

The Relationship Between Psychological Characteristics, Physical Fitness, and Physiology in Judo Athletes

(武道学研究第33卷第3号掲載)

平成13年3月

David MATSUMOTO	(San Francisco State University, U.S.A.)
Masayuki TAKEUCHI	(Daito Bunka University)
Rebecca RAY	(San Francisco State University)
Takeshi NAKAIIMA	(Kokushikan University)
Eio IIDA	(Japanese Academy of Budo)
Hidenaka WAKAYAMA	(International Budo University)

THE RELATIONSHIP BETWEEN PSYCHOLOGICAL CHARACTERISTICS, PHYSICAL FITNESS, AND PHYSIOLOGY IN JUDO ATHLETES

David MATSUMOTO (San Francisco State University, U.S.A.)
Masayuki TAKEUCHI (Daito Bunka University)
Rebecca RAY (San Francisco State University)
Takeshi NAKAJIMA (Kokushikan University)
Eio IIDA (Japanese Academy of Budo)
Hidenaka WAKAYAMA (International Budo University)

Abstract

Previous research on judo players has identified the parameters of physical fitness and mental state that are important to performance and competition. But, all previous work has examined the physical and psychological components separately; no study, to our knowledge, has examined them in the same athletes. Many studies in the English language literature in sports, medicine and psychology have documented the positive psychological benefits of exercise; but no study has examined the relationship between these components in elite athletes in any sport, let alone judo. The purpose of the two studies reported here was to examine the relationship between physical fitness and psychological traits shown by previous research to be important to judo development and competitive success. In Study 1, 20 elite American judo athletes completed Iida et al.'s 10-item battery of physical fitness, and five psychological scales. In the second study, 12 elite American judo athletes completed five physiologically based measures of strength and conditioning and six psychological measures. Across both studies, athletes who were in better physical shape had less anxiety, greater self-confidence, more internal locus of control, more tension and vigor, less anger and fatigue, and engaged in more effective coping strategies than athletes who were not as physically fit. These results are the first to document the psychological correlates of physical conditioning in judo athletes, and have implications to coaching competitive and non-competitive judo successfully.

I Introduction

Research of the last two decades has made considerable progress in contributing to our understanding of the psychological and biological/physiological components important to judo players. The most concerted effort to identifying the most

relevant components of basic physical fitness has been conducted by Iida and his colleagues. Across 15 years, this team of researchers has tested well over 700 male and female judo players, at all weight categories, on various indices of basic physical fitness. Their initial test batteries included over 50 items measuring different aspects of physical fitness. Through factor analyses of the test items, they isolated the eight factors they thought best representative of the test items, and selected 10 of the easiest to administer items to

David Matsumoto
Department of Psychology, San Francisco State University
1600 Holloway Avenue San Francisco, CA 94132
Tel: 415-338-1114 Fax: 603-737-7140
E-mail: dm@sfsu.edu

measure these eight factors. Based on these findings, these researchers have developed an 8-factor, 10-item standardized test battery for assessing general physical fitness. They have produced normative data on each of these items, and have demonstrated the correlation between these items and competitive performance. To date, this research is the most comprehensive and systematic of its kind, identifying the minimum set of variables that holistically and meaningfully assess physical fitness parameters in judo athletes.^{2),3),4)}

In similar fashion, the United States Olympic Committee's (USOC) Sport Science and Technology Division, in conjunction with United States Judo, Inc., has developed its own test battery assessing physical fitness characteristics they consider important for judo competition. While some items overlap with Iida et al.'s battery, some are unique. For example, the USOC's battery includes measures of anaerobic capacity involving the Wingate Anaerobic Test⁵⁾ and a Max VO₂ and lactic acid threshold analysis based on treadmill runs to exhaustion. Rather than basic research, the USOC's focus has been on the development of tests that can be applied for training purposes.

In the last few years, research has also made considerable progress in identifying the key psychological components associated with competi-

tive success in judo athletes. While there are many studies in the sport psychology literature examining the psychological components associated with competition in a variety of sports, reliable information on judo athletes has been relatively sparse. Recently, Matsumoto and his colleagues have conducted a number of studies examining the psychological profiles of judo athletes in the U.S., and have identified the psychological parameters that are associated with competitive success.¹⁰⁾¹¹⁾¹²⁾ These researchers have utilized tests of personality, emotion, self-confidence, anxiety, stress, coping, and optimism, and have compared elite versus non-elite athletes. They have also correlated scores on these measures with ranking for elite athletes, and with actual performance in competition. Findings across all studies indicate that competitive success is associated with more self-confidence, anger-hostility, subjective control over outcomes, conscientiousness, internal locus of control, social support, and optimism, and with less anxiety, neuroticism, confrontational styles of coping, and escape/avoidance coping (Table 1).

Studies on the psychological and physical aspects of judo players are especially important because mind, technique, and body (*shin, gi, tai*) are traditionally considered the three essential components of competitive abilities in judo, as

Table 1 Summary of the Findings from Previous Studies Examining Psychological Characteristics Associated with Competitive Success

Competitive success is associated With :	
GREATER	LESS
Self-Confidence	Pre-Competition Anxiety
Anger-Hostility	Neuroticism
Subjective Control Over Outcomes	Confrontive Styles of Coping
Conscientiousness	Escape/Avoidance Coping
Internal Locus of Control	
Seeking Social Support	
Optimism	

well as to the development of moral character and personality. While it is true that in competition, strengths in one or two of these components can compensate for weaknesses in another, most successful judo competitors have excellent technique, physical shape and conditioning, and mental fitness and outlook in relation to training and competition. Outside the competition arena, proper development in each of these areas is seen as a necessary condition to the development of the whole person through judo practice.

Yet, despite these important studies on two components of judo, no study, to our knowledge, has examined these components *in the same athletes*. Many studies in the English language literature in sports, medicine and psychology have examined the relationship among physical and psychological processes, many focusing on the positive psychological benefits of exercise. But, no study has examined the relationship between these components in elite athletes in any sport, let alone judo.

The purpose of the two studies reported here was to examine the relationship between physical fitness and psychological traits shown by previous research to be important to judo development and competitive success. In the first study, 20 elite American judo athletes completed Iida et al.'s battery of physical fitness, and five psychological scales. In the second study, 12 elite American judo athletes completed five physiologically based measures of strength and conditioning and six psychological measures. The purpose of both studies was to test the relationship between the physical fitness/physiological measures on one hand and the psychological measures on the other, addressing the general hypothesis that athletes who were in better physical shape had psychological profiles more conducive to positive mental states and competitive performance.

II Study 1

I. Method

Participants. Participants were 20 elite American judo athletes (11 males, 9 females, average age = 22.28 years). They competed in different weight and sex categories; thus, sex and size may have confounded the correlations reported below. To address the potential confound of size, correlations were computed between the psychological variables and height and weight. None of the 44 correlations (22 psychological scales x height and weight) was significant; thus, size could not have contributed to the findings reported below. To address the potential confound with sex, one-way Multivariate Analyses of Variance (MANOVAs) were computed separately for all psychological tests, and once on the physical fitness data, using gender as the independent variable. None of the *F*s was significant, indicating that gender differences could not have contributed to the significant correlations reported below. (Univariate one-way ANOVAs on the physical fitness scores, however, did produce a number of significant differences, and the results should be interpreted with this caution.)

Psychological tests. Both studies incorporated a comprehensive psychological test battery that previous research has shown to be relevant in predicting competitive success. In this study, five tests assessing four constructs were utilized.

- (1) **Personality.** The Big Five Inventory (BFI) is a 54-item test that scores five personality dimensions thought to be universal: Openness, Neuroticism, Conscientiousness, Extraversion, and Agreeableness. It has been used widely and shown to be both reliable and valid.⁶⁷⁾
- (2) **Coping.** The Brief Coping Inventory (BCI) is a 24-item test that scores 8 types of psychological processes individuals use to cope with stressful events: Confrontive Coping, Distancing, Self-Control, Seeking Social Support, Accept-

ing Responsibility, Escape/Avoidance, Planful Problem Solving, and Positive Reappraisal. This is a widely used test that is both reliable and valid.¹³

- (3) Stress/Emotion/Anxiety: two scales measured this cluster of constructs. The Competitive State Anxiety Inventory (CSAI) is a 27-item test that measures two types of competitive anxiety: cognitive and somatic. It has been widely used in the sport psychology literature both reliably and validly.⁹⁾ The Profile of Mood States (POMS) is a 65-item test that measures six different moods: Tension-Anxiety, Depression-following Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. This measure is also widely used, and has also been demonstrated to have high reliability and validity.⁸⁾

- (4) Sport Self-Confidence. Two scales measured this construct. The State Sport Self-Confidence Inventory (SSCI) is a 13-item test that measures state self-confidence. It has been widely used in the sports psychology literature and shown to be both reliable and valid.¹⁴⁾ The CSAI also includes a Self-Confidence scale that was scored.

Physical fitness tests. Iida et al.'s basic physical fitness battery was used. It involves 10 items assessing 8 basic physical fitness components:

- (1) Stature, measured by height;
 - (2) Body Bulk, measured by weight;
 - (3) Static muscular strength, measured by back muscular strength, pulling strength, and push ups with claps;
 - (4) Agility, measured by side step;
 - (5) Explosive power, measured by vertical jump;
 - (6) Explosive power endurance, measured by the 400m run (smaller times are better);
 - (7) Flexibility, measured by trunk extension;
- and

- (8) Balance, measured by the Bass dynamic balance test.

In addition, percent body fat was included as an 11th item.

Procedures. The psychological instruments were assembled in a single test battery in random order, and distributed to all athletes during a training camp in April, 1997. Athletes were given as much time to complete the battery as necessary. The physical fitness data were collected in September, 1997, at the next training camp. Although the time separation in the two data collections raises questions as to whether correlations are concurrent or predictive, it eliminates the possibility of false correlations due to halo.

2. Results

Correlations between each of the psychological scales and the 11 physical fitness scores were computed using Pearson and Spearman correlations. In interpreting the results, we focused on all physical fitness indices *except* height and weight, and interpreted only the correlations that were statistically significant on both statistics. For parsimony, we report only the Pearson correlations below (Table 2).

Personality. Agreeableness was positively correlated with push-ups and negatively with the 400m run. Conscientiousness was positively correlated with back strength, vertical jump, and negatively with 400m run. Neuroticism was negatively correlated with side step and vertical jump, and positively with 400m run and %fat. Previous research has shown conscientiousness and neuroticism to be associated with competitive success. These findings indicate that they are also indicative of athletes who are in better physical shape.

Coping. Confrontive coping was negatively correlated with dynamic balance. Escape/avoidance coping was negatively correlated with side step and vertical jump, and positively with 400m run. Planful problem solving was negatively

Table 2 Summary of Significant Findings

Study 1				
Psychological Construct	Scale	Physical Fitness or Physiological Index	Correlation	
Personality	Agreeableness	Push ups	.57*	
		400m run	-.49*	
	Conscientiousness	Back strength	.47*	
		Vertical jump	.56**	
	Neuroticism	400m run	-.61**	
		Side step	-.50*	
		Vertical jump	-.54*	
		400m run	.59**	
	Coping	Confrontive coping	% fat	.47*
			Dynamic balance	-.50*
Side step			-.62**	
Vertical jump			-.63**	
Escape/avoidance coping		400m run	.70***	
		Dynamic balance	-.63**	
Planful problem solving		Back strength	.48*	
		400m run	-.42+	
Stress/Emotion/Anxiety		Anger/hostility	Side step	-.59**
			Side step	.58*
	Vigor	Vertical jump	.57*	
		40m run	-.49*	
	Fatigue	Side step	-.52*	
		Vertical jump	-.61**	
	Cognitive anxiety	400m run	.52*	
		Side step	-.49*	
		Trunk extension	-.56*	
		Side step	-.64**	
Self-Confidence	CSAI Self-confidence	Side step	-.64**	
		Back strength	.45*	
		Side step	.54*	
	SSCI Self-confidence	Vertical jump	.61**	
		400m run	-.53*	
		Side step	.42*	
		Dynamic balance	-.66**	

Study 2					
Personality	Extraversion	% fat	-.75**		
		Total fat	-.85**		
	Neuroticism	% fat	.59*		
		Total fat	.70*		
	Agreeableness	Wingate fatigue	-.62*		
	Openness	Average Watts	-.64*		
		Watts/kg	-.64*		
		Average joules	-.64*		
Coping	Distancing	Vertical jump	-.70*		
		% fat	.79**		
	Escape/avoidance	Vertical jump	.67*		
		Accepting responsibility	Vertical jump	.88***	
			Average Watts	.76**	
			Average joules	.72*	
			Wingate Fatigue	.62*	
			Planful problem solving	Vertical jump	.69*
			Positive reappraisal	Wingate Fatigue	.81**
			Strees/emotion/anxiety	Tension	Average Watts
Watts/kg	.59*				
Average joules	.60*				
Wingate Fatigue	.63*				
Vertical jump	.64*				
Right grip strength	.73**				
Left grip strength	.72*				
Somatic anxiety		Average Watts			.63*
		Right grip strength			.66*
		Left grip strength			.61*
Self-Confidence	SSCI Self-confidence	Average Watts	.70*		
		Average joules	.62*		
		Right grip strength	.54+		
		Left grip strength	.60*		
Locus of Control		Vertical jump	-.67*		
		% fat	.70*		

+ p < .10 * < .05 ** p < .01 *** p < .001

correlated with dynamic balance, while Positive Reappraisal was correlated positively with back strength and negatively with 400m run. Previous research has shown Escape/avoidance Coping and Confrontive Coping to be associated with less competitive success, and these findings indicate that athletes who score high on these scales are in worse physical shape than those who score lower on these scales.

Stress/Emotion/Anxiety. POMS scale Anger/hostility was negatively correlated with side step. POMS scale Vigor was correlated positively with side step and vertical jump, and negatively with 400m run. POMS scale Fatigue was also correlated negatively with side step and vertical jump, and positively with 400m run. CSAI scale Cognitive Anxiety was correlated negatively with side step and trunk extension. CSAI scale Somatic Anxiety was negatively correlated with side step. All of these findings indicate that athletes who had less anxiety, hostility, and fatigue, and more vigor, had better physical fitness scores. Anger/hostility and anxiety have been shown to be important predictors of competitive success.

Self-Confidence. CSAI scale Self-Confidence was correlated positively with back strength, side step and vertical jump, and negatively with 400m run. Also, SSCI Self-Confidence was correlated positively with side step and negatively with dynamic balance. These findings all indicate that athletes with greater self-confidence had better physical fitness scores.

Discussion, Study 1

The findings from Study 1 show that athletes who had better physical fitness scores were more agreeable, conscientious, and less neurotic; engaged in healthy coping strategies to deal with stress; experienced less anxiety and fatigue and had more energy; and had more self-confidence. These findings are directly complementary to pre-

vious research highlighting the importance of these basic physical fitness variables to competitive success, and the importance of these psychological characteristics to competitive performance.

The goal of Study 2 was to examine whether these correlations would replicate using different measures of physical fitness. In this study, 12 American judo athletes completed a battery of physical strength and conditioning tests designed by the U.S. Olympic Committee's Sport Science and Technology Division.

III Study 2

1. Method

Participants. The participants were 12 elite American judo athletes (5 males, 7 females). Again, correlations between height and weight and the various psychological scales were computed to assess the possible confound of size. Of the 48 correlations computed (24 psychological scales x height and weight), only three were statistically significant. Thus, size could not affect the significant correlations between the psychological variables and the physical fitness parameters reported below. Also, sex differences on all variables were tested using Mann Whitney U. A number of significant differences were obtained. Males had significantly higher scores than females on BCI scale Accepting Responsibility, and on POMS scales Tension and Confused. Females had higher scores on POMS scale Fatigue. Also, males had significantly higher scores than females on all but one of the Wingate scores, right and left grip strength, and height and weight. These results suggest that the correlations reported below may be confounded by sex. Because of the small sample sizes, however, splitting the data by sex would have resulted in correlations that would be unreliable. Thus, we opted to present the correlations computed on the entire group, acknowledging the need for future research to obtain data separately

from larger samples of males and females.

Psychological tests. The BFI (personality), BCI (coping), POMS (stress/emotion), SSCI (self-confidence) and CSAI (anxiety and self-confidence) were all assessed in this study. In addition, participants completed the Locus of Control scale (LOC). This test is a 29-item test that measures the degree to which a person attributes control of events to internal (self) or external (environmental) factors, and has also been used widely both reliably and validly.¹³⁾

Physical fitness tests. The physical fitness tests included the following:

- (1) Upper Body Wingate. This is a test of the power endurance of the upper body, and involves a hand crank with resistance. It has been widely used as a measure of anaerobic capacity.⁵⁾ Athletes are tested in five 30-second trials. Output is measured in Watts and Joules, and averaged according to the mass resistance enforced. Fatigue is also measured in each trial. For this study, we averaged each subject's scores on Watts, Watts/kg, Joules, Joules/kg, and Fatigue across the five trials to produce a single score on each variable (see Figure 1).
- (2) Vertical jump.
- (3) Right and left hand grip strength.



Fig. 1 An athlete situated at the Wingate Anaerobic Test machine.

(4) Percent fat. Percent fat was measured separately in the chest, axilla, triceps, subscapular, abdominal, suprailium, and thigh regions. Total percent fat was computed based on the total fat measured across all sites. Total fat was also included in the analyses.

(5) Max VO₂ and heart rate. Athletes ran on a treadmill at a speed of 6 miles/hour; incline was elevated 3 degrees every 3 minutes. Continuous assessments of heart rate and VO₂ output were measured. Unfortunately, not all athletes completed this test; thus, data for this test were not included in the results below.

Procedures. The psychological instruments were assembled in a single test battery in a random order, and were distributed to all subjects during a training camp in April, 1997. Athletes were given as much time to complete the battery as necessary at their leisure. The physical fitness data were collected in a single 3-hour session during the same training camp. Order of the tests was randomized across athletes.

2. Results

Correlations between each of the psychological scales and the 10 physical fitness scores were computed by using both Pearson and Spearman correlations. Below, we report all correlations that were significant on either statistic (Table 2).

Personality. Extraersion and neuroticism were significantly correlated with both percent fat and total fat, indicating that athletes who were more extraverted and less neurotic had less total fat. Agreeableness was negatively correlated with Wingate Fatigue, indicating that athletes who were more agreeable had less fatigue. Openness was negatively correlated with average Watts, Watts/kg, and average Joules, indicating that athletes who had higher scores on this personality trait had lower power output on the Wingate test. The results concerning Neuroticism are in line with our previous research indicating the impor-

tance of this scale in predicting competitive success.

Coping. A number of the BCI scales were correlated with the physical fitness scores. Distancing was negatively correlated with vertical jump, and positively correlated with percent fat. Escape/avoidance, Accepting Responsibility, and Planful Problem Solving were all positively correlated with vertical jump. Accepting Responsibility was also positively correlated with average Watts, average Joules, and Fatigue on the Wingate test. Finally, Positive Reappraisal was positively correlated with Wingate Fatigue.

Stress/emotion/anxiety. POMS scale Tension was positively correlated with average Watts, Watts/kg, average Joules, and Fatigue on the Wingate test. Tension was also correlated with vertical jump, and right and left grip strength. Likewise, CSAI Somatic Anxiety was positively correlated with average Watts on the Wingate, and right and left grip strength. These findings indicate that findings indicate that athletes with higher Tension and Somatic Anxiety scores were in better physical shape than those with lower scores. These findings appear to be inconsistent with our previous findings on stress, emotion, and anxiety, and may be a function of the specific physical fitness tests used in this study.

Self-Confidence. SSCI Self-confidence was correlated with average Watts and average Joules on the Wingate test, and right and left grip strength. Athletes with more self-confidence were in better shape, consonant with our previous findings.

Locus of Control. LOC was negatively correlated with Vertical Jump, and positively correlated with percent fat. Athletes with internal locus of control were in better shape, consonant with our previous findings.

IV General Discussion

Across both studies, the results indicated that athletes who were in better physical shape had less anxiety, greater self-confidence, more tension and vigor, less anger and fatigue, more internal locus of control, and engaged in more effective coping strategies than athletes who were not as physically fit. These findings complement well our previous research identifying the psychological characteristics important to competitive success in judo, and those of Iida et al. in highlighting the importance of basic physical fitness to competitive success. And, they are the first, to our knowledge, to document a reliable relationship between psychological and physiological indices in judo athletes and elite athletes in any sport.

These findings suggest that the physical state of athletes is intimately and reliably connected to their psychological frames of mind as well. Whether one causes the other is not the issue; that physical development is intricately tied to psychological and emotional factors is the key. And, as the findings from both studies indicate, the psychological factors that previous research has shown to be important for competitive success appear to be related to those physical fitness and physiological parameters that also are related to competitive success. These findings have ramifications that go beyond competition; they implicate the positive psychological benefits that accompany the development of physical fitness in judo training, and suggest that physical development through judo practice is associated with the development of positive psychological and mental states.

Still, there were some limitations to the studies presented above, notably in the small sample sizes and sex differences that possibly confounded some of the results. Future studies need to incorporate larger sample sizes that allow for sex-specific tests of the relationship between psychological traits and basic physical fitness. Also,

some of the results in Study 2 concerning the relationship between the anxiety/stress measures and physical fitness appear to be incongruent with our previous research and the findings of Study 1. Future studies need to examine the reliability of these findings, and whether or not they are specific to the physical fitness tests that were used in Study 2.

These findings are the first of their kind to measure two of the three important components of judo in the same athletes. The findings generated were meaningful and interpretable. Future research should now endeavor to replicate these findings, and to extend them by eventually incorporating measures of the all-important third component—technique.

References

- 1) Folkman, S. & Lazarus, R. S. (1988). Ways of coping questionnaire: Research edition. Palo Alto: Consulting Psychologists Press.
- 2) Iida, E., Matsuura, Y., Takeuchi, M., Nakajima, T., & Tanaka, H. (1995). The study on measurement items for the diagnosis of college judoists (in Japanese). Budogaku Kenkyu, 27 (2), 37-44.
- 3) Iida, E., Matsuura, Y., Takeuchi, M., Nakajima, T., Tanaka, S., Wakayama, H., & Matsumoto, D. (in press). The construction of an evaluation scale of basic physical fitness in university judo athletes (in Japanese as *Daigaku judo senshu no kisotairyokuyoukashakudo no kousei*). Budogaku Kenkyu, 33 (1).
- 4) Iida, E., Takeuchi, M., Nakajima, T., Tanaka, H., Wakayama, H., & Matsumoto, D. (1999, October). The study of measurement items for the diagnosis of university judo athletes in Japan. Paper presented in poster at the First International Judo Federation Judo Conference, Birmingham, England.
- 5) Inbar, O., Bar-Or, O., & Skinner, J. S. (1966). The wingate anaerobic test. Champaign, IL: Human Kinetics.
- 6) John, O. P. (1990). The search for basic dimensions of personality: A review and critique. Advances in Psychological Assessment, 7, 1-37.
- 7) John, O. P., Donalhue, E. M., & Kentle, R. L. (1991). The "Big Five" Inventory—Version 4a and 54. Technical Report (July 1991). University of California, Berkeley: Institute of Personality Assessment and Research.
- 8) McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). Manual for the Profile of Mood States. San Diego, CA: Industrial Testing Service.
- 9) Martens, R., Vealey, R., & Burton, D. (1990). Competitive anxiety in sport. Champaign, IL: Human Kinetics.
- 10) Matsumoto, D., & Takeuchi, M. (in press). Psychological correlates of training and performance in senior and junior elite judo athletes. Budogaku Kenkyu, 33 (1).
- 11) Matsumoto, D., Takeuchi, M., Biehl, M., Kimura, K., & Nakajima, T. (1997). Stress and coping in American judo athletes. Budogaku Kenkyu, 30 (1), 1-13.
- 12) Matsumoto, D., Takeuchi, M., Nakajima, T., & Iida, E. (2000). Competition anxiety, self-confidence, personality, and competition performance of American elite and non-elite judo athletes. Budogaku Kenkyu, 32 (3), 12-21.
- 13) Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, Vol. 80, (1, Whole No. 609).
- 14) Vealey, R. (1986). Conceptualization of sport-confidence and competitive orientation: preliminary investigation and instrument development. Journal of Sport Psychology, 8, 221-246

米国柔道選手における基礎体力と心理的特性の関係

デービット・松本 (サンフランシスコ州立大学)
武内政幸 (大東文化大学)
レベッカ・レイ (サンフランシスコ州立大学)
中島 隼 (国土館大学)
飯田 颯 男 (日本武道学会)
若山 英 央 (国際武道大学)

柔道選手の競技力あるいは競技適性としての基礎体力の重要性は多くの研究者によって主張され、柔道選手の基礎体力の特徴に焦点を合わせた研究は多く報告されてきた。また、柔道選手の心理状態についての要因を明らかにした研究も報告されている。しかし、これまでの先行研究は身体的、心理的な要素を別々に研究した報告であり、我々の知る限りでは、同じ選手にこれらの要素を同時に研究した報告は見当たらない。スポーツに関する多くの医学と心理学の英語の文献では、練習には心理的な効果があるとしてきたが、柔道においてこれらの要素の関連性を調査した研究、報告はないと思われる。

本研究は、柔道の発展と柔道選手の競技力向上に貢献することを目的に、過去の研究が柔道の強化や試合成績と関連して重要だと報告した基礎体力と心理的特性の関連性について、二つの研究から検討を試みたものである。

研究1では、20人のアメリカ人一流柔道選手を対象にして、我々の作成した8要素10項目の基礎体力テストと5種類からなる心理学テストを実施した。また、研究2では12人のアメリカ人一流柔道選手を対象にして、研究1で用いた測定項目とは異なる身体の強さと生理的反応を測ることを目的とした5項目の基礎体力テストと6種類からなる心理テストを実施し、それぞれ基礎体力と心理的特性の関連性を検討した。

二つの研究結果から次の知見が得られた。

1. より基礎体力に優れている選手は、基礎体力が劣っている選手よりも、不安、怒り、疲労をあまり感じる事が少なく、自己により自信を持ち、また、より内省的な統制力を持ち、さらに、良い緊張と活気があり、より効果的なストレス対処法を用いている等の心理的特徴が見られた。
2. これらの結果は、柔道の稽古や基礎体力トレーニングを通して生ずる柔道選手の身体的発達には自信の基となる肯定的自己像を生み出す心理的效果があると推察され、今後、柔道選手に対して競技力向上のための指導のみならず、柔道を効果的に指導するための有益な資料になると思われる。