product-moment correlation matrix was produced for all variables. Because the research question centered around prediction of involvement in competition, correlations between the potential predictor variables and whether someone competed (1 = ‘Yes’, 2 = ‘No’) were of particular interest. The correlation matrix, shown in Table 1, demonstrates that age, the number of years registered with USMS, PMQ subscales for affiliation, characteristics of competitive swimming, energy release, significant others, and social status, and the RTSCI total score were all inversely related to competing. The inverse relationships indicated that participants who compete had higher values for age, the number of years registered with USMS, PMQ subscales for affiliation, characteristics of competitive swimming, energy release, significant others, and social status, and the RTSCI total score. The number of competitions per year was positively and significantly related to all of the PMQ subscales except the health and fitness and the RTSCI subscale

Table 1

Pearson product-moment correlations

	1	2	3	4	5
1 Age	1.000				
2 Gender	-.028	1.000			
3 Compete (yes/no)	-.127**	-.080	1.000		
4 Competitions Per Year	.116**	.053	-.789***	1.000	
5 Years Registered	.176***	-.017	-.269***	.254***	1.000
6 Years Swimming	.237***	.072	-.087	.070	.343***
7 HPLP- exercise	-.021	-.043	-.064	.061	.010
8 HPLP - health responsibility	.073	-.128**	.035	-.018	-.011
9 HPLP - interpersonal support	-.036	-.152***	.040	.001	-.074
10 HPLP - nutrition	.029	-.205***	.060	-.052	.004
11 HPLP - self actualization	-.003	-.019	-.024	.075	-.083
12 HPLP - stress management	.041	-.135**	.050	.027	-.017
13 PMQ - affiliation	.147***	-.148***	-.194***	.250***	.149***
14 PMQ - characteristics of competitive swimming	.138**	-.065	-.332***	.344***	.087
15 PMQ - health and fitness	.012	-.084	-.036	.077	.022
16 PMQ - fun	.110**	-.188***	-.090	.109**	.120**
17 PMQ - energy release	.143***	-.151***	-.113**	.130**	.088
18 PMQ - significant others	.217***	-.076	-.241***	.261***	.121**
19 PMQ - social status	.106	.058	-.297***	.291***	.147***
20 RTSCI - total score	-.042	.169***	-.205***	.226***	.156***

	6	7	8	9	10
6 Years Swimming	1.000				
7 HPLP- exercise	.048	1.000			
8 HPLP - health responsibility	.029	.393***	1.000		
9 HPLP - interpersonal support	.046	.317***	.451***	1.000	
10 HPLP - nutrition	.008	.350***	.343***	.221***	1.000
11 HPLP - self actualization	.047	.325***	.399***	.550***	.238***
12 HPLP - stress management	.086	.358***	.526***	.584***	.323***
13 PMQ - affiliation	.085	.152***	.138**	.214***	.086
14 PMQ - characteristics of competitive swimming	.075	.207***	.110**	.204***	.105
15 PMQ - health and fitness	.041	.295***	.199***	.192***	.185***
16 PMQ - fun	.048	.225***	.119**	.285***	.146***
17 PMQ - energy release	.155***	.142**	.232***	.165***	.116**
18 PMQ - significant others	.102	.135**	.173***	.272***	.061
19 PMQ - social status	.066	.127**	.060	.119**	.028
20 RTSCI - total score	.131**	.209***	.205***	.232***	.096

Table I cont'd

Pearson product-moment correlations

	11	12	13	14	15
11 HPLP - self-actualization	1.000				
12 HPLP - stress management	.532***	1.000			
13 PMQ - affiliation	.060	.159***	1.000		
14 PMQ - characteristics of competitive swimming	.136**	.172***	.596***	1.000	
15 PMQ - health and fitness	.255***	.237***	.159***	.310***	1.000
16 PMQ - fun	.291***	.261***	.282***	.374***	.459***
17 PMQ - energy release	.085	.228***	.445***	.450***	.365***
18 PMQ - significant others	.160***	.218***	.566***	.641***	.179***
19 PMQ - social status	.011	.092	.472***	.651***	.180***
20 RTSCI - total score	.431***	.328***	.170***	.357***	.248***

	16	17	18	19	20
16 PMQ - fun	1.000				
17 PMQ - energy release	.349***	1.000			
18 PMQ - significant others	.310***	.493***	1.000		
19 PMQ - social status	.257***	.400***	.561***	1.000	
20 RTSCI - total score	.263***	.196***	.288***	.336***	1.000

* $p < .05$; ** $p < .01$; *** $p < .001$

total score. The greater the scores, the more often a participant who competes will do so each year.

Age was also positively correlated with the PMQ subscales of affiliation, fun, energy release, significant others, and characteristics of competitive swimming. These findings agree with Fontane and Hurd's (1992) research with the 1989 Senior Olympians which revealed that health, personal challenge, competition, and public recognition (characteristics of competitive athletics), recreation (fun), and social aspects (significant others and affiliation) were major motivating factors in participation.

Within this study, gender played an interesting role in determining health-promoting lifestyle choices (the HPLP survey). Higher scores on the health responsibility, interpersonal support, nutrition, and stress management subscales were significantly and inversely related to gender—which is to say that women (Female = 1 within the analyses) tended to 'routinely' (as opposed to 'never') participate in the behaviors/activities on these subscales as compared to men.

T-test analyses

To extend the results of the bivariate correlations, a series of t-tests for independent samples (two-tailed) was performed comparing Competitors and Non-competitors. These two groups' differences were compared using the following continuous variables: years registered, years swimming, HPLP subscales, PMQ subscales and the RTSCI. Chi-square tests of association were used to compare Competitors and Non-competitors on the categorical variables of age and gender. Table 2 displays

Table 2

Differences between Competitor and Non-competitors on Demographic Variables and Measures

Variable	Frequency	Competitors (n = 224)	NonCompetitors (n = 102)	Test of Difference
				Chi-square
Age				$\chi^2(7)=210.6^{***}$
1 - 55-59	107 (32.8%)			
2 - 60-64	68 (20.9%)			
3 - 65-69	58 (17.8%)			
4 - 66-70	40 (12.3%)			
5 - 71-74	25 (7.7%)			
6 - 75-79	19 (5.8%)			
7 - 80-84	7 (2.1%)			
8 - 90-94	2 (0.6%)			
Gender				$\chi^2(1) = 3.14$
1 - Female	147 (45.1%)			
2 - Male	179 (54.9%)			
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	t-test
Years Registered		12.98 (8.24)	8.17 (7.35)	ns
0 - 29 yrs (<i>N</i> = 320)				
Years Swimming		29.08(20.79)	25.13 (21.45)	$p = .000$
0 - 75 yrs (<i>N</i> = 317)				
HPLP Subscales				
Range, 1 - 4				
Exercise		3.03 (.45)	2.97 (.40)	ns
Health-Responsibility		2.59 (.46)	2.63 (.46)	ns
Interpersonal Support		3.19 (.52)	3.24 (.56)	ns
Nutrition		3.22 (.48)	3.28 (.47)	ns
Self-Actualization		3.45 (.48)	3.28 (.42)	ns
Stress Management		2.61 (.53)	2.68 (.58)	ns
PMQ Subscales				
Range, 1 - 5				
Affiliation		3.43 (1.11)	2.96 (1.13)	$p = .000$
Chars. of Comp. Swimming		4.23 (.75)	3.64 (.84)	$p = .000$
Health and Fitness		4.52 (.44)	4.49 (.47)	ns
Fun		4.56 (.53)	4.44 (.65)	ns
Energy Release		3.53 (.89)	3.31 (.93)	$p = .041$
Significant Others		2.97 (1.27)	2.32 (1.13)	$p = .000$
Social Status		3.14 (.82)	2.57 (.89)	$p = .000$
RTSCI		49.61 (9.88)	45.10 (10.24)	$p = .000$
Range, 1 - 5				

* $p < .05$; ** $p < .01$; *** $p < .001$

differences between Competitors and Non-competitors. The groups were significantly different in terms of age categories ($\chi^2(7)=210.60, p < .001$) but not in terms of gender ($\chi^2(1)= 3.14, p = ns$).

The Competitors had significantly more years of swimming (as opposed the years registered with USMS) than the Non-competitors. A significant difference between the two groups emerged on five of the PMQ subscales; affiliation, characteristics of competitive swimming, energy release, significant others, and social status and the RTSCI.

Discriminant analysis

Researchers use discriminant analysis when the question is a matter of whether variables can be combined to predict group membership, actually classifying cases into groups. Stepwise discriminant analysis, also called statistical discriminant analysis, is generally used when the researcher has no *a priori* knowledge of which variables would be the best predictors. Tabachnick and Fidell (1996) note that stepwise discriminant analysis is controversial because the “Order of entry may be dependent on trivial differences in relationships among predictors in the sample that do not reflect population differences” (p. 532). If the researcher does have *a priori* knowledge about predictor variables, she/he is able to utilize sequential, or hierarchical, discriminant analysis. She/he enters the variables in a specific order assessing the “improvement in classification when a new predictor is added to a set of prior predictors” (Tabachnick & Fidell, 1996, p. 529). The variables with the most predictive ability become apparent through forward selection and backward elimination of predictors meeting a minimum criterion of $F = 1.00$. If the research question

is exploratory, then direct discriminant analysis is used whereby all of the predictor variables are entered in the equation at once and “each predictor is assigned only the unique association it has with groups. Variance shared among predictors contributes to the total relationship, but not to any one predictor” (Tabachnick & Fidell, 1996, p. 528).

Although certain variables repeatedly appeared to be connected to competitive involvement within analyses in this study as well as previous research, direct discriminant analysis was used because this study was meant to be exploratory. The variables entered were age, gender, years registered, the HPLP and PMQ subscales, and the RTSCI total scale.

Three hundred ($n = 300$) cases remained in the analysis after 26 cases were dropped due to at least one missing discriminating variable (22 were the Non-competitors who did not complete the RTSCI). In order to help avoid over-prediction in the Non-competitor group, actual *a priori* probabilities of 73% for the Competitors and 27% for the Non-competitors were entered rather than assuming an equal probability of membership. Homogeneity of variance-covariance matrices were analyzed, and because group populations were not equal, Box’s *M* test was provided at each step. Box’s *M* is a statistic that is sensitive to unequal sample sizes, and if $p < .001$, robustness is not guaranteed (Tabachnick & Fidell, 1996, p. 382). These tests all showed p -values $> .001$ (range .048 - .448), therefore even though sample sizes were unequal, there was no significant discrepancy between variances.

Inclusion of variables. At Step 0, all potential predictors were entered together. However, they were only allowed to remain in the analysis by meeting the earlier specified criterion, $F = 1.00$. The variable chosen for the next step was the one which accounted for the next largest percentage of variance. This is shown by Wilks' lambda, a statistic that tells the reader how much variance is unaccounted for. (Therefore, the amount of variance accounted for can be obtained by subtracting Wilks' lambda from 1.00.) Seven steps showed that the following variables met the required criteria: the characteristics of competitive swimming subscale (PMQ), years registered with USMS, gender, stress management subscale (HPLP), TSCI total score, health/fitness (PMQ), and affiliation (PMQ). None of the other variables qualified for inclusion after Step 7. The canonical discriminant function revealed that taken together, these seven variables accounted for approximately 18% of the variance, $\lambda = .84$, $X^2(7) = 49.67$, $p < .0001$. Table 3 displays a summary table of variables with univariate F and corresponding significance values prior to and after inclusion in the discriminant function.

Ranking of included variables. Table 4 depicts the Structure matrix which shows pooled within-groups correlations between predictor variables and the canonical

Table 3

Univariate *F* values before and after Inclusion, Competition Items in Analysis

	Before Discriminant Function		After Inclusion in Discriminant Function		
	Univariate <i>F</i>	Significance Level	Wilks' Lambda	Univariate <i>F</i>	Significance Level
*PMQCHAR	18.83	$p < .0001$	.94	18.83	$p < .0001$
*Years Registered	18.11	$p < .0001$	.88	19.46	$p < .0001$
*Gender	3.13	ns	.87	15.37	$p < .0001$
*HPLP - stress management	0.15	ns	.86	12.07	$p < .0001$
*RTSCI	14.60	$p < .001$	.85	10.14	$p < .0001$
*PMQ - health and fitness	0.29	ns	.85	8.77	$p < .0001$
*PMQ - affiliation	6.30	$p < .05$	.84	7.66	$p < .0001$
PMQ - social status	12.37	$p < .001$			
PMQ - significant others	11.39	$p < .001$			
PMQ - fun	2.21	ns			
PMQ - energy release	1.82	ns			
Age	2.75	ns			
HPLP - exercise	1.38	ns			
HPLP - self actualization	0.59	ns			
HPLP - nutrition	0.12	ns			
HPLP - interpersonal support	0.03	ns			
HPLP - health responsibility	0.01	ns			

* denotes variables included in discriminant function

Table 4
Structure Matrix Correlations, Competition Items in Analysis

Structure Matrix ^a	
PMQ - characteristics of competitive swimming	.59
Years Registered	.58
RTSCI	.52
PMQ - social status	.49
PMQ - significant others	.42
PMQ - affiliation	.34
PMQ - energy release	.28
Gender	.24
PMQ - fun	.23
Age	.15
PMQ - health and fitness	.07
HPLP - exercise	.07
HPLP - stress management	-.05
HPLP - self actualization	.04
HPLP - nutrition	-.02
HPLP - health responsibility	.02
HPLP - interpersonal support	-.00

a Values are rounded

b Eigenvalue = .18

c Wilks' lambda = .84

discriminant function. Essentially it describes the importance of the variable's relationship listing the correlations highest to lowest. Tabachnick and Fidell (1996) note that by convention, correlations in excess of 33% may be considered eligible for interpretation, while those under 33% may not. A review of the Structure Matrix shows that characteristics of competitive swimming, the number of years registered with USMS, the trait sport confidence total score, and the PMQ subscales of social status, significant others, and affiliation had correlations of .32 or above with the discriminant function.

Classification of Competitors versus Non-competitors. When prediction into groups based on multiple variables is the major effort of the research, the most telling step of a discriminant analysis is the classification table. Ideally, an optimal situation occurs when predicted group membership closely matches actual group membership. As a reminder, 320 total cases were analyzed which were split into 69% ($n = 221$) Competitors and 31% ($n = 99$) Non-competitors except where the RTSCI was added and the group membership drops to 220 (73%) for Competitors and 80 (27%) for the Non-competitors.

A classification table was produced after using; 1) only the demographics (age, gender, and years registered in USMS), 2) adding the HPLP variables, 3) adding the PMQ variables, and 4) adding the RTSCI total score variable. Table 5 shows how the addition of each of the scales increased the percentage of cases correctly classified. The demographics alone correctly classified Competitors and Non-competitors 60.3% of the time. Demographics alone did a better job of predicting the Non-competitors (67.7%) than the Competitors (57.0%). The addition of the HPLP scale showed a .3% increase in Table

Direct Discriminant Analysis, Classification Results, Competition Items Included

	Percent of "grouped" cases correctly classified	Number of Cases	Predicted Group (Competitor)	Predicted Group (Non- competitor)
Step 1 - Demographics	60.3%			
Actual Group (Competitor)		221	126 57.0%	95 43.0%
Actual Group (Non-competitor)		99	32 32.3%	67 67.7%
Step 2 - Demographics, HPLP	60.6%			
Actual Group (Competitor)		221	129 58.4%	92 41.6%
Actual Group (Non-competitor)		99	34 34.3%	65 65.7%
Step 3 - Demographics, HPLP, PMQ	73.1%			
Actual Group (Competitor)		221	161 72.9%	60 27.1%
Actual Group (Non-competitor)		99	26 26.3%	73 73.7%
Step 4 - Demographics, HPLP, PMQ, RTSCI	76.3%			
Actual Group (Competitor)		220	204 92.7%	16 7.3%
Actual Group (Non-competitor)		80	55 68.8%	25 31.3%

cases correctly classified, which was not surprising considering the HPLP variables did not play a significant role in the discriminant function or the structure matrix. As was shown throughout the analysis, the PMQ variables were the most significantly correlated, and within the discriminant analysis, were the most predictive. 73.1% of the cases were correctly classified with the addition of the PMQ variables. The overall increase was due to the increase in correct classification of both groups (Competitors - 72.9%, Non-competitors - 73.7%). The final addition of the RTSCI scale caused another slight increase in percentage of cases correctly classified (76.3%). The main reason the Trait Sport Confidence Inventory aided in adding correct prediction was its apparent ability in differentiating Competitors as the cases correctly classified jumped to 92.3%. This, however, was at a great cost to correct classification of the Non-competitors (31.3%).

Press's Q is a useful statistic that tells whether the percent correctly classified reaches significance and computed using the formula $[N - (n - k)]^2 / N - (k-1)$, where N = total population, n = sample of correctly classified, and k = the number of groups. Significance of the results from this calculation can be obtained from a *Critical Values of Chi-Squared* table. Calculation of Press's Q showed that the classification accuracy was significantly better than would be expected by chance ($Q=17.76$, $df(1)$, $p<.001$). The reasons for the possible over-classification into the Competitor group will be presented in the discussion section.

A second discriminant analysis of predictor variables

Analyzing the characteristics of competitive swimming subscale in Appendix B, one can see that several items pertain to competition. Item 8, "I like to go to the meets"; Item 12, "I like to compete at higher levels"; Item 25, "I like to receive ribbons and trophies"; and Item 31, "I like to compete" all detail some aspect directly linked with competing which might lead a reader to think that these questions could correctly classify Competitors from Non-competitors at least as well, if not better, than the previous discriminant function. Therefore, a second direct discriminant analysis was done after creating a variable which excluded the four items. Table 8 shows that the same variables in the first discriminant analysis, excluding the four items pertaining to competition, were still able to correctly predict 75.0% of the cases. Press's Q again showed that the classification accuracy was significantly better than chance ($Q=19.76$, $df(1)$, $p<.001$). The error that this function made was to again over-classify competitors; at Step 4, after all variables were added, 78.8% of the 80 Non-competitors were incorrectly classified as Competitors. Tables 6, 7, and 8 depict the information garnered from the second direct discriminant analysis.

Discussion and Conclusion

There were three major findings in this study. The first finding demonstrated the lack of predictability that the Health Promoting Lifestyle Profile offered. Secondly, there was superior predictive ability offered with the Participation Motivations Questionnaire regarding competitive involvement. Finally, the Trait Sport

Table 6

Univariate *F* values before and after Inclusion, Competition Items Removed from Analysis

	Before Discriminant Function		After Inclusion in Discriminant Function		
	Univariate <i>F</i>	Significance Level	Wilks' Lambda	Univariate <i>F</i>	Significance Level
*Years Registered	18.11	$p < .0001$	.94	18.11	$p < .0001$
*PMQ - social status	12.37	$p < .001$	.91	14.39	$p < .0001$
*RTSCI	14.60	$p < .001$	.90	11.29	$p < .0001$
*HPLP - stress management	0.15	ns	.89	9.18	$p < .0001$
*PMQ - significant others	11.39	$p < .001$	.88	7.98	$p < .0001$
*Gender	3.13	ns	.88	6.94	$p < .0001$
PMQ - characteristics of competitive swimming (competition items removed)	6.43	$p < .05$			
PMQ - affiliation	6.29	$p < .05$			
PMQ - fun	2.21	ns			
PMQ - energy release	1.82	ns			
PMQ - health and fitness	0.29	ns			
Age	2.75	ns			
HPLP - exercise	1.38	ns			
HPLP - self actualization	0.59	ns			
HPLP - nutrition	0.12	ns			
HPLP - interpersonal support	0.03	ns			
HPLP - health responsibility	0.01	ns			

* denotes variables included in discriminant function

Table 7
Structure Matrix, Competition Items Removed from Analysis

	Structure Matrix ^a
Year Registered	.65
RTSCI	.59
PMQ - social status	.54
PMQ - significant others	.52
PMQ - affiliation	.34
PMQ - characteristics of competitive swimming (competition items removed)	.30
PMQ - energy release	.27
Gender	.27
PMQ - fun	.21
PMQ - health and fitness	.14
Age	.12
HPLP - stress management	-.06
HPLP - exercise	.04
HPLP - nutrition	-.03
HPLP - self-actualization	.03
HPLP - health responsibility	.02
HPLP - interpersonal support	.00

a Values are rounded

b Eigenvalue = .14

c Wilks' lambda = .88

Table 8

Direct Discriminant Analysis, Classification Results, Competition Items Removed

	Percent of "grouped" cases correctly classified	Number of Cases	Predicted Group (Competitor)	Predicted Group (Non- competitor)
Step 3 - Demographics, HPLP, PMQ	70.9%			
Actual Group (Competitor)		221	158 71.5%	63 28.5%
Actual Group (Non-competitor)		99	26 26.3%	73 73.7%
Step 4 - Demographics, HPLP, PMQ, RTSCI	75.0%			
Actual Group (Competitor)		220	208 94.5%	12 5.5%
Actual Group (Non-competitor)		80	63 78.8%	17 21.3%

Confidence Inventory tended to over-predict, classifying Non-competitors as Competitors. Addressing the first finding, living a healthy lifestyle does not necessarily directly bear on a person's competitive nature. Although not significant, the Non-competitor group means were higher for the Health Responsibility, Interpersonal Support, Nutrition, and Stress Management HPLP subscales than the Competitor group's. Remember that Fontane (1996), noted in previous research that many older persons who are very healthy are, in fact, competitive about their health status (recall the term *competitive health*.) This does not mean that these people are competing in sport, but they are engaging in and promoting good health above and beyond what their average peers are doing.

Predictive power of the PMQ. The Participation Motivations Questionnaire contains numerous items regarding why people take part in swimming whether it is strictly for exercise or to compete in conjunction with exercising. It is likely that the PMQ provided superior predictability for just this reason; it identifies those who swim more for fun and health/fitness as opposed to those who swim for fun through competition. Many participants were anxious to share what motivates them to jump in and start swimming. Results from this study showed that health and fitness and having fun are equally important motivators for competitors and non-competitors alike. However, comments about being hooked on the challenge of winning or achieving personal bests often were given by those who compete or have competed. Lifelong swimmers, such as 1936 Olympic backstroke champion, Adolf Kiefer, remarked, "Swimming is my life. It's my sport and my business, and it has given something to everyone in my family" (Lauerman,

1998, p. 13). One of the many participants who returned a letter with the survey listed several abstract reasons why she swims. These included liking the feel of the water on her skin and the power of the water to hold her up. Another said he finds:

Joy - the kind of freedom and intensity that a puppy gets when chasing a ball.

Discipline - like a Zen archer tuning in to the light of his arrow. Comradeship - the kind of a society where I can find people I like to be with. Recognition - my fifteen seconds of fame when I cruise past all those youngsters, or teach them the splashing flip finish in order to drown the guy with the watch. Preventative maintenance - to keep the body in tune for the next decade. Release - the best way I know to take all the stress out of my life. And more....

Why does the RTSCI over-predict competitor group membership. A likely reason for the RTSCI's tendency to over-predict competitive involvement is that these swimmers actually are competitors by nature. However, for reasons out of their control they are not able to compete presently. An important difference emerged between the two discriminant analyses when the PMQ competition items were removed. The RTSCI did an even poorer job of correctly classifying Non-competitors when these four items were not in the analysis than when they were. This can be interpreted two ways. First, the competition questions in fact, do a better, but not necessarily acceptable job of differentiating competitors from non-competitors. The second option is that the RTSCI, which is a personality inventory regarding sport self-efficacy, is telling the truth and identifying participants who are actually competitive by nature. Based on a background-like question asking participants if

they “had ever taken a break from swimming, and if so, why,” it would appear that the second interpretation is more valid. An example came from a woman who said that she competed in every open water event in 1996, but because her friend was dying, she was not able to be involved in competition in 1997. For others, especially in the upper age brackets, competition was very much a part of their lives and athletic personalities earlier in life but their own declining health, perhaps a bad hip, or the declining health of a loved one prevented competition at present. A participant may have responded on the PMQ and RTSCI surveys with a profile that appears that she/he is a competitor, yet life’s circumstances may preclude their ability to compete.

Suggestions for future study and final remarks. Based on research such as this, USMS may want to consider analyzing how many of the currently affiliated clubs are meeting the needs of their competing and non-competing members. For example, some respondents wrote in the margins of the Participation Motivations Questionnaire that if they actually had a coach, it would be easier to answer items regarding team functions and liking swimming because of the coaching. At the same time they expressed some displeasure about finding themselves in a coachless/ teamless situation. Perhaps USMS could investigate just how many swimmers are without a coach and of these how many would be interested in receiving some guidance and/or instruction. A program entailing educated and experienced coaches travelling to these people and offering a week’s worth of stroke instruction and workout ideas could go a long way in increasing goodwill with existing and recruitment of new USMS members.

Also of interest from a gerontological approach is the health (individual and family) and exercise histories of people who are currently engaged in 'successful aging'. Did they learn it early or is a phenomenon of more recent years? What kinds of models of healthy aging did the baby boomers and their older swimming friends have as youngsters? How does their own participation in sport impact the quantity of quality time with others and self?

At first, it was surprising to attain such a high return rate, but after reading these extraordinary older adults responses, it was understood that they are extremely proud of their accomplishments not only in the pool but in life. They were grateful for the opportunity to "spout off", as one put it. It was obvious from the personal articles and stories sent to the researcher that the participants feel swimming and being healthy in general, is very much a part of growing old gracefully. Knowing what makes this group tick, competitor or not, may help others (whether in the public or private sector) to develop important health-promoting athletic-like programs for the growing senior population.

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Appendix A
Health-Promoting Lifestyle Profile

Health-Promoting Lifestyle Profile

Please respond to the following items by circling the number that best represents you.

1.	I check my pulse rate.	Never 1	Sometimes 2	Often 3	Routinely 4
2.	I live in a satisfying environment.	Never 1	Sometimes 2	Often 3	Routinely 4
3.	I express concern and love.	Never 1	Sometimes 2	Often 3	Routinely 4
4.	I touch and am touched.	Never 1	Sometimes 2	Often 3	Routinely 4
5.	I do stretching exercises.	Never 1	Sometimes 2	Often 3	Routinely 4
6.	I eat 3 meals daily.	Never 1	Sometimes 2	Often 3	Routinely 4
7.	I use stress control methods.	Never 1	Sometimes 2	Often 3	Routinely 4
8.	My life has a purpose.	Never 1	Sometimes 2	Often 3	Routinely 4
9.	I eat roughage and fiber.	Never 1	Sometimes 2	Often 3	Routinely 4
10.	I like myself.	Never 1	Sometimes 2	Often 3	Routinely 4
11.	I take part in recreational activities.	Never 1	Sometimes 2	Often 3	Routinely 4
12.	I take part in supervised programs.	Never 1	Sometimes 2	Often 3	Routinely 4
13.	I relax my muscles before sleeping.	Never 1	Sometimes 2	Often 3	Routinely 4
14.	I read labels on my food.	Never 1	Sometimes 2	Often 3	Routinely 4
15.	I eat food from the 4 basic food groups.	Never 1	Sometimes 2	Often 3	Routinely 4
16.	I get my blood pressure checked.	Never 1	Sometimes 2	Often 3	Routinely 4
17.	I attend environmental programs.	Never 1	Sometimes 2	Often 3	Routinely 4
18.	I maintain meaningful interpersonal relationships.	Never 1	Sometimes 2	Often 3	Routinely 4
19.	I practice meditation and/or relaxation techniques.	Never 1	Sometimes 2	Often 3	Routinely 4

20.	I attend health care programs.	Never 1	Sometimes 2	Often 3	Routinely 4
21.	I am aware of stress sources in my life.	Never 1	Sometimes 2	Often 3	Routinely 4
22.	I am aware of my strengths/ weaknesses.	Never 1	Sometimes 2	Often 3	Routinely 4
23.	I know what is important.	Never 1	Sometimes 2	Often 3	Routinely 4
24.	I report symptoms to my M.D.	Never 1	Sometimes 2	Often 3	Routinely 4
25.	I find my days challenging.	Never 1	Sometimes 2	Often 3	Routinely 4
26.	I am enthusiastic/optimistic.	Never 1	Sometimes 2	Often 3	Routinely 4
27.	I have daily relaxation time.	Never 1	Sometimes 2	Often 3	Routinely 4
28.	I praise others easily.	Never 1	Sometimes 2	Often 3	Routinely 4
29.	I spend time with close friends.	Never 1	Sometimes 2	Often 3	Routinely 4
30.	I do vigorous exercise 3 times/week.	Never 1	Sometimes 2	Often 3	Routinely 4
31.	I set realistic goals.	Never 1	Sometimes 2	Often 3	Routinely 4
32.	I seek information.	Never 1	Sometimes 2	Often 3	Routinely 4
33.	I do not eat preservatives.	Never 1	Sometimes 2	Often 3	Routinely 4
34.	I question M.D./look for second opinion.	Never 1	Sometimes 2	Often 3	Routinely 4
35.	I discuss my concerns and problems.	Never 1	Sometimes 2	Often 3	Routinely 4
36.	I look forward to the future.	Never 1	Sometimes 2	Often 3	Routinely 4
37.	I am growing/changing.	Never 1	Sometimes 2	Often 3	Routinely 4
38.	I check my cholesterol.	Never 1	Sometimes 2	Often 3	Routinely 4
39.	I express my feelings.	Never 1	Sometimes 2	Often 3	Routinely 4
40.	I eat breakfast.	Never 1	Sometimes 2	Often 3	Routinely 4
41.	I have long term goals.	Never	Sometimes	Often	Routinely

		1	2	3	4
42.	I read books about health.	Never	Sometimes	Often	Routinely
		1	2	3	4
43.	I feel happy/content.	Never	Sometimes	Often	Routinely
		1	2	3	4
44.	I respect my accomplishments.	Never	Sometimes	Often	Routinely
		1	2	3	4
45.	I have pleasant bedtime thoughts.	Never	Sometimes	Often	Routinely
		1	2	3	4
46.	I enjoy touching.	Never	Sometimes	Often	Routinely
		1	2	3	4
47.	I observe my body for changes.	Never	Sometimes	Often	Routinely
		1	2	3	4
48.	I discuss my health concerns.	Never	Sometimes	Often	Routinely
		1	2	3	4

Appendix B
Participation Motivations Questionnaire (PMQ)

Participation Motivations Questionnaire for Swimming

Please respond to the following items by circling the number that best represents your feelings towards your participation and involvement with swimming.

1 = Not at all important

5 = Extremely important

1.	I like to swim in the pool.	1	2	3	4	5
2.	I want others to notice me.	1	2	3	4	5
3.	I like to do something I am good at.	1	2	3	4	5
4.	I like to win.	1	2	3	4	5
5.	It helps get rid of frustrations.	1	2	3	4	5
6.	I like to be active.	1	2	3	4	5
7.	I like the excitement.	1	2	3	4	5
8.	I like to go to the meets.	1	2	3	4	5
9.	I want to learn new skills.	1	2	3	4	5
10.	I like to feel important.	1	2	3	4	5
11.	My friends want me to participate.	1	2	3	4	5
12.	I like to compete at higher levels.	1	2	3	4	5
13.	I like to get rid of energy.	1	2	3	4	5
14.	I like the coaches.	1	2	3	4	5
15.	I like to exercise.	1	2	3	4	5
16.	I like being on a team.	1	2	3	4	5
17.	I want to stay in shape.	1	2	3	4	5

	1 = Not at all important	5 = Extremely important				
18.	I like to have fun.	1	2	3	4	5
19.	I like the challenge.	1	2	3	4	5
20.	I like to meet new friends.	1	2	3	4	5
21.	I like how my body looks/feels.	1	2	3	4	5
22.	I like the teamwork.	1	2	3	4	5
23.	My family wants me to participate.	1	2	3	4	5
24.	I like to get out of the house.	1	2	3	4	5
25.	I like to receive ribbons & trophies.	1	2	3	4	5
26.	I like having something to do.	1	2	3	4	5
27.	I like team dinners/picnics.	1	2	3	4	5
28.	I want to improve my health.	1	2	3	4	5
29.	I like the team spirit.	1	2	3	4	5
30.	I want to improve my skills.	1	2	3	4	5
31.	I like to compete.	1	2	3	4	5
32.	I want to get in shape or be stronger.	1	2	3	4	5
33.	I want to be popular with others.	1	2	3	4	5
34.	I like the action.	1	2	3	4	5
35.	I want to be with friends.	1	2	3	4	5

Appendix C

Revised Trait Sport Confidence Inventory (RTSCI)

Revised Trait Sport-Confidence Inventory

Think about how self-confident you are when you compete in swimming.

Answer the questions below based on how confident you *generally* feel when you compete in your sport.

Please answer as you *really* feel, not how you would like to feel. Your answers will be kept completely confidential.

When you compete, how confident do you *generally* feel? (circle number)

1.	Rate your confidence in your ability to <i>execute the skills necessary to be successful.</i>	Low
1	2	Middle
3	High
4	5
2.	Rate your confidence in your ability to <i>make critical decisions during competition.</i>	Low
1	2	Middle
3	High
4	5
3.	Rate your confidence in your ability to <i>perform under pressure.</i>	Low
1	2	Middle
3	High
4	5
4.	Rate your confidence in your ability to <i>execute successful strategy.</i>	Low
1	2	Middle
3	High
4	5
5.	Rate your confidence in your ability to <i>concentrate well enough to be successful.</i>	Low
1	2	Middle
3	High
4	5
6.	Rate your confidence in your ability to <i>adapt to different race situations.</i>	Low
1	2	Middle
3	High
4	5
7.	Rate your confidence in your ability to <i>achieve your competitive goals.</i>	Low
1	2	Middle
3	High
4	5
8.	Rate your confidence in your ability to <i>be successful.</i>	Low
1	2	Middle
3	High
4	5
9.	Rate your confidence in your ability to <i>consistently be successful.</i>	Low
1	2	Middle
3	High
4	5
10.	Rate your confidence in your ability to <i>think and respond successfully during competition.</i>	Low
1	2	Middle
3	High
4	5
11.	Rate your confidence in your ability to <i>meet the challenge of competition.</i>	Low
1	2	Middle
3	High
4	5
12.	Rate your confidence in your ability to <i>be successful even when the odds are against you.</i>	Low
1	2	Middle
3	High
4	5
13.	Rate your confidence in your ability to <i>bounce back from performing poorly and be successful.</i>	Low
1	2	Middle
3	High
4	5

Appendix D

Demographic Survey

Demographic Survey

Please help complete the packet. These answers, as with the rest of the responses will be kept completely confidential.

Please circle your USMS age group.

55-59 60-64 65-69 70-74 75-79 80-84 85-89 90-94 95-99 100+

_____Female _____Male

How many years have you been consecutively registered with USMS? _____

How many years have you been swimming registered or unregistered? _____

Have you ever taken an extended break from swimming? If yes, please briefly explain and estimate amount of time away from the pool. _____

Why did you join USMS? _____

Do you regularly compete? _____Yes _____No

If yes, how many meets per year? _____

What is your best 500 yards/400 meters Free time within the last 5 years? _____

a. If you do this distance but in another stroke, which stroke do you do? _____

b. If you do not, or have not, competed in the last 5 years, how long, swimming with maximum effort, does it take you to complete 20 laps? _____

Have you ever *qualified or competed* at the USMS National level? _____Yes _____No

Please give your local USMS affiliate (e.g. Pacific Masters Swimming). _____

150mm

6"

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