

Sport Psychology in Combat Sports

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Learning objectives:

1. To understand basic psychological principles concerning stress, coping, emotion, and emotion regulation, and their impact and influence on combat sports such as judo
2. To understand the *zone of optimal stress* related to performance
3. To understand the close relationship between stress and emotion with motivation and behavior
4. To provide practical insights into how coaches and athletes can improve the management of stress and emotions related to competition

Psychological issues play a major role in optimizing health and improving performance of athletes in combat sports. Psychological principles are important to understand and maintain motivation for grueling training regimens over long periods of time, dealing with pre-competition preparation and stress during competition, and redefining goals and objectives after competition. Coaches and athletes at all levels realise the importance of all of these issues.

In this chapter, we discuss the psychological issues related to motivation and competition stress in the one combat sport that we know best, judo. We all bring our experiences in competitive judo to bear on the issues we introduce in this chapter¹, and blend them with the psychological research literature providing a pragmatic approach to the topics discussed. We do not focus on the many psychological benefits of the practice of the combat arts. Indeed, a number of studies have documented the positive effects of the practice of sports in general, and combat arts in particular, on the development of character, life satisfaction, and well-being (1, 2). These studies provide empirical evidence that participation in sports and many combat arts such as judo are important life-long activities with positive psychological benefits, regardless of whether this participation is competition oriented. Instead, we provide this chapter from the perspective of former coaches and athletes in high-level competition who also have a background in psychology. Thus, many of the guidelines we provide and examples we use come not from time-tested research, but from our experience and the application of basic psychological principles to the areas of our experience in which we believe they are most important.

¹ Matsumoto is a former national coach of judo in the USA from 1989 – 2000; Konno is a former two-time All Japan Champion in judo; and Ha is a gold medalist at the 1984 Los Angeles Olympic Games in judo.

We begin by introducing the concepts of stress and coping. Then, we highlight issues related to pre-competition stress, competition stress, and post-competition stress. In each of these areas, we analyze the concept of stress using a model of emotion, because stress is a catch-all phrase that refers to specific emotions that tax our energy systems. We also discuss issues concerning the maintenance of athletes' motivation between competitions.

Stress and Coping

Eliminating v. Managing Stress

Managing stress before, during, and even after competition is a most important battle which all athletes face. While this is true for all sports, it is especially true in combat sports, because the “usual” stress of athletic performance is compounded by the fact that one is in actual combat with others who can produce pain and injury. In judo, for example, getting thrown or pinned to lose a match is one thing; but even a lapse of focus for one second can lead to being strangled unconscious or being arm-locked, and dislocate or fracture an elbow. These aspects of combat sports increase the amount of stress during competition, and thus make psychological issues more actual.

Managing stress does not mean *eliminating* stress. Classic research in psychology has demonstrated that some degree of stress is necessary for optimal performance in both cognitive and motor tasks. For many people, the relationship between stress and performance can be depicted as an inverted U. Too little stress is often associated with minimal performance, but, as people get more stressed, their performance increases. Likewise, for most individuals there is a point that defines “too much stress.” If stress

increases beyond that point, therefore, performance declines. This is known as the Yerkes-Dodson law.

Thus, eliminating stress altogether does not lead to better performances. For coaches and athletes it is probably more important to find the *zone of optimal stress which is associated with peak performance*. Each athlete has one. Yet what makes this difficult is the fact that each athlete's zone is different than the next athlete's zone. And the methods of how to get them there, keep them there, or bring them back to that level if the athletes go past that point, are probably very individualized. Thus, individual athletes have their own profiles of what their inverted-U's look like. The job of many coaches and athletes, therefore, is to work together to find out what those individual graphs look like, and to explore methods of intervening when the athlete is too high or low on the graph.

What is Stress?

As coaches and athletes move to work with athlete stress, it is important to have an operational definition of exactly what stress is. In fact, stress is really a catch-all phrase that refers to *the strains on our physiological and psychological well-beings that occur because of the taxing of emotions that arise because of our appraisals of events, situations, or occurrences that are threatening to our sense of well-being*. When emotions turn on, they engage our physiology, our skeletal muscles, and our cognitions, all of which can be taxing on our bodies, especially if they occur repeatedly over long periods. Stress is the tax that emotions extract from our bodies and minds.

If stress is the tax that emotions extract from us, then it is important for practitioners (i.e., coaches and athletes) to identify exactly what kinds of emotions athletes experiencing during competition. For example, anger can be stressful, but so can sadness, fear, or disgust. Each of these different emotional reactions refers to a specific

way in which athletes react to a given situation. Anger, for instance, is elicited when goals are obstructed. Disgust occurs when an individual comes into contact with something repulsive. Fear occurs when there is an imminent threat to one's safety or well-being. Each of these emotional reactions can lead to "stress." Thus, in dealing with stress, it becomes important to identify the specific emotional triggers that are occurring to cause the stress, and to deal with the triggers on their own basis. In the case of combat sports, it is likely that these emotions are occurring repeatedly and intensely, and are probably often blending with each other.

Coping with Stress

Individuals all have their own unique ways of dealing with stress, which in psychology is known as *coping*. Coping helps to produce changes in our emotional reactions (3). It refers to both cognitive and behavioral ways we devise to deal with the demands of the stresses and strains on our bodies and minds (4). Coping is necessary for us because we cannot remain in an excited, emotional state forever. Emotions tell us something about our relationship with the environment, others, or ourselves, and they motivate us to do something. Coping is the response we have to this emotional need.

There are many different coping strategies, and many different ways to think about them. One of the pioneers in psychological research on stress and coping, Richard Lazarus, identified eight major coping styles that individuals adopt (Table 1). When one is stressed, for instance, one might directly confront the situation that brought about the emotional reaction (Confrontive Coping). Or one might just escape from the situation and avoid those kinds of situations altogether in the future (Escape/Avoidance Coping). Or one might ask friends for help to deal with the situation (Seeking Social Support Coping).

Table 1	
Eight Ways of Coping (5)	
Confrontive Coping	Aggressively trying to alter the situation, with some degree of hostility and risk taking
Distancing	Gaining physical or psychological distance from the event or situation that produced the stress
Self-Controlling	Exerting cognitive control over your emotional reactions when stressed
Seeking Social Support	Seeking information, emotional, or tangible support to help deal with the situation
Accepting Responsibility	Acknowledging your contributions to the situation that brought about stress and trying to make things right
Escape-Avoidance	Wishful thinking and acting to escape or avoid the problem
Planful Problem Solving	Deliberately analyzing the problem and situation in order to alter it
Positive Reappraisal	Creating positive meaning from a negative event by focusing on personal growth

Some types of coping focus on doing something concretely about the situation or event that brought about the emotion and stress: these are known as problem-focused coping strategies (4). Some types of coping focus on doing something to re-interpret the situation or the response: these are called emotion-focused coping strategies (4), and involve mainly changing one's thinking rather than acting to change the situation.

Athletes (and coaches) deal with their stresses before, during, and after competition in unique, individual ways which typically engage one or more of the coping strategies outlined above. Coping during actual competition, however, is extremely difficult, because coping needs to be done in second-by-second precision with limited resources in a highly emotionally charged environment.

Pre-Competition Stress

Given that athletes have an optimal level of stress at which they will perform their best, one important issue concerns how to prepare them appropriately to be at that level prior to competition, and not have too little or too much stress. Obviously, this presupposes that coaches and athletes know what that optimal level is in the first place. One of the first things to do, therefore, is to determine exactly what that optimal level is.

How can that be done? One method is based on the link between anxiety and heart rate; the more anxious (stressed) a person is, the faster the heart will beat. Measuring heart rate, therefore, is a quick, unobtrusive way to gain a glimpse of the athlete's level of anxiety at any one time. The next question is, then, when would one measure it? There are many possible times when this measurement can be taken, but perhaps the period most directly applicable to pre-competition is the pre-workout stage, after warm-ups, but before randori (sparring in judo, which is the closest form of practice to competition; literally, "catching chaos"). If athletes are warmed up, report that they are "feeling good," and are about to engage in strenuous sparring which mirrors competition, that may be an optimal time at which to measure heart rate to gauge that athlete's optimal level of stress. If that value is known, then it can be compared against the value when heart rates are measured immediately before competition. If it is too high prior to competition, the athlete may need to be de-stressed. If it is too low, the athlete may need to be 'pumped up'.

One method used by many coaches and teams to bring their athletes to optimal levels of pre-competition stress is to utilize a standard pre-competition warm-up procedure. If this procedure is standardized, athletes are able to allow their minds to flow into the rhythm of the procedures, and not ruminate about the competition, which would

add to unnecessary stress. A proper warm-up procedure would also ensure that athletes are prepared physically for combat.

Although too much and too little pre-competition stress are both problems for athletes, in our experience the more common problem is too high stress. Too much stress prior to competition may lead to less-than-optimal performances during actual competition, possibly because one's emotions are too strong and/or one's body just cannot adapt to changing combat situations in an optimal fashion. Thus coaches and athletes need to be aware of this potential problem, and, if recognized, engage to reduce (but not eliminate) the stress.

One very successful technique to regulate one's emotional reactions involves deep breathing. Breathing, in fact, is a part of many healing arts. It fosters the development of self-awareness, which is an aspect of emotion regulation that is important if one is to be able to monitor and manage one's emotional reactions. However, breathing needs to be practiced. Breathing can be introduced as a way of fostering centering and self-awareness for athletes in many ways, such as the beginning and end of practice. It can also be introduced in the middle of practice, especially during tough rounds. Once well practiced, individuals can often derive the benefits of deep breathing even by just starting the procedure. This can be useful for athletes in the few seconds prior to matches, or even in the breaks during matches, and coaches can keep their athletes focused by having them breathe. Breathing is also an integral part of proper stretching routines, and can be utilized effectively when stretching.

Clearly, each athlete is different, and deals with stress in his or her own way. Some prefer to stay in a corner by themselves thinking; others prefer to listen to music

and walk. Some prefer to be in groups and chat away; others prefer to lose themselves in a vigorous warm-up routine. Athletes should not be pigeonholed into a standard routine for everyone because there is no routine that is the best for everyone, especially in individually-based combat sports. However, coaches and athletes can bring some clarity to this process by understanding optimal stress levels, and helping find ways in which their athletes can achieve that optimal stress level prior to competition.

Competition Stress

Dealing with High-Intensity Stress in High-Stakes Environments

Judo competition, like all combat sports, is difficult because athletes constantly need to make motor decisions to adapt their tactics and techniques to their opponents and the flow of the matches in a highly stressful environment. While this is true for all sports, the difficulty inherent in this process is compounded by the fact that judo is a combat art, and athletes are not just competing, but are fighting as well. Moreover, within matches, athletes may be scored against, putting additional pressure on them to come back to win. In judo, and we suspect in many combat sports, defending a lead is usually easier than coming from behind, and athletes in this situation thus have additional stress to deal with during the match. For these reasons – competition, combat, and the flow of the match – judo competition is highly stressful, and thus the athlete's ability to deal with this high level of stress becomes a major factor in determining competitive outcomes.

Despite the great importance of this psychological ability in determining competitive outcomes, we strongly believe that the priority in *supplemental* training for high-level judo competition is first in strength and conditioning. (The priority in primary judo training is the development of judo skills and technique.) The reason for this is that

judo competition at the highest levels – Olympics, world championships, union championships, international tournaments, and many national championships – include the strongest and best conditioned athletes in the world. Judo competition requires enormous aerobic and anaerobic conditioning, and judo athletes at the highest levels train to achieve these. They also develop extraordinary strength, both through normal judo training and supplemental weight and plyometric training. Athletes who are the best physically conditioned and who have tournament experience are often in a better position to do well in high-level competition than athletes without such conditioning. For the latter, it makes little difference how well athletes are prepared mentally, and how much ability they have to regulate their stress during competition.

Achieving strength and conditioning necessary for high-level competition brings with it, in fact, many psychological benefits. Athletes who are stronger and who can go more rounds at high intensity will develop more self-confidence in competition. Judo, unlike many other combat sports, involves gripping the other opponent, and, when doing so, often athletes gauge the strength of their opponent when they grip. Athletes at their peak of strength and conditioning will know, at the time of the grip, that they are stronger than their opponents, and that can lead to a boost in confidence during a match. Athletes who are stronger can also break the grips of their opponents. Thus, these psychological benefits are positive side effects of an emphasis on strength and conditioning in supplemental training.

If athletes can match the strength, conditioning, experience, and talent of their opponents, then psychological factors during matches are crucially important. Of course, athletes must be motivated to win, and, if they are not motivated to win in the first place,

then no amount of strength, conditioning, experience, or talent will help them. Assuming they are motivated at all costs to win (or, equally important, not to lose), then one important psychological variable that must be considered concerns the degree to which athletes can manage the high intensity stress that is inevitable in competition, and especially during matches.

The ability to regulate or cope with stress is known as emotion regulation. It refers to the degree to which an individual can monitor, manage, and modify one's emotional reactions to achieve constructive outcomes. Emotion regulation is a key skill in adjusting and adapting constructively to many changing life circumstances (6-14). Athletes with high degrees of emotion regulation will be able to manage the high intensity stress associated with high-level competition in order to adapt and adjust well during matches. They will be able to keep their emotions in check, even when they are behind or put under pressure, so that they can think clearly, rationally, and rapidly about the adjustments in their performance necessary to win. Athletes with low degrees of emotion regulation, however, are slaves to their emotions, overcome by their feelings, and unable to think clearly. They might freeze or panic, or do things they would not normally do. Differing ability to regulate emotion is one reason why players who are strong in practice may lose to those with less talent in actual competition.

Training Emotion Regulation in a High-Stress Environment

One of the difficulties of sport psychology in the combat sport arena is the fact that one needs to make psychological principles applicable to this very specific area of competition. In practice, it is one thing to mentally train athletes when they are out of competition in a non-stress environment. It is, however, a completely different thing to train athletes mentally in a high-stress, emotionally-wrung environment, which is

precisely the environment of high-level competition. Skills in a stress-free environment are often not applicable in a high-stress environment, which is why we believe many mental imagery tasks, a commonly used sport psychology task with athletes, may not be as successful in judo. These tasks are often conducted in a stress-free environment, and, although some athletes may be able to image success in competition in that environment, it is very difficult to get them to perform to the best of their abilities in a high-stakes, high-stress environment if their emotions are in control of their behavior, and not vice versa.

Thus, we strongly believe that the best psychological training programs that can have a positive impact on actual competition are those implemented in a high-stress, high-intensity environment. To do so, coaches will need to simulate the intensity of competitive combat and then to implement psychological training as part of the simulation. For example, one technique may involve having athletes engaged in a high-intensity run on an inclined treadmill to exhaustion, and then immediately having them do a cognitive task that requires intense concentration. Such training would simulate the physical demands made by competition (which can lead to heart rates of 200 bpm), but require the athlete to maintain their composure to engage in the cognitive task. In the past, we know of such programs that have used math problems, untying knots, or spinning around blindfolded to grab objects resting on a table or pedestal, all during the resting periods of intense interval training. All of these require high degrees of concentration when athletes' hearts are racing at competition speed.

Another possibility may involve intervening during actual practices. Again, it is necessary to bring athletes to the limits of their physical abilities, which maximizes the

stress of the environment, and then to allow them to gain control of their emotions to adapt effectively within that stressful environment. In judo, this may be achieved by having athletes engaged in the most taxing rounds of randori in which they are losing to their partners because they have lost control of their emotions, stopping the action, and guiding them to think through what they need to do in order to regain control of the situation or adapt successfully to their opponents.

To be sure, these tactics are very successful when athletes are not taxed during practice, because emotions have not yet overcome them. But if supplemental psychological training does not occur in an environment that simulates the intensity of actual competitive combat, athletes will not become used to regulating their emotions in a high-stress environment.

There are many ways in which to train emotion regulation in a high-stress environment. The methods are limited only to the creativity of the coaches. For now, we offer the general guidelines that the most effective mental training for competition involves the simulation of the high-intensity stress of competition, and then finding ways in which athletes can gain a better control of their emotions and thoughts in that high-stress environment.

Post-Competition Stress: Interpreting Winning and Losing

Once a competition is concluded, athletes are flooded with a range of emotions, whether they win or lose (15). The emotions of athletes who win may range from ecstasy, achievement, pride, and joy to tears for all of the hard work and sacrifices they and all those around them have made throughout years of grueling training. Athletes who lose may experience sadness, despair, dejection, anger, shame, contempt, disgust, and even

fear. Clearly, athletic competition, especially in combat sports, can be associated with strong, raw emotions for all involved.

When athletes are gripped by emotion after competition – regardless of its type – there is little that others can do except to share the emotion with the athlete. Emotions have their own life course, and, when elicited, they need to run their course (16). Attempts to prematurely block or change the course of an emotion will be futile. Coaches, friends, and family members, despite their good intentions, often do not realize that this is the case, and attempt to intervene when athletes have just completed the competition, when emotions are too raw to allow that to occur.

Thus, there is an appropriate time to intervene, and every individual athlete is different on exactly when that time is. Coaches and athletes can work by noting when that is. A history of experience together is often the best way to deem so, but, if that time window is known, then even new coaches working with athletes who have that valuable information can adapt appropriately to the needs of the athletes.

Once athletes and coaches are in the proper frame of mind (i.e., when raw emotions are receding into their refractory phase), then one of the most important jobs of coaches, not only as sport coaches but also as life teachers, is the way in which winning or losing is interpreted to the athlete. In psychology, the interpretation of the causes of events is known as attributions, and the study of attributions is a major part of social psychology. Most individuals, regardless of culture or gender, have a *self-serving bias* when they make attributions about successes and failures (17). In practice, people have a tendency to attribute their own successes to stable, internal factors (“I am intelligent”, “I am a hard worker”), and their own failures to unstable, external causes (referee mistake,

“my opponent was lucky”). Also, people have a tendency to attribute other people’s successes to unstable, external factors (“they were lucky”, “they had a good draw”), and other people’s failures to stable, internal factors (“they don’t work hard enough”, “their technique is terrible”). All of these are ways in which we protect our own sense of self, regardless of our socio-cultural background. However, self-serving attributional styles are not conducive to long-term success in performance, or growth as an individual. Instead, a model of self-efficacy and self-agency (18) strongly suggests that objective attributions of both successes and failures to controllable internal factors (e.g., effort, thinking styles, planful actions, etc.) can lead to the most positive outcomes in the long run. This attributional style will help athletes and coaches identify the strengths and weaknesses of a given individual are, one’s limitations and shortcomings, and focus efforts on overcoming those, regardless of what external factors may exist to influence performance outcomes. Put succinctly, focusing on others (e.g., opponents, referees, the draw, etc.) does little in the long run to influence positive character development or work habits necessary to achieve positive competition outcomes. Focusing on what one can do to improve future outcomes will most likely lead to improved future outcomes.

Maintaining Athlete Motivation

Once competition is over, one of the primary psychological issues that athletes and coaches face concerns how to maintain motivation (of both athletes AND coaches!) for intense, long-duration training regimens. One of the major reasons for this is because emotions are a major source of motivation of behavior (19, 20), and athletes and coaches need to deal with many different, fluid emotions in between competition as well. This is often not a problem for athletes who have consistent winning records: success breeds

success, and winning produces many positive emotions that lead to sustained, high-level motivation. But the number of athletes who lose matches enough to be emotionally affected by them far outweighs the number who can consistently win and maintain their own training motivation. Sadness and fear can especially inhibit motivation; anger can be constructive if it is directed toward the obstacle to previous successful performance. If directed toward oneself, coaches, or training, then anger may severely hinder motivation. Thus, for most coaches, the more common problem to deal with is how to maintain athlete motivation after less-than-optimal performance outcomes.

There are several guidelines we feel are important to acknowledge in considering how to maintain, or in many cases rebuild, athlete motivation for training and success. We believe that athletes should be as involved as reasonably possible in setting their own goals and developing their own training plans. Younger athletes may have difficulty in doing so, and may need guidance from coaches in this respect. Older athletes may have the skills to do so, but may need the knowledge of sport science that many top-level coaches around the world use in developing their training plans. Regardless, we feel that athletes' motivations will be easier to sustain if they feel that they have *ownership* over their goals and their training. The feelings of ownership are one of the first steps toward accepting individual responsibility for training and performance outcomes, a necessary part of self-agency.

Also, athletes need to take responsibility for their training. Part of any training plan will be the establishment of developmental milestones along the way. These milestones may be competitive outcomes in preliminary tournaments; success in the gym or track in supplemental training; or success in developing new skills in the *dojo* (school

or club; literally, place to learn the way). Regardless of the specific nature of the milestone, athletes should be involved in deciding what the milestones should be within the training plan, and should take the ultimate responsibility of achieving them. Coaches should provide the framework and the guidance, and sometimes the extra push, to achieve these. Yet, in the end it's the athletes who compete. Thus, it is the athletes who need to take individual responsibility for their training as well. Making the milestones public in the dojo, and reminding athletes that they need to achieve those milestones, is one way of fostering individual responsibility for training.

Finally, coaches should take an interest in their athletes not only as sport competitors, but also as individual people. Athletes (and many students) are not as interested in how much coaches (or teachers) know: they want to know that coaches are interested in them. That means learning about athlete's interests, hobbies, ways of thinking, values, philosophies of life, etc. Doing so requires spending time together regularly, and talking and exchanging ideas in a non-judgmental, inquisitive fashion. One major goal of the development of these relationships is to explore the basis of athletes' emotions, especially in relation to competition outcomes. Joy, sadness, fear, dejection, apprehension, and anger are all part and parcel of the emotional pendulum that athletes are often on, and one important step in maintaining athlete motivation is for coaches to understand exactly what emotions athletes are feeling, and why. Listening, in combination with guiding questions, is a key. Unfortunately, many coaches, either of national teams, universities, or private dojos, are just too busy in their lives to make the time to get to know their athletes on this personal level, and conversations about emotions are avoided. Even when conversations about emotions take place, coaches and

athletes are often too quick to try to do something about them, instead of learning as much about them as possible in the first place. Part of the reason for this is that coaches and athletes tend to be doers, and talking about emotions seems counterproductive. It also makes many people feel uncomfortable themselves. But an important part of being interested in athletes as individuals is learning about their emotions as well as their ways of thinking. Because emotions are such a central part of motivation, we feel that understanding athlete's emotions is a key to maintaining motivation. And athletes' feelings that coaches are interested in them as people are a large part of their achievement of self-efficacy and self-agency with regard to their training and competition.

Conclusion

This chapter did not focus on the many psychological benefits of the practice of the combat arts. Instead, we wrote this chapter not from the perspective of professional sport psychologists, but as former coaches and athletes in high-level competition who also have a background in psychology. Thus many of the guidelines we provided and examples we used come not from time-tested research, but from our experience, and from the application of basic psychological principles to the areas of our experience in which we believe they are most important. We feel that a lack of focus on athlete's emotions, especially in the heat of battle in high-stress, high-intensity combat sports, often renders discussions of sport psychological principles and practices irrelevant to many practitioners. We hope that we have bridged that gap, by understanding exactly that high-intensity, high-stress situation from an emotional and psychological standpoint.

Hopefully, future research can test many of these ideas to determine their scientific worthiness. Undoubtedly, the results of those studies may change some of the

guiding principles we offered, and/or offer modifications to the specific ways in which those principles can be put into practice. Regardless, we welcome such scientific efforts, and an expanded discourse about these issues among coaches and athletes involved in training for high-level competition. These activities can only help to introduce another element of humanity into this tough, and sometimes brutal, world.

Recommended reading:

Brousse M, Matsumoto D. Judo: A sport and a way of life. Seoul, Korea: International Judo Federation; 1999.

Matsumoto D, Konno J, Ha HZ. The effects of judo participation on character traits. *Budogaku Kenkyu*. 2006;39(2):17-28.

Matsumoto D, Konno J. The relationship between adolescents' participation in judo, quality of life, and life satisfaction. *Budogaku Kenkyu*. 2005;38(1):13-26.

Matsumoto D, Takeuchi M, Nakajima T, Iida E. Competition anxiety, self-confidence, personality, and competition performance of American elite and non-elite judo athletes. *Budogaku Kenkyu*. 2000;32(3):12-21.

Matsumoto D, Willingham B. The thrill of victory and the agony of defeat: Spontaneous expressions of medal winners at the 2004 Athens Olympic Games. *Journal of Personality and Social Psychology*. 2006;91(3):568-81.

Medvec VH, Madey SF, Gilovich T. When less is more: Counterfactual thinking and satisfaction among Olympic medalists. *Journal of Personality and Social Psychology*. 1995;69(4):603-10.

Willingham B, Matsumoto D. *The Thrill of Victory and the Agony of Defeat*. Bristol, United Kingdom: The World of Judo; 2007.

References

1. Matsumoto D, Konno J. The relationship between adolescents' participation in judo, quality of life, and life satisfaction. *Budogaku Kenkyu*. 2005;38(1):13-26.
2. Matsumoto D, Konno J, Ha HZ. The effects of judo participation on character traits. *Budogaku Kenkyu*. in press.
3. Folkman S, Lazarus R. Coping as a mediator of emotion. *Journal of Personality and Social Psychology*. 1988;54(3):466-75.
4. Lazarus R. *Emotion and adaptation*. New York: Oxford University Press; 1991.
5. Folkman S, Lazarus R. *Ways of coping questionnaire: Research edition*. Palo Alto, CA: Consulting Psychologists Press; 1988.
6. Gross JJ, John OP. Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*. 2003;85(2):348-62.
7. Gottman JM. *What predicts divorce?* Hillsdale, NJ: Erlbaum; 1994.
8. Field T. The effects of mother's physical and emotional unavailability on emotion regulation. In N. A. Fox (Ed.), *The development of emotion regulation: Biological and behavioral considerations*. Monographs of the Society for Research in Child Development. 1994;59(2-3):208-27.
9. Hanin YL. *Emotions in sport*. Champaign, IL: Human Kinetics; 2000.
10. Fisher CD, Ashkanasy NM. The emerging role of emotions in work life: An introduction. *Journal of Organizational Behavior*. 2000;21:123-9.
11. Grandey AA. Emotional regulation in the workplace: A new way to conceptualize emotional labor. *Journal of Occupational Health Psychology*. 2000;5:95-110.
12. Matsumoto D, LeRoux JA, Ratzlaff C, Tatani H, Uchida H, Kim C, et al. Development and validation of a measure of intercultural adjustment potential in Japanese sojourners: The Intercultural Adjustment Potential Scale (ICAPS). *International Journal of Intercultural Relations*. 2001;25:483-510.
13. Matsumoto D, LeRoux JA, Iwamoto M, Choi JW, Rogers D, Tatani H, et al. The robustness of the Intercultural Adjustment Potential Scale (ICAPS). *International Journal of Intercultural Relations*. 2003;27:543-62.
14. Matsumoto D, LeRoux JA, Bernhard R, Gray H. Personality and behavioral correlates of intercultural adjustment potential. *International Journal of Intercultural Relations*. 2004;28(3-4):281-309.
15. Matsumoto D, Willingham B. The thrill of victory and the agony of defeat: Spontaneous expressions of medal winners at the 2004 Athens Olympic Games. *Journal of Personality and Social Psychology*. 2006;91(3):568-81.
16. Ekman P. *Emotions revealed*. New York: Times Books; 2003.
17. Sedikides C, Gaertner L, Toguchi Y. Pancultural self-enhancement. *Journal of Personality and Social Psychology*. 2003;84(1):60-79.
18. Bandura A. Toward a psychology of human agency. *Perspectives on Psychological Science*. 2006;1(2):164-80.
19. Tomkins SS. *Affect, imagery, and consciousness*. New York: Springer.; 1962.
20. Tomkins SS. *Affect, imagery, and consciousness*. New York: Springer; 1963.