

**COMPETITION ANXIETY, SELF-CONFIDENCE,
PERSONALITY AND COMPETITION PERFORMANCE OF
AMERICAN ELITE AND NON-ELITE JUDO ATHLETES**

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Abstract

Judo is one of the most widely practiced sports in the world. In the US, however, other sports like tennis, golf, or basketball are more popular. Consequently, there is very little judo-related research published in the contemporary scholarly literature, particularly in English. Research in other sports has shown that stress, confidence, and personality are important factors in predicting athletic performance, and this information has been used to help athletes perform better. This line of research is no less important for judo athletes. The present study is a first attempt to test whether anxiety, confidence, and personality are related to performance in judo athletes. Elite and non-elite judo athletes completed measures assessing anxiety and confidence before competition. Elite athletes also completed a measure of personality and provided competitive performance data. Elite athletes also had more confidence than non-elite athletes and normative samples. Several psychological variables predicted performance measures and anxiety was correlated with less confidence in both elite and non-elite athletes. Applications of these results for both coaches and athletes are discussed.

Key Words: judo, anxiety, self-confidence, personality, performance

I Introduction

In just over 100 years, judo has become an immensely popular international sport. In the world, there are more people playing judo than any other sport, with the exception of soccer. Internationally, there are 175 member countries in the International Judo Federation (IJF), the largest number of countries registered as members in any international sport federation. In the 1995 World Judo Championships, 625 contestants from

over 100 countries participated and medal winners came from Cuba, France, Germany, Japan, Korea, and Russia. At the 1996 Summer Olympic Games, a medalist came from more countries than any other sport.

Despite the enormous popularity of judo around the world, it does not enjoy such popularity and recognition in the United States. Consequently, the research literature in sport involving judo athletes is almost non-existent. There are, in fact, some studies on judo in Europe and Japan, but these focus on biomechanics and exercise physiology rather than psychology. Thus, despite the fact that judo is one of the premier sports in the world, there is a serious void in the sport psychology

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literature regard to this sport.

In more recognized sports (e. g., football, golf, gymnastics, swimming, tennis, and track and field), the wealth of research concerning the importance of psychological factors has been steadily growing, especially in relation to studies examining anxiety, confidence, and personality characteristics, and how they affect performance.⁸⁾⁹⁾¹¹⁾¹³⁾¹⁴⁾¹⁶⁾¹⁸⁾¹⁹⁾ For example, research has shown that anxiety, self-efficacy, and extroversion are correlated with confidence; moreover, each of these factors has been able to predict performance.⁴⁾¹²⁾¹³⁾¹⁶⁾ Elite athletes rate anxiety as more facilitative than non-elite athletes⁸⁾ and numerous stress management training and psychological skills programs have been developed to help athletes cope with the demands of competition and to produce better performance outcomes in a variety of sports including gymnastics,¹⁰⁾ tennis,³⁾ and volleyball,¹¹⁾

Only a handful of studies has even involved judo athletes as participants. In one,²⁰⁾ eleven judo athletes, three power-lifters, three cyclists, and three triathletes were interviewed to examine how athletes defined and categorized sport situations. Using content analyses he found many common situations among athletes in training and competition; this study however, did not examine differences between different types of athletes. Another study¹⁷⁾ tested 15 elite judo athletes on both physiological and psychological factors (mood, anxiety, confidence, and personality) over 10 weeks while increasing training loads. As training increased, anger and fatigue increased in weeks 8 and 10 from baseline; anxiety decreased in weeks 4 and 6 from baseline; and confidence increased in week 4 from baseline. Another study²³⁾ examined the physical and physiological consequences of increased mental strain in 20 adolescent judo athletes, and reported that those with higher overall VO_2 max scores and earlier

heart rate peaks during the stress period had significantly less heart reactivity.

Basic psychological research with judo athletes is necessary for several reasons. First, it would help establish national standards for judo athletes on important psychological variables, and allow us to compare judo athletes with other athletes and even non-athletes to examine the possible psychological effects of judo. Second, research can identify the psychological factors important in predicting actual competition performance. It is unclear whether or not factors affecting performance in other sports is applicable to judo athletes, or whether the interrelationships among various psychological factors are the same. Third, research on judo athletes would be applicable in both coaching and training. Many sports successfully integrate sport science findings into their training plans, and the judo community could do so as well.

This study addresses this void by examining the role of the anxiety, confidence, and personality in predicting competitive performance. Elite and non-elite American judo athletes completed a series of psychological measures assessing competition anxiety and sport self-confidence prior to actual competition. Also, for elite athlete, we administered a personality inventory and collected performance data from actual competition. With these data, we conducted exploratory analyses examining differences between judo athletes and non-athletes, the relationship between psychological factors and performance, and the relationship among the psychological variables.

II Methods

1. Participants

The participants included 63 (47 males, 16 females) non-elite and 89 (43 males, 44 females, 2 subjects did not indicate gender) elite judo athletes. Athletes were classified as "elite" by criteria

approved by the board of directors of United States Judo, Inc., the national governing body of judo in the US. and accepted by the US Olympic Committee. Essentially, athletes qualify for elite status by placing first, second, or third at various national or international competitions. All other athletes were classified as "non-elite".

Data for the non-elite athletes were collected during the registration period of the 1994 USJI National Ladder Tournament (September, 1994). This tournament is a national championship designed to develop future elite athletes and strictly prohibits current elite athletes from competing in the division in which they have earned elite status. All non-elite athletes participated in this study on a voluntary basis, with no payment or compensation.

Data for the elite athletes were collected at the Trials for the 1995 Pan American Games and World Championships (January, 1995). This tournament was limited to the five elite athletes in each weight division. All elite athletes participated in this study as part of mandatory sport science testing.

2. Psychological Measures

State-Trait Anxiety Inventory (STAI, state only). This measure requires participants to make scalar ratings on 20 items that assess general anxiety at the present time. A score is computed by summing all 20 items with higher scores indicating higher levels of anxiety. The STAI has been used widely in psychological research and been shown to be both highly reliable and valid.²²⁾

Sports Competition Anxiety Test (SCAT). The SCAT assesses sports competition anxiety before competition. This measure consists of 15 items that are rated on a three-point scale. A score is computed by summing ten of 15 the items, with higher scores indicating higher levels of anxiety concerning the upcoming competition. The SCAT has also been extensively used in sports research

and shown to be both reliable and valid.¹³⁾⁵⁾

Performance Anxiety Questionnaire (PAQ). This scale was originally designed to measure competition anxiety in Japanese participants and translated for use in this study.⁵⁾⁶⁾ Accuracy of the translation was verified using back-translation procedures. Subjects are required to make scalar ratings on 50 items. Scores for each subject are computed by summing the respondent's ratings across all 50 items with lower scores indicating higher levels of anxiety.

Sport-Self-Confidence Inventory (SSCI). All athletes completed the SSCI, which requires them to make scalar ratings on various items assessing self-confidence compared to the most confident athlete they know. Scores for each subject were computed by summing the respondent's ratings across all items with higher scores indicating higher self-confidence. The SSCI has been used in the sport psychology literature and proven to be both reliable and valid.²⁴⁾

The Big Five Inventory-54 (BFI-54). Elite athletes also completed the BFI-54 as a general measure of personality. Subjects rate 54 statements on a five point scale indicating how much the statement is like them. The BFI-54 produces scores for five personality dimensions: conscientiousness, openness, neuroticism, extroversion, and agreeableness. The BFI-54 is a widely used measure of personality and is reported to have good reliability and validity.[?]

3. Point Status and Performance Data

Various indices were used to measure actual performance of the elite athletes. First, elite athletes were ranked from one to five within their weight division based on the number of qualifying points they had accumulated over the year preceding the tournament. These data were called "elite ranking." Second, the elite versus non-elite classification by definition was yet another index of performance. Third, we collected four types of

performance data from the trials competition that occurred the day after data collection: (a) The winner of the trials and the runner-up were classified as "placers"; all other athletes were classified as "non-placers." (b) A win ratio was computed by taking the number of matches each athlete won and dividing that by the total number of matches competed in. (c) The number of attacks each athlete engaged in during each match was recorded by two trained members of the USJI National Coaching Staff. An attack per match average was computed for each athlete by dividing the total number of attacks by the number of matches the athlete competed in. (d) The average number of times a match ended in ippon (defeating the opponent before the match is over, either by takedown or surrender) was calculated across the total number of matches competed for each athlete.

4. Procedures

All psychological data for both elite and non-elite athletes were collected the day before competition. Data were collected in groups, and the questionnaires were distributed to all athletes in prepared packets. Athletes were given as much time as they wished to complete the questionnaires, which generally took 20-30 minutes. The

elite ranking data were obtained from the elite athlete point roster at the time of the trials competition.

III Results

1. Descriptive and Preliminary Analyses

Means and standard deviations were computed on the STAI, SSCI, PAQ, and SCAT for both the elite and non-elite groups and on the BFI and performance variables for the elite group (Table 1).

2. Do Judo Athletes Differ from Norm Data on Self-Confidence or Anxiety?

We compared scores for the judo athletes against normative means on the SSCI,²⁴⁾ STAI,²¹⁾ and SSCI¹⁵⁾ separately for the elite and non-elite groups (Table 2). Elite athletes had significantly higher scores on the SSCI than the normative sample. Both elite and non-elite athletes had significantly greater scores than the norms on the STAI; but they had significantly lower scores on the SCAT.

3. Does Self-Confidence, Competition Anxiety, or Personality Predict Performance?

First, we first computed Pearson product moment correlations between the elite rankings

Table 1 Descriptive Statistics for STAI, SSCI, SCAT and PAQ

Measure	Elite				Non-Elite							
	Total	(sd)	Males	(sd)	Females	(sd)	Total	(sd)	Males	(sd)	Females	(sd)
STAI	46.26	(9.71)	49.31	(9.47)	46.86	(10.17)	47.08	(8.84)	46.24	(9.17)	49.50	(7.55)
SSCI	75.23	(13.65)	64.65	(15.13)	71.96	(14.95)	64.31	(13.35)	64.69	(14.43)	63.13	(9.60)
PAQ	181.69	(32.41)	177.64	(32.14)	184.90	(32.74)	178.92	(32.93)	177.20	(34.20)	184.07	(29.27)
SCAT	21.37	(4.12)	22.05	(3.77)	21.16	(4.38)	21.31	(4.24)	21.31	(4.24)	21.25	(4.28)
Extroversion	3.49	(.66)	3.38	(.54)	3.60	(.74)						
Agreeableness	4.03	(.57)	4.02	(.50)	4.04	(.63)						
Conscientiousness	4.05	(.53)	4.01	(.45)	4.09	(.56)						
Neuroticism	2.68	(.77)	2.69	(.66)	2.72	(.78)						
Openness	3.81	(.55)	3.72	(.57)	3.86	(.53)						
Attack Frequency	7.20	(5.14)	8.86	(5.56)	5.96	(4.09)						
Win Ratio	.19	(.26)	.23	(.25)	.19	(.29)						
Ippon Ratio	.19	(.27)	.16	(.24)	.21	(.28)						
Place/Non-place	2.39	(.81)	2.38	(.82)	2.39	(.84)						
Elite Ranking	2.90	(1.42)	2.97	(1.45)	2.89	(1.41)						

Table 2 Comparison of Normative Scores on the SSCI, STAI, and SCAT for both Elite and Non-Elite

Measure	Elite	Norm	t	df	p
SSCI	75.23 (13.65)	60.74 (13.78)	7.47	203	p ≤ .001
STAI	46.26 (9.71)	35.74 (9.46)	9.15	566	p ≤ .001
SCAT	21.37 (4.12)	23.00 (4.70)	-2.72	228	p ≤ .01

Measure	Elite	Norm	t	df	p
SSCI	64.31 (13.35)	60.74 (13.78)	1.66	176	ns
STAI	47.08 (8.84)	35.74 (9.46)	9.37	544	p ≤ .001
SCAT	21.31 (4.24)	23.00 (4.70)	-2.49	201	p ≤ .01

and the psychological variables for the total group, and separately for males and females. None of the correlations was significant for the total group or male athletes. For females, however, self-confidence was significantly negatively correlated with elite ranking, $r(38) = -.36$, $p \leq .05$, indicating that those ranked higher had more self-confidence. Neuroticism was also significantly positively correlated with elite ranking, $r(38) = .40$, $p \leq .05$, indicating that athletes ranked higher had less neuroticism than those ranked lower. One of the anxiety measures (PAQ) and conscientiousness were also marginally negatively correlated with elite ranking, $r(38) = -.29$ and $r(38) = -.27$, $p \leq .10$, indicating that higher ranked female athletes had more anxiety and consciousness than lower ranked female athletes.

Second, we computed separate two-way ANOVAs on the athlete's scores on the STAI, SCAT, SSCI, and PAQ, using sample (elite v. non-elite) and gender as the independent variables. For the STAI, SCAT, and PAQ no significant effects were found. There was significant main effect of athlete type, however, on the SSCI, $F(1, 126) = 25.25$, $p \leq .001$, indicating that elite athletes

had more self-confidence than non-elites.

Third, we computed t-tests and Mann-Whitney Us on all the psychological variables for the total group, and separately for male and female athletes, using place/non-place as the independent variable. Both analyses corroborated each other, and for parsimony we report only the t-tests. None of the effects was statistically significant for the total group or female athletes. Male placers, however, had lower scores on Agreeableness than non-placers, $t(40) = -2.02$, $p \leq .05$.

Fourth, we computed Pearson product moment correlations between the athlete's win ratios with the psychological variables for the total group, and separately for male and female athletes. None of the effects were statistically significant for the total group or female athletes; but, Openness was positively correlated with win ratios for males, $r(41) = .34$, $p \leq .05$.

Finally, we examined if either psychological or other performance variables might predict attacks during competition. We computed Pearson product moment correlations on attacks with performance and psychological variables for total group, and separately for males and females (Table

Table 3 Do the Psychological and Performance Variables Predict Attack Frequency?

Measure	Total Group	Males	Females
STAI	-.17	-.03	-.36 *
SSCI	.21 +	.06	.35 *
PAQ	-.06	-.32 *	.28 *
SCAT	-.14	.06	-.36 *
Extroversion	-.09	-.01	-.11
Agreeableness	-.01	-.05	.08
Conscientiousness	-.04	-.19	.27
Neuroticism	-.17	-.02	-.38*
Openness	-.12	-.17	.07
Win Ratio	.30 **	.16	.43 *
Ippon	.12	.36 *	-.06
Elite Ranking	-.26 *	-.26	-.32 *

+ = p ≤ .10, * = p ≤ .05, ** = p ≤ .01

3). For the total group, attacks were correlated with higher win ratios, higher ranking, and more confidence. For males, attacks were correlated with higher ippon ratios and lower anxiety (PAQ). For females, attacks were correlated with higher win ratios, elite ranking, anxiety, self-confidence, and neuroticism.

4. Relationships Among the Psychological Variables

We computed intercorrelation matrices on all psychological variables, separately for elite and non-elite athletes (Table 4). The three anxiety

measures were significantly correlated with each other, and for each measure higher anxiety scores predicted less self-confidence for both athlete groups. Also, conscientious athletes had less anxiety and more self-confidence. Conversely, neurotic athletes had more anxiety and less self-confidence.

IV Discussion

Results showed that elite athletes had more self-confidence than non-elite athletes and both elite and non-elite athletes had more self-confidence than normative data. Because we defined elite status based on how well athletes did in competition, it is not surprising that athletes who do better in competition would have more confidence. Similarly, athletes in our study were top ranking national (elite) and local (non-elite) champions, while normative scores were based on college athletes and would be less likely to have more confidence than top ranking champions. We also found that both elite and non-elite athletes had more general anxiety on the STAI and lower sports anxiety on the SCAT than norm data. The STAI norms were based on college undergraduates non-athletes, while our athletes were competing in national tournaments in addition to going to school (or working) and thus would be more

Table 4 Intercorrelations of All Psychological Measures for Each Group

	STAI	SCAT	SSCI	PAQ	EXT	AGR	CON	NEU
STAI	-----	.73***	-.46***	-.51***				
SCAT	.74***	-----	.50***	-.52***				
SSCI	-.52***	-.32***	-----	.35 **				
PAQ	-.72***	-.56***	.45***	-----				
EXT	-.19	-.04	.06	.22	-----			
AGR	.01	.13	.18	.08	.13	-----		
CON	-.37 **	-.22	.49***	.37 **	.05	.22	-----	
NEU	.54***	.29	-.41***	-.56***	-.20	-.15	-.51***	-----
OPN	-.21	-.17	.16	.19	.21	.04	.41***	-.17

Non-elite athletes (n=57) correlations in upper right diagonal, elite athletes (n=74) correlations in lower left diagonal, ** = p ≤ .01, *** = p ≤ .001

likely to have more general anxiety than the average college student. The norms for the SCAT, however, were based on high school athletes who be more anxious about their sport performance than top ranked athletes.

We found that psychological factors do indeed predict performance, but a different pattern of results emerged for males and females. Self-confidence, anxiety, and neuroticism predicted female athlete' ranking prior to competition while agreeableness and openness predicted competitive performance for males. Previous research has found differences between males and females for changes in cognitive anxiety, confidence in team outcome, and rating of opponents over time before competition.⁹⁾ Perhaps the process, appraisal, attributions, and interaction of anxiety, confidence, personality, and performance may be different for male and female Judo athletes. It is possible that psychological variables may be more important in the prediction of performance for female judo athletes. For example, we found that more psychological and performance variables predicted the number of attacks during competition for females than males. Conceivably, female athletes who possess less neuroticism and greater confidence may be more comfortable attacking opponents and increase performance. However, since male athletes attack more throughout the match, the number of attacks is less salient in predicting performance and psychological variables.

Finally, we found that more anxiety predicted less confidence in both elite and non-elite athletes and that both neuroticism and conscientiousness predicted anxiety and self-confidence. Possibly conscientiousness predicts training adherence and this in turn creates more confidence and less anxiety. Similarly, neuroticism may have the reverse effect on training and create lower confidence and more anxiety.

These results represent a first step in obtaining

psychological data for judo athletes on that can be implemented in evaluation, training, and development. With this information, both coaches and athletes can develop training plans to aid individual athletes in determining psychological strengths and weaknesses. Similarly, these data allow us to compare judo athletes to other types of athletes to identify specific factors important for judo, as well as general athletic performance. Furthermore, these standards could be used to monitor psychological profiles at regular intervals during the training process and detect burnout or early peaking before it happens. Finally, we need to integrate this information into our senior and junior development programs so that our athletes get the best possible training we can give them.

Future studies need to continue to understand which psychological factors are really predictive of actual competition performance. Our results showed that anxiety, confidence, and personality were indeed important in predicting competitive performance. Additionally, we replicated previous findings with other types of athletes on these factors. This demonstrates that psychological factors do indeed have an impact on competitive performance for judo athletes just as in other sports. Our results represent a modest beginning in understanding competitive judo performance and athletes. Much further research, however, is needed to understand the psychological processes at work in competitive performance and then apply these results to individual athletes.

Future studies need to include other psychological constructs important in predicting judo performance. An important aspect of competitive performance that our study did not include is the stress and coping process of how athletes deal with anxiety, pressure, and emotions that arise both during training and prior to competition. By including these other constructs the field can examine both the interrelationships among the con-

structs and examine causal models that predict competitive judo performance. By understanding the process of how psychological factors affect competitive performance we can then help our athletes gain a competitive edge, just as other sports do, through applied sport science.

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