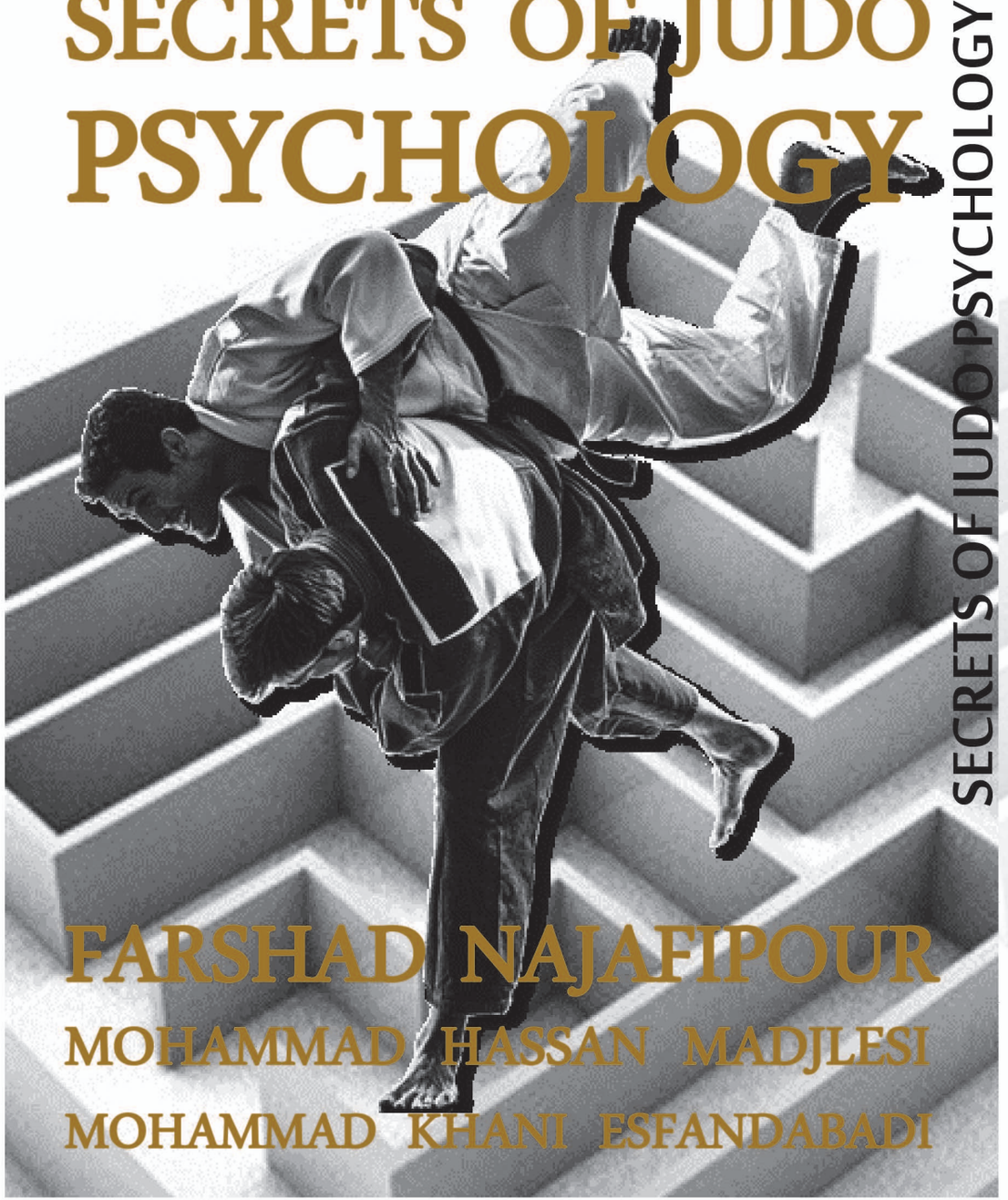
SECRETS OF JUDO PSYCHOLOGY



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SECRETS of JUDO PSYCHOLOGY

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subject

In The name of GOD

In the past years we have witnessed many scientific books related to Judo and many of them are very rich and effective in information in the field of judo but unfortunately we do not see many books written on psychology in this field and Judokas have been less published and this is witnessed all over the world.

The book that I would like to introduce is written by my scholar friend Dr F.Najafipour and his intellectual group Like Mr M.H.Madjlesi and Mr M.Kh.Esfandabadi being published which could cover this deficit of knowledge with in Judo.

This book is very interesting covering a wide range of different subject related to psychology with different syllabus making it attractive and beneficial for judo and others in the society .

Mohammad Derakhshan

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PREFACE

Competition in elite judo requires task-specific psychological readiness that will enable the performer to act in combat situations that may often change within extremely short periods of time (e.g., 100 to 200 m sec). Emotional and mental states are subject to extreme fluctuations during combat matches. It is a challenge for the competing judoka to simultaneously attack and defend while concealing his or her intentions from the opponent, especially in a state of extreme tension. Making decisions under time pressure, while facing aggressive opponents, and deciding on alternative tactical movements (e.g., attentional flexibility) is difficult as far as striving to achieve the designated goals go.

In order for competitive judokas to meet the above-mentioned specific combat requirements, they should be involved in sport-specific training programs. A training program for competitive judokas is typically comprised of physical, technical, tactical, and psychological preparation, which are uniquely linked with one another. The interaction between these preparations defines the quality of the practice and its contribution to judo goal attainment.

In this book we focus on one type of preparation, the psychological preparation. Those professionals who regularly work with competitive judokas should obtain relevant information on psychological interventions that are evidence-based, in order to plan task- enhancement sport psychology programs aimed at preparing these judokas for practice sessions and combats.

This evidence-based information can help the professionals who work with competitive judokas to effectively plan training programs that match the specific needs of the individual judoka. Among these professionals are sport psychology consultants (SPCs), coaches, and strength and conditioning coaches.

In this book, we are specifically focused on judo. Judo is a traditional martial art that was developed in Japan during the 1880s. It was first introduced as an Olympic sport for males in the 1964 Olympic Games in Tokyo. Four years later it was excluded from the Olympic Games in Mexico City. However, it returned in the Munich Games of 1972. In the 1992 Barcelona Games, female judo was included as an Olympic sport as well. Although a judo combat for competitive females and males can typically last up to five minutes, a combat can last more than five minutes in cases there is a tie between the two opponents. In such matters more time is allotted until one of the judokas is awarded additional points. During a combat, a split- second lack of concentration can lead to a quick defeat. On the other hand, a quiet mind, in conjunction with awareness of the opponent's energy and intentions, can lead to the execution of correct defensive or offensive techniques at the right moment, leading to victory.

The purpose of this book is to review studies examining the psychological aspects of judokas who compete at the intermediate level, national team level, and international level, and those who hold international titles. It is our assumption that professionals who work with competitive judokas (e.g., SPCs, coaches, and strength and conditioning coaches) will benefit from the contents of this book.

Psychologic al interventions and preparation in judo

While reviewing the studies, five psychological categories were identified: (a) imagery, (b) motivation, (c) stress, anxiety, and mood states, (d) eating attitudes and weight control, and (e) coach/athlete interactions.

Imagery: The ability to visualize judo performances or the competition site differs between medalists and non-medalists. However, most of the medalists in their least successful combats are unable to visualize their mental preparation routine. Individualized psychological preparation plans should be developed for judokas.

Motivation: Dropouts, comparing with persistent Judokas, have the motivational climate as more ego-involving and less task-involving. In addition, the best predictor for persistence is a peer-induced task-involving climate. While dropouts are less task-oriented, persistent judokas are more ego-oriented. The perception of the coaches' ego-involving role increases over years. However, there is no concurrent increase in the judokas' ego-orientation. These may reflect relative independence between the coach-induced and the athlete-induced motivational climates. Interestingly, the intention to drop out increases over the years. The main distinction between persistent judokas and dropouts is that dropouts perceives the roles of coaches and peers as less task-oriented. Coaches should be aware of the fact that creating a task-oriented climate can be beneficial for their judokas.

Coaches' support for judokas' autonomy is associated with contextual (i.e., general) self-determined motivation towards judo. This, in turn, is associated with situational self-determined motivation prior to the specific judo tournament.

These support a hierarchical or top-down model that begins with coaches' autonomy support, continues with contextual and situational self-determined motivation, and ends with objective performance.

In the female judokas, the importance of the motivational factors remain similar before and after joining the team. The most important factors are attaining health and fitness, the pursuit of excellence, and the need for independence. In male judokas, the most important factors before joining the team are attaining health and fitness, the need for independence, and excellence. However, after joining the team, excellence drops down to the fifth in importance. In general, the motivational profiles of female and male judokas are moderately similar before joining the team and less similar after joining the team.

Goal orientations explain one's tendency to be task- or ego-involved in a specific situation. Being task-involved means attempting to master the task at hand, while being ego-involved suggests that the goal is to outperform others or to avoid being outperformed and judged critically for it. In judo, both task and ego orientations are of importance. Task orientation relates to mastering skills and advancing to higher belt ranks, while ego orientation relates to striving to win in combats.

It appears that, at least in judo, goal involvement can be highly dynamic and individualized. States of mastery, performance approach, and performance avoidance shows rapid—sometimes abrupt—variations during a combat. In addition, both patterns of correlations (high and low) are found among the three states. Changes in goal involvement varies based mainly on the course of action of the combat. Finally, there are clear differences in the pattern of changes between the judokas. Goal involvement states fluctuate, undergo abrupt changes, and develop varied relationships between them, according to the ecological constraints of the situation. Psychological processes occurring during a judo combat are com-

plex and individualized, and therefore psychological interventions that help one judoka may not help another in improving performance.

Stress, anxiety, and mood states: Chronic stress has been defined as an imbalance (perceived or actual) between what is expected of an athlete and his or her ability to respond to these expectations .Anxiety is an aversive emotional and motivational state occurring in threatening circumstances. Mood has been defined as a set of feelings, ephemeral in nature, varying in intensity and duration, and usually involving more than one emotion.

The judokas experience extreme measures in four categories: negative aspects of competition, negative significant-other relationships, personal struggles, and traumatic experiences. More specifically, the most important factors causing stress are concerns about the coaches' criticism after the combat and individual conflicts with coaches. This can be explained by the one-directional communication path from coaches to judokas. Judokas are required to always follow their coaches' instructions. It should be noted that such instructional methods can lead to passivity and to the adoption of a "learned helplessness" approach. In addition, the judokas have stress and poor performance when significant others (e.g. their mother) were present in the crowd.

While all the medalists have no negative feelings or negative thoughts, only less than half of the non-medalists are the same. Besides the medalists making heightened efforts and commitment, only nearly half of the non-medalists are the same. The two key factors found to distinguish between medalists and non-medalists are the ability to visualize judo performances and the ability to use a "focus-refocus" technique.

There is no difference between female and male medalists. State anxiety is the highest in the least successful combats and is the lowest in practice sessions.

In addition, it is not easy to recover from the high anxiety level and return to previous levels. A "catastrophe" model best explains the relationship between anxiety and poor performance. In such a model, once an athlete passes a certain threshold of arousal and anxiety, a dramatic decline in performance follows.

Significantly higher cortisol levels seen in both competition days comparing to the values obtained three weeks prior to the competition. Cortisol values before the first combat are higher than those obtained at the competition day.

Significantly higher state, cognitive, and somatic anxiety and lower self-confidence seen in the higher level competitions. In addition, cognitive anxiety and somatic anxiety correlates significantly with cortisol levels in competition days. The combination of non-invasive hormonal testing and psychological questionnaires can be useful in assessing judokas' stress and anxiety before competitions. Such data can be used by SPCs and judo coaches to determine whether coping strategy interventions can work in alleviating stress.

Both the losers and winners have significantly higher cortisol levels during the day of the competition when compared to resting values. Trait anxiety and type A behavior (i.e., motivated by a need to control the environment, ambitions, impatience, time restrictions, reacts to frustration with hostility) are higher in the winners, while type B behavior (i.e., the lack of type A characteristics) and cognitive anxiety characterizes the losers. In addition, ways of coping with anxiety differs between winners and losers. Comparing to the winners, losers are higher on self-blame, wishful thinking avoidance, and social support approbation. The winners, on the other hand, are higher on the positive re-evaluation factor. Successful performance is associated with lower levels of cognitive anxiety, higher levels of confidence, and the use of coping strategies such as positive re-evaluation.

Levels of cortisol are higher during competition comparing to resting days. The psychological data show higher state anxiety on competition days compared to resting days, and higher anxiety early before competition when compared to right before the competition. It is important to note that cortisol levels right before the competition correlates positively with the perceived possibility of winning. Therefore, higher cortisol levels, with the addition of the high motivation and self-confidence found in all judokas, could facilitate an appropriate mood state for fighting.

The fluctuations in mood states are related to changes in the self-efficacy of achieving goals. In addition, coping strategies also change in accordance with changing mood states. Psychological profile of a judoka can change abruptly by both intrinsic (e.g., mood states, goal settings) and extrinsic (e.g., winning or losing, coach's instruction, quality of opponent) variables.

Eating attitudes and weight control: Weight classes can lead judokas to abnormal eating attitudes, which can lead to clinical eating disorders (ED). More than 10% of elite judokas have clinical or subclinical ED (less than 5% of people have ED). Approximately half of female judokas have clinical ED. ED can have detrimental physical, psychological, and social implications, among them body image distortion and weight preoccupation. In addition, judokas with ED suffer more from depression, anxiety, and substance abuse, and might be at risk for serious medical complications.

Seventy percent of the judokas lose approximately 3 kg during the season and 60% consciously limiting food choices. In females, menstrual dysfunction among judokas is near 60% (it is below 10% for others). Eating behaviors of male judokas are as others. In contrast, disordered eating attitudes and bulimia nervosa are high in female judokas (bulimia by 200%). Nearly 40% of male judokas are involved in weight loss methods that could put them at risk for developing ED.

Coaches should be aware that instructions or comments regarding their judokas' weight can be detrimental to the judokas' performance and health.

Even when abnormal eating attitudes do not lead to clinical ED, restricted eating — a common practice in judokas before competitions — can have a negative effect on the psychological profile of a judoka. The judokas lose approximately 4 kg of body mass and 2 kg of fat-free mass after the food restriction period that cause high mood states of tension, anger, fatigue, and confusion, and a significant low mood state of vigor. But physical performance remains relatively stable. The adverse psychological effects of a 7-day food restriction regimen (mainly due to inadequate intake of carbohydrates and micronutrients) can affect mood states negatively, and as a consequence it is possible that performance will be negatively affected.

From the beginning to the end of a 4-week weight loss program, that judokas lose approximately two to three kg of body mass and approximately 2% of body fat, physical performance remains unchanged but they will adverse changes in mood states. Specifically, confusion will rise and vigor will reduce in both male and female judokas, and tension will rise in the females.

In a weight reduction program lasts 20 days and ends one day before a judo competition, which males and females will have lower values of body mass (~ 3kg), percent fat (~2%), body fat (~1 kg) and fat free mass (~2 kg) at the end of the program, changes in mood states will found only in the males. These judokas will have high fatigue and tension, and low vigor. In addition, the total mood disturbance (TMD) — an index representing the unpleasant mood states — will be high in males after the program. In contrast, in the females who participate in the weight reduction program there is a trend for the TMD to improve. While the process of weight reduction increases psychological pressure in male judokas, this pressure actually reduces in females. Psychological support for female

judokas must be warranted before the program begins, while the same support is needed for male judokas while the program is in progress.

Coach/athlete interactions: More than 70% of ideas retain under the verbal information and more than 80% of ideas retain under the combined information (audio-visual or audio-kinesthetic). The coherency, namely the ratio between ideas delivered and ideas retained, is approximately 70% for both female and male judokas. However, female judokas show greater coherency (more than 80%) than male judokas (near 60%). Importantly, coherency is inversely related to the number of transmitted ideas, emphasizing the importance of delivering concise and specific ideas to the judokas prior to the combat.

While the interaction strategies between coaches and judokas differ, they share two main goals: optimizing the selection process and performance. For example, in order to optimize the selection process the coaches stimulate rivalry, provoke the judokas verbally, display indifference, and enter into direct conflict. In their mind, such practices would lead to mental toughness. The judokas, on the other hand, cope with their coaches' strategies by exercising diplomacy and trying to achieve the best performance. Those processes together could result in an effective selection process. It is important to note that the interaction styles of coaches differ in some aspects from those described in the conventional leadership literature (i.e., democratic rather than authoritative leadership). In addition, the coping strategies use by the judokas suggest that the authoritative style of the coaches is not appreciated. Most SPCs would agree that the interactions observe are unhealthy and need to be changed.

Summary

The purpose of this book is to review studies on psychological preparation of competitive judokas. These studies are observational, experimental, and case studies.

Five psychological categories were identified: (a) imagery, (b) motivation, (c) stress, anxiety, and mood states, (d) eating attitudes and weight control, and (e) coach/athlete interactions.

The main conclusions are:

1. Goal involvement states of competitive judokas fluctuate and undergo abrupt changes during actual combat, according to the ecological constraints of the situation.

2. Cortisol levels and somatic and cognitive anxiety tend to increase prior to and during a judo combat.

3. Weight reduction programs that judokas undergo prior to a judo combat can cause unpleasant moods, and cultural differences can lead to conflicting results.

4. Psychological preparation plans should be tailored to each individual judoka, as there can be significant individual differences among the judokas.

5. Coaches and SPCs should be aware that individual judokas may require different interventions in order to improve their judo performances

CHAPTER ONE

MOTIVATION

Early attempts to explain motivation employed the concept of instincts based on the evolution. Over time, as vast lists of many thousands of basic instincts were produced, it became clear that instinct, as a concept, had lost explanatory power. It cannot explain cultural differences in behavior and motivation. When its limitations became apparent, psychologists turned to drive reduction theory. In this basic theory of motivation a need is an internal state of deficit. This need initiates a drive, which is the state of being motivated, to reduce the deficit. It persists until an effective response is made. Closely tied in with the drive reduction model is the notion of homeostasis. The most widely used analogy for homeostasis is the thermostat. Just as a thermostat tells a boiler when it should be on or off, based on a set temperature, people are said to have a set level of physiological needs, imbalance from which governs their drives. While drive reduction provides a reasonable explanation for basic activities, it fails to convince the curiosity or self-actualization motives. Humans are motivated not only by the push of drives but also by the pull of incentives, such as winning medals. Human needs could be represented in the form of a pyramid. Basic needs, such as physiological needs for food and water and needs for safety, were located at the base of the pyramid. Less essential for survival, but important for psychological well-being, love and esteem needs were located further up the pyramid. Finally, the need for self-actualization, central to the humanistic perspective, was placed at the top. Self-actualization is the realization (or making actual) of one's potential. People prioritize the meeting

of lower-order needs above higher ones. Despite problems, this theory continues to be popular because of its intuitive appeal. Need for achievement is a function of approach tendency minus avoidance tendency, multiplied by the likelihood of success, and the value of a successful outcome to the individual. It predicts that individuals high in achievement needs will prefer tasks of intermediate difficulty, and that individuals low in achievement needs will prefer tasks that are either easy or hard. Research findings are not very supportive of the theory. Expectancy theories assume people are motivated by their expectations about the relationship between their actions and the outcomes of such actions. According to Valence Instrumentality Expectancy theory (VIE), we will be motivated if: we value the outcome (valence), we believe that our performance will be rewarded (instrumentality) and we believe we have put in the effort and we will be able to perform well (expectancy).

Instinct theory

Motivation is about what energizes, directs and sustains actions. Early attempts by psychologists to explain motivation employed the concept of instincts based on the evolution. In this view humans exhibit behavior that has evolved because of its survival value. For example, instinctual urges could explain aggressive behavior since aggressive organisms were more likely to survive to reproduce more offspring. In this way any behavior, like eating, drinking, washing or partying, could be explained as representations of eating, drinking, washing or partying instinct. Pioneers in psychology began to lay down lists of basic instincts. However, some lists had grown to over 10, 000 instincts! Clearly, when a concept becomes all-embracing it loses explanatory power. If the answer to the question 'Why does she like to paint?' or 'Why do they play sport?' is 'because it's instinctual', then this does not advance understanding by much, even if true. A second problem with instinct alone as

a theory of motivation is that it cannot explain cultural differences in behavior and motivation. When the limitations of instinct theories became apparent, psychology turned to needs and drives, and proposed drive **reduction theory** to explain motivation.

Drive reduction theory

Drive reduction theory is another approach with a long history in psychology. It is based on the view that motivation occurs when there is a tension caused by a state of imbalance between the current physiological state of the organism and some normal or resting level. Some writers have used the terms need and drive interchangeably. Others have differentiated between them arguing that need is the internal state of deficit that initiates the **drive**, which is the state of being motivated to reduce the deficit.

Thus, in this view the drive derives from the **need**, and persists until an effective response is made.

Homeostasis

If we engage in strenuous activity for some time without drinking, a tissue deficit will result. The homeostatic mechanism will register this deficit and produce a need signal, on the basis of which a drive (thirst) is created, which motivates us to search for a drink. Once we drink something, our tissue deficit is removed and the homeostatic regulator stops the need signal which removes the drive. Drinking too much also results in homeostatic regulation, except that in this case the tissue imbalance comes from overload rather than deficit.

Higher needs

More complex needs such as curiosity needs, competence needs, and esteem needs cannot simply be based on physiological deficit and homeostasis. Humans do reach a point when they are sated with regard to eating but do not appear to do so in relation to needs for praise, or being cared for, or loved. Similarly, human motivation is not simply the result of the push of drives. Humans are motivated by the pull of **incentives**,such as anticipated rewards like money or winning medals in sport competition.

Need hierarchy

Hierarchy of needs represents needs in the form of a pyramid. Basic needs, such as physiological needs for food and water and needs for safety, were located at the base of the pyramid as essential to human existence. Less essential for survival but important for psychological well-being, love and esteem needs were located further up the pyramid.

Finally, the need for **self-actualization,** considered as the sine qua non of the human condition was placed at the top. Self-actualization is the realization (or making actual) of one's potential. The other main claim of the theory is that people prioritize the meeting of lower-order needs above higher ones. In simple terms this means that someone who is being chased by a bear is not likely to be concerned about self-esteem! This theory continues to be popular and widely cited in general textbooks on human motivation. This is probably because of its simplicity and intuitive appeal. However, there are problems with the theory. Firstly, it was not based on a very solid empirical basis. It is selective in the motives it covers. For example, it makes little reference to curiosity as a motive. Finally, it is easy to think of anecdotal examples that

contradict its hierarchical premise. It is clear that on countless occasions, human beings have put higher-order needs, such as conquering a mountain, or crossing an ocean, above safety needs. Thus, some people are so driven by self-actualization that they take little care of their lower-level needs. Another example of such behavior is the stereo-typical painter who wastes away in his garret to produce his masterpiece, while being unconcerned about basics like eating properly. Similarly, if humans are satisfied with lower needs in preference to higher ones, we might expect athletes to stop running during marathons to deal with their tissue deficits, or for pain reduction reasons. As humans it appears we can choose to overlook basic needs when we want to meet higher ones.

Need for achievement theory (nAch)

One candidate that showed early promise as a theory of motivation that would be relevant to sport was Need for Achievement Theory. It grew out of the somewhat unlikely marriage of projective measurement techniques, and the scientific respectability of a mathematical formulation. The theory holds that people differ in the extent to which they desire to achieve their goals. The level of their desire is given by subtracting their motive to avoid failure (trait anxiety) from their motive for success, or approach tendency **(intrinsic motivation)**. The resultant motivational tendency is then moderated by two situational variables, perceived probability of success, and the incentive value of success to the individual. In summary, according to the theory, **need for achievement (nAch)** is a function of approach tendency minus avoidance tendency, times the likelihood of success, and the value of a successful outcome to the individual. The major prediction from the theory concerns choice of activity. Specifically, it is predicted that individuals high in achievement needs will prefer tasks of intermediate difficulty, and that individuals low in

achievement needs will prefer tasks that are either easy or hard. The typical test of these ideas involves giving participants the choice, prior to each trial, of how far from a target they wish to perform an aiming task. Research findings are not very supportive of the theory, since it is often found that all participants appear to prefer intermediate difficulty tasks! Also it becomes apparent that many people low on need for success, and high on fear of failure, nevertheless put themselves into achievement situations. Another problem was that it did not predict the achievement behavior of women. The notion of fear of success was introduced to deal with this; however, subsequent research has had little success in demonstrating a sex difference on fear of success scores. Another problem is that there is little supportive evidence that those with high nAch perform are better than those with low in nAch, as one would expect. Finally, it should be said that problems with the measurements used also cast some doubt on the theory. For example, motive for success is assessed by the Thematic Apperception Test (TAT), which is a **projective technique** that has been widely criticized on the grounds of low reliability. Further, the state anxiety measurement used in the early tests of the theory could be criticized in the light of more recent discoveries in sport and exercise regarding the multidimensional nature of competitive anxiety. As a result of its many problems the model has ceased to be widely used to explain achievement motivation.

Expectancy theories

Need reduction theories are not particularly useful to explain other than basic drives. Consequently, more sophisticated theories that attempted to account for complex human motives, have been developed. For example, organizational psychologists have developed cognitively oriented models to explain motivation in work settings. Surprisingly, despite the fact that these potentially useful ideas have been around for over 30 years, sport and exercise psychol-

ogists have not paid much attention to them. The most widely publicized of these are the **expectancy theories.** Expectancy theories assume that people are motivated by their expectations about the relationship between their actions and the outcomes of such actions. Specifically, they are motivated if they perceive that effort expended will lead to good performance, and that such performance will be rewarded appropriately. For example, in **VIE approach,** valence (V) is the

Attractiveness of an outcome, instrumentality (I) is the relationship between performance and reward, and expectancy (E) is the subjective probability that leads to performance. We can illustrate this with a concrete example. Think of the situation of first team selection. The theory says that to motivate a judoka they have to value the outcome of being selected **(valence)**. They must believe that if they do perform at first team standard they will be selected

(Instrumentality). Finally, they must believe that if they practice, train hard, get enough sleep, don't drink too much and avoid junk food, they will be able to perform at first team standard **(expectancy).** Despite its value in organizational psychology and the world of work, expectancy theories have not been employed in sport psychology.

COGNITIVE EVALUATION THEORY

Intrinsic motivation refers to wanting to do something for its own sake, because it is, in and of itself, pleasurable or rewarding. There are three sub-divisions of intrinsic motivation: to know, to accomplish, and to experience. In contrast, extrinsic motivation refers to the desire to do things in order to gain external rewards. It involves doing something as a means to an end. Cognitive evaluation theory proposes that intrinsic motivation is a function of people's perceptions of self-determination and competence. Rewards are said to contain both controlling and informational features. In general, the theory has been supported both in the laboratory and in ecologically valid settings. A reward which is perceived to control behavior is predicted to reduce feelings of self-determination, and leads to a reduction in the desire to perform the behavior. Tests of the 'over-justification hypothesis' (so called because the reward is more than necessary for a pleasurable activity) have shown the counterintuitive finding that external rewards can undermine intrinsic motivation for activities that were initially seen as interesting.

Rewards provide us with information about how we have performed. This affects our perceptions of competence, which, in turn, influence our level of intrinsic motivation. In particular, positive information about our competence (for instance, achieving a goal) will enhance our feeling of intrinsic motivation. In contrast, negative information about our competence (for instance, not achieving a goal) will result in low perceived competence, and low intrinsic motivation. Research has supported this aspect of the theory.

Intrinsic vs extrinsic motivation

Most non-professional sport is carried out because it is fun or exciting. The pleasure is inherent in the activity and requires no tangible reward. Similarly, many people find drawing or painting intrinsically motivating. Some writers have sub-divided intrinsic motivation into itself to know, to accomplish, and to experience, i.e. a thirst for knowledge, a need to achieve and a need for pleasure. In contrast, **extrinsic motivation** refers to the desire to do things to gain external rewards. This involves doing something as a mean to an end other than for the activity itself. Typical examples of extrinsic rewards are material goods and money, or in the sporting arena, trophies and medals. Although not tangible, praise, recognition and approval are also considered to be extrinsic motivators. So, for example, being told by the coach that you are playing well, or being promoted to a team captain, is likely to be a source of extrinsic motivation.

Cognitive evaluation theory

Cognitive evaluation theory proposes that intrinsic motivation is a function of people's perceptions of **self-determination and competence**. Thus, a judoka who feels they have had some choice in an activity is more likely to be intrinsically motivated, as a judoka who perceives themselves to be competent in the activity. The other main feature of the theory relates to rewards. A common sense assumption is that, rewards will automatically motivate. However, the theory claims that rewards contain both **controlling** and **informational** features. A reward that is perceived to control behavior is predicted to reduce feelings of self-determination, and lead to a reduction in the desire to perform the behavior. Rewards which convey information suggesting increased

self-competence will enhance intrinsic motivation, whereas rewards which convey information that suggests decreased self-competence will reduce it.

The controlling aspect

According to the theory, rewards consist of two main aspects: controlling and informational. An example of the controlling aspect is provided by this story of the old man who was being bothered by some noisy children, who were playing football outside his house. The old man had the wisdom to tell the children that he had so much enjoyed them playing, that he would give them some money to come back and play the next day, which he did. After a day or two of paying the money, the old man said that he was short of money and could only pay %25 of the money from now on. With a derisory look the kids refused to play, on the grounds that to stay, they needed more than %25! In terms of the theory, the children had come to see the old man as controlling their behavior, which reduced their feeling of self-determination. This in turn reduced their intrinsic motivation to play outside his house. When athletes feel 'controlled', the reason for their behavior resides outside themselves. This perceived 'locus of causality' determines whether intrinsic motivation will increase or decrease. An external locus of causality leads to feelings of low self-determination. Studies of the controlling aspect of the theory have tested the **over justification hypothesis**, so called because the reward is more than is necessary for a pleasurable activity. Typically, these experiments involve manipulating extrinsic rewards in different experimental groups to see what this does to intrinsic motivation, as measured by the amount of subsequent free-choice behavior exhibited. In a classic study of children's intrinsic interest in a drawing and coloring-in activity, children randomly assigned to one of three conditions. In one condition, children had an expected reward (a good player award for completing the task). In a second condition children

were given an unexpected reward (which was the same as in condition one except that it was unanticipated).Finally, in a control condition no reward was given to the children. Results revealed that children in the expected reward condition showed significantly less interest or time on task than the other two conditions. Interestingly, this not only supports the 'over-justification' hypothesis, but it is counter-intuitive, since it demonstrates that in some circumstances by rewarding people we reduce their motivation. According to the theory, this is because rewards that are contingent upon good performance signal to people that they are competent. However, rewards given regardless of performance are seen as controlling and result in diminished intrinsic motivation.

The informational aspect

The other aspect of rewards is the informational one. The theory says that rewards provide us with information about how we have performed, and that affects our perceptions of competence, which, in turn, influences our level of intrinsic motivation. In particular, positive information about our competence (for instance, achieving a goal) will enhance our feeling of intrinsic motivation. In contrast, negative information about our competence (for instance, not achieving a goal) will result in low perceived competence, and low intrinsic motivation. The awarding of certificates of achievement to young athletes typifies the informational aspect of the theory. Gaining a certificate provides children with information about their competence, which leads to enhanced motivation to achieve the next level of award. On the negative side, failure to gain the certificate can provide information that tells the child they are not competent, and can lead to loss of motivation. To test this aspect of the theory, researchers have manipulated both type of feedback and perceptions of competence, and then measured subsequent free choice involvement in the task at hand. Again, results are supportive of the theory.

For example, in one study, judokas who had been given varying amounts of positive feedback were more intrinsically motivated than those who had been given none. Another study demonstrated a linear relationship between intrinsic motivation and whether participants had received positive feedback, no feedback or negative feedback. Increasing perceptions of competence has also been shown to raise levels of intrinsic motivation. For example, in one study two groups of judokas matched on ability, competed in a dropping task. It was found that judokas who perceived they were more successful in the competition recorded significantly higher intrinsic motivation scores than those who perceived themselves to have been less successful. Interestingly, the intrinsic motivation levels of actual 'winners and losers' did not differ, underlining the fact that it is perceived outcome rather than actual outcome that influences subsequent motivation. In general, the theory has been supported both in the laboratory and in ecologically valid settings. For example, it has been found that students with sports scholarships are less intrinsically motivated in their sports than those without scholarships. The theory offers two main approaches to increase intrinsic motivation. Focusing on the self-determination issue, we could give judokas an explanation in the design and content of training sessions. For example, we might give judokas some choice about which practice drill to use next, or what type of defense to practice. Judokas could also be encouraged to set their own routine and individual targets for training and matches. In terms of rewards, coaches could avoid anything that judokas might perceive as controlling, or they could let judokas give their opinions in the type of rewards that are given, for what and to whom. In short, strategies which empower judokas and encourage them to take ownership of their progress are likely to produce self-determining and thereby intrinsically motivated judokas. Turning to the competence issue, intrinsic motivation could be increased by improving the quality of competence information available to athletes and by encouraging the use of self-referenced goals, so that all judokas can see progress and can experience competence development.

ACHIEVEMENT GOAL THEORY

The theory suggests that people have personality dispositions (task and ego orientations) in relation to achievement situations. These orientations have an important influence on three things: our attitudes about achievement, our motivation in achievement settings and our actual achievement behavior. Much research has been carried out on achievement goals, and the theory has been supported in relation to its claims about orientation and attitude, and orientation and motivation. However, there is little evidence that orientation is correlated withPerformance. Task-orientation involves being motivated by a desire for mastery and doing as well as you are able to do. For the task-oriented individual, competence judgments are based on how well they did in relation to their previous performances, i.e. they are self-referenced. Ego orientation involves being motivated to win or to out-perform others. Judgments of competence are based on how well one does in relation to others, i.e. they are other-referenced. These two orientations, task and ego, are conceived of as stable personality dispositions, or traits, along which different individuals vary. Not only do people bring their achievement orientation with them to each competitive situation, but each situation has its own atmosphere, or task versus ego climate. Whether the climate is task or ego involving is largely determined by the behavior of coaches, managers and parents. The type of involvement (task or ego) that an athlete has, at any given moment, is their achievement goal state. This state is a function of the interaction between the goal orientation they bring to the competitive situation, and the goal climate in which they find themselves.

Achievement goal theory

Achievement goal theory has dominated the area of sport motivation over the last years. It was principally developed to explain behavior in educational achievement situations such as tests and examinations. The first part of the theory is that the two orientations are relatively stable dispositions, i.e. they are personality dimensions. Before moving on to describe the theory further, it is important to make the point that this area has become unnecessarily complicated by the fact that different theorists have used different terms to describe the same basic concepts. Once you realize this, the literature that describes work in this area becomes much less confusing to read. The term that is now generally used is **achievement goal theory** but you will also find it described as motivational orientation, achievement orientation, goal orientation and goal perspective theory. Another potential confusion comes from the fact that over the years, researchers have given task and ego-orientation different labels, such as, mastery versus ability orientation, or performance versus outcome orientation, and even learning versus performance goals. Fortunately, writers have begun to use the more common terms, task- and ego-orientation. Having clarified terms, we can now continue to outline achievement goal theory. In addition to suggesting that we have personality dispositions or orientations in relation to achievement situations, the theory claims that these orientations have an important influence on three things: our attitudes about achievement, our motivation in achievement settings and consequently, our actual achievement behavior. With regard to attitudes, task-oriented judokas see the purpose of judo as being for enjoyment, and to offer mastery or personal growth opportunities. Ego oriented judokas are more likely to think of judo as providing opportunities to favorably compare their performances with others. Task-oriented judokas also appear to

hold more judo attitudes with regard to fair play, and are less likely to endorse cheating and non-legitimate aggression than ego-oriented judokas. Finally, in relation to attitudes, task-oriented judokas are more inclined to believe that effort is what leads to success, while ego-oriented judokas are more likely to assume that natural ability is the key. In terms of motivational differences, the argument is that task-oriented judokas are more motivated and persist longer because of their belief that effort is worth expending, as opposed to the ego-oriented individual's belief that performance is a function of natural ability or talent, and that added effort will have little effect. Added to this is the likelihood that task-oriented judokas are more likely to feel competent following performance than ego-oriented judokas, because they assess success against their own standards, rather than on the vagaries of how closely matched to an opponent they might have happened to be. Finally, in relation to motivation, the theory claims that task-oriented judokas have higher levels of intrinsic motivation. Turning to the relationship between orientation and performance, it is not surprising that given the above, proponents of achievement goal theory have argued that task-oriented judokas should out-perform ego-oriented ones. Although this does follow logically from the theory's claims about the higher levels of intrinsic motivation in task-oriented judokas, there are many people who question it. For example, it is hard to imagine that judokas at the top of professional judo, or their coaches, do not have strong win or ego orientations. For some 'it is not just a matter of life or death. A second aspect of the theory in relation to judo behavior is that the task oriented judoka is more likely to choose a fairly challenging task, because it will give them feedback about their progress. In contrast, the ego-oriented judoka is more likely to choose to compete in a situation that is either easy (so that they can win or feel competent), or very difficult (so they can dismiss losing because they could not have been expected to win!).Much research has been carried out on achievement goals, and the theory has been supported in many but not all areas.

For example, the fact that task- and ego-orientation can be reliably and validly measured, provides some evidence that these two personality dispositions exist and are conceptually different. In terms of the link between orientation and attitude, it has been shown that task-oriented judokas are more inclined to agree that hard work is important for success than ego-oriented ones. With regard to attitudes to cheating and legitimacy of action, again there is evidence that ego-oriented judokas are happier to endorse aggressive behavior and bend the rules than task-oriented ones. The literature on orientation and its relationship to motivation also shows predicted patterns. For example, persistence has been shown to be greater in task oriented judokas. Similarly, studies have shown a link between task orientation and higher levels of intrinsic motivation for various tasks. Personality dispositions, are notoriously difficult to change. It is more fruitful to focus on the climate aspect and try to set up training environments that encourage task involvement. Such environments would stress mastery and improvement against one's own standards, as opposed to competition between judokas. In this way we may see long-term benefits to motivation. One crucial difference between the educational and the judo situation is the importance of competition. In educational testing children are usually trying to perform well against a standard, as opposed to beating their classmates. While judo is not solely about competition it is a big part of it. Perhaps the theory does help us to understand aspects of motivation, but it may not be the whole story with regard to competitive situations, which are for many, the essence of judo.

Task-ego orientation

The basic building blocks of **achievement goal theory** are the concepts of task-and ego-orientation. **Task-orientation** involves being motivated by a desire for mastery and doing as well as you are able to do, matched against your own standards. The development of competence is crucial for the task-orient-

ed individual whose competence judgments are based on how well they did measured against their previous performances or current ability level, i.e. they are **self-referenced**. In contrast, **ego-orientation** involves being motivated to win or to out-perform others. These two orientations, task and ego, are conceived as stable personality dispositions, or traits, along which different individuals vary. These dimensions are thought to be independent (orthogonal). Thus, judokas might be relatively high in both, low in both, or high in one and low in the other. Scales have been developed to measure these, the most widely used of these can be the Task and Ego Orientation in judo Questionnaire (TEOSQ).

Task-ego climate

It is important to be aware that not only do judokas bring their achievement orientation with them to each competitive situation, but also that the atmosphere of the session may have a task or ego climate. Whether the climate is task or ego involving is often determined by coaches, managers and parents. For example, a coach who sets up all drills to be competitive, with winners and losers, is creating an ego climate. The coach who avoids comparisons with other judokas and stresses personal growth is likely to create a task climate. Similarly, parents who ask their children returning home from training or practice sessions, 'Did you win?' are likely to be creating an ego involving climate. In contrast, parents who ask 'Did you learn anything?' or 'Did you have fun?' are helping to create a climate that is more task involving.

Task-ego involvement

From the above, we can see that the type of involvement **(task or ego involvement)** that a judoka has, at any given moment, i.e. their achievement goal state, is a function of the interaction between the **goal orientation** they bring to the competitive situation and the **goal climate** in which they find themselves.

ATTRIBUTION THEORY

Attributions are the ordinary explanations judokas give for the events that happen in their daily lives. For example, if we think we have been deliberately fouled, we are more likely to respond with a negative reaction than we attribute the foul to unintentional action by the other judoka. When humans process information they tend to be 'cognitive misers'. They use heuristics, which are strategies that save processing time at the expense of thoroughness and often accuracy. For example, when judokas make attributions for failure they tend to blame the situation on others, rather than themselves. This tendency for self-serving attributions has a positive effect on motivation, because when we can avoid the blame for failure we can avoid its demotivating effects. There are two dimensions, locus of control (internal-external), and stability, account for the lay explanations that judokas make for success and failure. Ability is seen as an internal stable attribution for outcome, while task difficulty is seen as an external and stable attribution. Effort and luck are classified as internal-unstable and external-unstable,

Respectively. The theory predicts that following success, stable and internal attributions will produce higher levels of motivation than unstable and external ones. Following failure, motivation is least damaged by attributions that are unstable and external as opposed to internal and stable. Research has generally supported these predictions.

Attributions

If we ask why they are so successful, we might be given the attribution by one person that they have bought their way to success, and by another that they have a good manager. If asked why someone fouled you on the playing field,

you might attribute it to clumsiness or to 'dirty play'. Attributions are relevant to motivation because it is on the basis of our attributions that much of our behavior rests.

Cognitive misers

We know from research on information processing that human beings tend to be **'cognitive misers'**. That is, they tend to take shortcuts to save time and effort in cognitive activity by not going systematically through all possible permutations in arriving at conclusions. They use **heuristics**, which are strategies that save processing time at the expense of thoroughness and often accuracy. **Stereotypes** are one example of this where we use rough classification systems to help us to manage the vast number of types of judokas we might encounter and how we should respond to each. At a party, for example, our interactions with a man in a monk's habit might be quite different from those we might have with someone wearing a jacket. In a similar way, we are biased our assumptions when we make attributions. It is well documented that when judokas make attributions for their own behavior, they tend to take the credit when things go well, and to blame others when they do not. In this way judokas protect their own egos and self-esteem. This inaccuracy is one of the most common mis-attributions judokas make and is known as the self-serving bias. The relevance of all this for motivation is that our tendency to have **self-serving attributions** has a positive effect on motivation, because we don't blame ourselves when things go wrong and we thus avoid the possible demoralizing and demotivating effects of defeat.

Attribution theory

Attribution theory attempts to account for the way in which judokas make attributions. In fact there is not one attribution theory but several. However,

from a judo perspective the most obviously useful, and certainly most studied, is theory of attributions for achievement. The theory originally proposed that two dimensions could account for the lay explanations that judokas made for success and failure in achievement situations. The first of these was locus of **control**, and the second **stability**, so that ability was seen as an internal stable attribution for outcome, while task difficulty was seen as an external and stable attribution. Effort and luck were classified as internal unstable, and external unstable, respectively. The theory has been extended with the introduction of three further dimensions: controllability, generality and intentionality, although there is some debate whether these extensions added much to the power of the theory. It is difficult, for example, to envisage an external controllable event, or an internal uncontrollable one. We agree with a four-dimensional model, the dimensions of which are locus of control, stability, external control and personal control. The basic suggestion is that judokas who attribute stable and internal, which this way of thought causes successful outcomes will be more likely to choose to participate again, to practice more, and as a result eventually play better than those who believe their success was unstable and externally caused.

Another less well-publicized aspect of theory is the emotional consequences that are associated with different attributions. Internal attributions for success will be related to pride ('it was me') and external ones with gratitude ('I was lucky'). In the case of failure, internal attributions will be associated with shame, external ones with surprise and/or anger. In terms of applying the theory, we should encourage judokas to see success in internal stable terms.

For example, after a win, the coach could talk about our skills, rather than the weaknesses of the opposition. It would also be important to avoid attributions for success that invoke luck, which is unusual and unlikely to be repeated. In contrast, after failure, coaches should encourage external and unstable attributions.

CONFIDENCE

Psychologists make the distinction between trait and state confidence. Trait confidence is an enduring aspect of how we are generally. It is a personality dimension. Someone who is trait confident is confident across a wide range of situations. In contrast, state confidence relates to one's belief about a specific situation. Self-efficacy is 'judoka's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance'. It is synonymous with state confidence. The theory suggests that there are four main sources of self-efficacy: performance accomplishments, vicarious experience, verbal persuasion and our physiological state. Self-efficacy is said to affect task choice, effort and persistence. The theory has been supported in judo settings, but only in tasks that are predominantly effort based, as opposed to tasks requiring aiming or tracking skills.

Collective self-efficacy is the efficacy of the group as a whole. Studies generally find that there is a relationship between collective self-efficacy and performance. Evolutionary processes have produced in humans an innate need to be competent, which motivates mastery attempts. Successful mastery attempts lead to satisfaction, increased perceived competence, higher levels of effectual motivation and more mastery attempts. In contrast, unsuccessful mastery attempts lead to dissatisfaction, lower perceived competence, lower levels of effectual motivation, and a reduction in mastery attempts. Judokas bring two personality dispositions, trait confidence and competitive orientation, to each judo situation. These two dispositions are said to interact to determine the state confidence level of the competitor, which, in turn, provides the performance. Performance oriented (task-oriented) judokas should be more state confident than outcome-oriented (ego oriented) ones.

Confidence in judo

Confidence is seen by coaches, managers and judokas themselves as being absolutely crucial to motivation and peak performance. In fact it is a good example of when psychology could be accused of being 'just common sense'. However, psychology can add to common sense by discovering the limits of its effects, and by illuminating the processes involved. As we shall see, it may even show that common sense is not quite accurate and there are some times when confidence has no benefit to athletic performance. Before outlining the theories of confidence that sport psychology employs, it is important to make the distinction between trait and state confidence. As the name suggests, **trait confidence** is an enduring aspect of how generally we are, and suggests personality dimension. Someone who is trait confident is confident across a wide range of situations. In contrast, **state confidence** relates to one's belief about a specific situation. The state-confident judoka may be sure he or she can win, yet be low in confidence about other abilities. While some work has been carried out on trait confidence, the main focus in the area has been on state confidence. Cognition relates to thoughts and beliefs, whereas affection relates to feelings (emotions and moods). In everyday use judokas talk about feeling confident or being in a confident mood. However, this is to confuse beliefs with affects. Confidence is a belief, not a feeling, i.e. it is cognitive not affective. We feel emotions and we feel 'in a mood' but we don't feel thoughts or beliefs. When we say 'I am confident I can share a tenth of a second of my best today' we are saying we believe we have the capability to do what we claim.

Self-efficacy theory

It is not the stimulus or reward that drives our behavior, but rather our interpretation of it. We would not be motivated to try something unless we believe we have a chance of succeeding. Judokas who are afraid of some task are much more probable to be able to handle the task after they had been made confident that they could do so. **Self-efficacy** defines as 'judgments of our capabilities to organize and execute courses of action required to attain designated types of performance'. There are four main sources of self-efficacy. The first and most powerful is previous **performance accomplishments**. Thus, in case we have succeeded in a certain activity in the past, we are confident we can do it again. The second source of self-efficacy is **vicarious experience,** or modeling. This might be when we see others succeed and we think, 'If they can do it, I can too'. The third source of self-efficacy is **verbal persuasion**. An example of this is when our coach convinces us we can do something. Finally, and of least influence on self-efficacy, is our **physiological state**. The way we feel physiologically is an indication to us about how confident we are. For example, as long as we are aware of having butterflies in our stomach we may lose confidence. Over the years two further sources of self-efficacy have been added to the theory. Firstly, it is suggested that imaginable experiences can also affect self-efficacy levels, with images of positive outcomes leading to increased self-efficacy, and negative outcomes resulting in lower self-efficacy. Secondly, it is argued that, just as our awareness of the physiological state can impact on self-efficacy, therefore our emotional states are a signal about our self-efficacy levels. For example, someone who is feeling depressed, or sad, prior to competition, might judge their self-efficacy to be low. There are nine sources: mastery; demonstration of ability; physical and mental preparation;

physical self-presentation; social support; coach's leadership; vicarious experience; environmental comfort and favorable situation. Expectations influence what we choose to attempt, i.e. task choice, how much effort we will expend, and how persistent we will be in the face of failure. Confidence (self-efficacy) and judo performance are correlated. However, the link should not be taken as though there is a cause and effect relationship that means falling into the trap of believing in the logical fallacy **'post-hoc ergo propter-hoc'** (after the fact therefore caused by the fact). Because two things are correlated does not mean that they are causally related. To be able to say that it was the confidence that caused performance (rather than for example, that being a good judoka makes us confident), we need to manipulate confidence experimentally. A small number of such experiments do show that when self-efficacy is manipulated, for example, by giving false feedback to participants, subsequent performance is affected. However, apart from being few in number, the experiments all appear that they have been carried out on tasks that demand effort as opposed to accuracy. For example, participants in a muscular endurance task have been able to keep their legs extended longer following a positive manipulation of self-efficacy. Increasing confidence does appear to lead to more effort and persistence. In contrast, it is difficult to see why the theory should apply in an aiming task, since no amount of determination or effort is going to make it instantly more accurate. The distinction being made here, which could loosely be termed the **'will versus skill distinction'** is between tasks where successful performance is more a product of effort or will, and those in which accuracy or aiming is the primary determinant of good performance. It should be said that the distinction between skill-based and effort-based tasks is not a perfect dichotomy. Most judo tasks require both effort and skill. It is not being claimed that an effort-based task such as running a 5000-meter race does not require any skill, rather it is the relative contribution that is being alluded to. The suggestion is that trying hard is probably having more effect

on how well one performs in a distance event, than how well one performs in a kata competition. To date, none of the true experiments in the area has investigated accuracy or aiming performance. Self-efficacy will affect thoughts as well as effort. For example, low self-efficacy might lead to worry. However, again, true experiments that manipulate self-efficacy to determine its effect on anxiety and subsequent performance do not appear to be carried out. The idea that self-efficacy affects performance has been extended by those interested in group processes in judo. This has led to the notion of **collective self-efficacy,** which is the efficacy of the group as a whole.

Competence motivation

Humans have an innate need to be competent. This has clear links with evolutionary theory, so we might expect that those humans without such a need did not attempt to be competent, were less likely to excel, and had fewer resources when it came to competitive survival. The theory proposes that our **innate need to be competent** motivates attempts to demonstrate competence in various activities. So the young child tries to walk and the older one might climb a tree. Successful mastery attempts lead to positive affects (feelings of satisfaction), increased perceived competence, and higher levels of **effectance motivation**. High effectance motivation results in more mastery attempts. In contrast, unsuccessful mastery attempts lead to negative affect (feelings of dissatisfaction), lower perceived competence, lower levels of effectance motivation, and a reduction in mastery attempts. The theory neatly explains why judokas drop out of judo at an early stage when they do not experience success of some kind or another.

V theory

Confidence is causally linked to performance. However, it also suggests that trait confidence will impact on state confidence in different ways depending on the judoka's competitive orientation. Judokas bring two personality dispositions to any given objective judo situation. Firstly they bring a level of trait confidence, and secondly a **competitive orientation**. Their competitive orientation corresponds more or less to what was called achievement goal earlier in this section, when we considered task and ego orientation. We prefer to use the terms performance (task) and outcome (ego) orientation. These two dispositions are said that they interact to determine the state confidence

level of the competitor which, in turn, determines the performance. Performance-oriented (task-oriented) judokas should be more state confident than outcome-oriented (ego-oriented) ones. It is presumable that for a task-oriented person, success is defined against their own standards, whereas for the ego-oriented judoka success means beating the other person. Thus, winning against others is much less in one's control than doing well against one's own standards, and consequently, the former situation should lead to higher levels of state anxiety. On the positive side, V theory is judo specific and was created with competitive anxiety in mind.

GOAL-SETTING THEORY

Goal setting is central to motivation since we are stimulated by the discrepancy between our goal and desired end state (what we want), and what we have now. Feedback tells us about the size of the discrepancy. Goal setting is the process of spelling out the aims and objectives that will be met by a set time, and at a set level. Three main types of goal have been identified. Process goals relate to how something will be done. For example, a judoka might have the process goal of keeping their head still throughout the match. Outcome goals focus on the outcome of our actions, for example, to win a game or to reach the semi-final stages of a competition. Performance goals specify a level of achievement against a measurable standard rather than against other competitors. Goal-setting theory was developed in industrial psychology. It claims that there is a linear relationship between goal difficulty and performance, so that as goals get more difficult, judokas perform better. The theory also claims that specific goals of sufficient difficulty produce higher levels of performance than no goals or 'do your best' goals. Since the theory was first proposed, hundreds of studies have demonstrated its validity. There is evidence that goal setting is effective in judo context, however its effect is less pronounced there than in the organizational context. This may be because judokas are more likely persistent

than industrial workers to operate to be close to their performance ceiling. Another possibility is that judokas are more highly motivated to excel than industrial staff. Despite not being as powerful as it is in the occupational setting, goal setting is still a useful technique that is widely employed in sport psychology.

Introduction to goal setting

One of the most widely cited examples of successful goal setting is that of John Naber, the American swimmer who wanted to win the Olympic 400-meter backstroke gold medal. In 1972 he was just under 4 seconds slower than the gold winning time, so he set himself the goal of being 4 seconds faster by the time of the 1976 Olympics. He broke his overall goal down into sub-goals of 1 second a year, and 0.08 seconds per month, and 0.02 seconds per week, which is about 4 milliseconds per training hour (about a fifth of the time it takes to blink). He said to himself, 'I can improve that much per training hour'. He did and won the gold in 1976!

Goal types

Three main types of goals have been identified. **Process goals** relate to how something will be carried out. For example, a judoka might have the process goal of keeping her/his head still throughout the match. Another judoka might set the process goal of following through when he takes a kick. As the name suggests, **outcome goals** focus on the outcome of our actions. An example of an outcome goal is to win a game or to make it to the semi-final stages of a competition. **Performance goals** specify a level of achievement against a measurable standard rather than against other competitors. For example, a judoka might aim to have a 90% accuracy. It has been suggested that performance and process goals are 'better' than outcome goals on the grounds that the latter are not as much under our own control as performance or process goals.

For example, our opponent may simply be vastly superior to us. Research into goal type has not supported the efficacy of one type over another. It is perhaps more appropriate to suggest that there are advantages and disadvantages to each. It may be in some situations process goals are more appropriate, for example, when we are learning new skills the outcome or performance goals are more appropriate than when we are competing. Using a combination of different goal types is better than employing each alone.

Goal-setting theory

A goal-setting group out-performs a **'do your best'** group. The theory claims that there is a generally linear relationship between goal difficulty and performance, so that as goals get more difficulties, judokas perform better. Secondly, specific goals of sufficient hardship produce higher levels of performance than no goals or 'do your best' goals. Thirdly, to be effective, goals need to be accepted by the performer, i.e. they should have 'ownership' of the goal, whether self-set, negotiated or assigned. Finally, for goals to be effective, they need to be accompanied by feedback on performance. Hundreds of studies have confirmed its main claims and the effectiveness of goal setting. In particular, it has been shown that specific and sufficiently challenging goals are the key to increased performance. Explanations for why goal setting is effective include that it directs attention, mobilizes effort, enhances persistence and leads to new strategies. One aspect of goal setting that the original theory did not include, but that has been argued to be of relevance, is goal proximity. This refers to the closeness of the goal over time, and in particular, the distinction between short- and long-term goals. Many writers have suggested that the addition of short-term goals as opposed to long-term goals alone, improves the effectiveness of goal setting. As yet there is little evidence on this, but it seems reasonable to assume that it is worth including both, which is considered to cost little.

Goal setting in judo

Having proved its worth in the organizational context, researchers began to investigate the effectiveness of goal setting in judo settings. Here, the evidence has been less compelling. Goal setting does appear to work and is widely applied to judo performance. However, research shows its effects to be less pronounced than in the organizational context. Meta-analyses (a way to combine the findings of many studies mathematically using a statistic known as the effect size), have shown that it has modest effect sizes, compared to the ones for industrial studies. Several suggestions have been made to explain this discrepancy. Another related claim is that judokas are more highly motivated to excel than industrial staff. It could also be that there are methodological difficulties in the experimental research. For example, it has been suggested that judokas in the 'do your best 'condition inadvertently subvert the experimental process by spontaneously setting their own goals. Another methodological problem is that sample sizes are smaller in judo-related research. This could be part of the reason why there have been more failures to demonstrate significant differences between goal-setting and 'do your best' groups. Despite not being as powerful as it is in the occupational setting, goal setting is still a useful technique that is widely employed in judo.

DETERMINANTS OF JUDO

Determinants are factors that show consistent/reproducible associations with judo that are potentially causal. Modifiable determinants are useful targets in interventions. Unmodifiable determinants identify target groups for interventions. Positive associations (i.e., when levels of one get higher, so do levels of the other) have been found for education, being male, socioeconomic status, self-efficacy, perceived benefits, enjoyment, intention to judo, self-motivation, perceived health/fitness, stages of change, processes of change, diet quality and adult activity history. Negative associations (i.e., when levels of one get higher, levels of the other gets lower) have been found for age, ethnicity (some ethnic groups have higher levels), perceived barriers, perceived effort, intensity and climate/season. In children positive associations have been found for having an overweight parent, being male, intentions to judo, preferences for physical activity, healthy diet, previous physical activity, access to facilities and programs, and time spent outside. Negative associations have been found for perceived barriers. In adolescents, positive associations have been found for being male, ethnicity, achievement orientation, perceived competence, intention to be active, sensation seeking, previous activity, participation in judo, parental support, sibling physical activity and opportunities to judo. Negative associations have been found for age, depression and sedentary pursuits.

Determinants of Judo

Determinants may be modifiable (e.g., enjoyment of judo) or unmodifiable (e.g., age, gender). Identifying modifiable determinants is important as the logic of the determinants approach suggests that interventions that target change in modifiable determinants will be more successful. This has resource

implications as activity promoters can target their resources at factors that are most likely to result in activity behavior change. Understanding unmodifiable determinants helps identify target groups (e.g., adolescent girls, older adults) which again allows for more effective use of resources and time. Although the early determinants work was largely descriptive, theories and models have also been applied in an attempt to uncover the consistent influences on behavior. These theories and models include the health belief model, the theory of planned behavior, social cognitive theory, the Trans theoretical model and ecological models. The link between theories and determinants research is important because the identification of determinants can be used to inform and modify models and theories so that they better represent behavior. For example, a sense of having judo to please others has shown no consistent relationship to behavior. This finding has implications for theories such as the theory of planned behavior which includes subjective norms as a key variable.Determinants can be categorized under the following headings: demographic and biological factors, psychological, cognitive and emotional factors, behavioral attributes and skills, social and cultural factors, physical environment factors, and characteristics of the judo. No one factor or category of factors will explain the behavior. Rather the factors will interact within an individual, and across time and circumstances. This was recognized in early work, for example, the psychobiological model of adherence postulated that both psychological and biological factors influenced participation.

Determinants in adults

Age and gender are the two most consistent demographic and biological determinants. Judo participation is consistently higher in men, and consistently higher in younger compared to older adults. Socio-economic status and education have also consistently been related. Ethnicity is consistently associated.

There is emerging evidence that overweight and obesity influences behavior. The most consistent psychological determinant is self-efficacy (person's confidence). The more confident people feel the more likely they can be judokas. Barriers (e.g., lack of time, too tired, etc.) are also consistent determinants with individuals who report to participate fewer. While intentions are related to behavior, other components of the theory of planned behavior (e.g., attitudes, normative beliefs and perceived behavioral control) have received little or no support. Other important psychological determinants related to higher levels of participation include enjoyment of activity, an expectation of benefits, self-motivation, and stage of change. Several consistent determinants within the behavioral category have been identified. Activity history during adulthood is positively associated with current behavior. That is, recent participation in activity is a strong predictor of your current participation. Adults with a better-quality diet are also more likely to participate in physical activities. Processes of change, which are cognitive and behavioral strategies that are used to modify thoughts and behaviors are also positively related to participation. This demonstrates that individuals who actively engage in cognitive and behavioral change strategies are more likely to participate. Smoking and activity history during childhood and adolescence are not related to participation. The most consistent determinant in the social and cultural area is social support from peers and family. Adults reporting greater social support are more likely to be active and reach recommended levels of participation. Support and encouragement from a physician is also related to greater participation. Equipment in the home, access to facilities, satisfaction with facilities, perceived neighborhood safety, hilly terrain, seeing others, and enjoyable scenery are all related to greater participation.

The perceived effort and intensity are characteristics of judo itself that are negatively associated with participation. That is, higher intensities and greater perceived exertion are associated with lower participation.

Determinants in children and adolescents

Significant determinants have been found in all categories for children (4–12years) and adolescents (13–18 years). Determinants research with young judokas is complicated by the psychological, physical and social developmental changes that are occurring. The effects of these changes are not well understood. Within children results for demographic and biological variables suggest a positive association between judo and being male and having an overweight parent. That is, if you are male or have an overweight parent you are more likely to participate in judo. Inconsistent findings have been reported for age and body weight/fatness. Socio-economic status (SES) and ethnicity appear unrelated in this age group. For adolescents greater activity was found for boys compared to girls and some ethnic groups. Less activity was associated with increasing age. Psychological variables associated with judo in children include perceived barriers (negative, i.e., more perceived barriers is associated with less activity), intentions (positive, i.e., stronger intentions to be active are associated with greater activity) and preferences for activity (positive). For adolescents, achievement orientation, perceived competence, and intention to be active were positively associated, and depression negatively associated, with judo. It has been reported that activity may also be related to perceptions of enjoyment, self-efficacy, competence, control and autonomy, positive attitudes towards activity, and a perception of few barriers and many benefits. Behavioral factors with a positive association with judo in children include healthy diet and previous physical activity. For adolescents, a positive association was found for sensation seeking, previous activity and participation. No consistent association was found between judo and sedentary behaviors in children (e.g., TV viewing), but time in sedentary pursuits in adolescents after school and at weekends was negatively related to judo. No social variables were

clearly associated with childhood judo. For adolescents parental support was positively associated with activity. Sibling judo was consistently associated for adolescents whereas other social factors (e.g., peer modeling, perceived peer support) were not. Subjective norms are a small but significant predictor of judo intentions. However, attitudes, perceived behavioral control, self-efficacy and past behavior were all stronger influences. Some physical environment influences have been identified for young judokas. For children access to facilities and programs, as well as time spent outside, are consistently associated with greater judo activity. For adolescents, the general variable of 'opportunities to judo' was associated with activity.

PARTICIPATION MOTIVATION

Participation motivation is a descriptive approach examining the reasons and barriers people give for starting, maintaining or quitting participation in judo activity. There are five recurring motives: health and fitness, appearance improvement, enjoyment, social reasons and psychological benefits. Reasons commonly given for non-participation or dropping out are lack of time, lack of knowledge about judo, lack of facilities and fatigue. Five motives consistently emerge as important: fun and enjoyment, learning and improving skills, being with friends, success or challenge, and physical fitness and health. Common reasons given for ceasing participation or nonparticipation are conflicts of interest, lack of time, lack of fun, limited improvement in skills or no success, boredom, and injury.

Participation motivation

Participation motivation in adults

There are five recurring motives: health and fitness, appearance improvement, enjoyment, social reasons (such as being with friends or meeting new judokas) and psychological benefits (e.g., judo makes me feel better). Appearance improvement sums up motives for ideal weight and improved muscle tone. Physical appearance is important to both men and women; however, it seems to be somewhat more important for women. Health and fitness, or ideal weight, are often the motives for beginning a program, although they are seldom sufficient to maintain participation over a long period of time. Enjoyment of judo is particularly important for maintenance of participation. Social reasons include being with friends and meeting new judokas. Psychological benefits seem to be more important to older adults and women. Four reasons are commonly given for either non-participation or dropping out of judo: lack of time, lack of knowledge about judo, lack of facilities and fatigue. Lack of time is the most frequent reason, although some have argued that it is more a matter of priorities than actual lack of time. Those with children are more likely to report a perceived lack of time, particularly among women. Barriers which prevent adults from judo are categorized under five headings: physical, emotional, motivational, time and availability. Time barriers appeared to be most important for both men and women, but women were more likely to report emotional barriers such as I'm not the judo type, or I'm too shy or embarrassed. Across the adult years physical barriers (e.g., I have an injury or disability that stops me, my health is not good enough) and emotional barriers increased, and time barriers (for those over 55 years) decreased. There is a need for more work identifying how barriers in exercising change across the lifespan, because as with understanding motives they identify the points and targets for interventions.

Participation motivation in children and adolescents

Five consistently emerge as important: fun and enjoyment, learning and improving skills, being with friends, success or challenge, and physical fitness and health. There is some evidence to suggest that these motives are similar across activity settings and groups. The importance of these motives may change with age (e.g., success in competition may be more important in younger adolescents than older ones).Frequently 'fun and enjoyment' is the most important reason and 'winning' the least important. The process of judo (e.g. improving skills, performing skills, testing skills against others) which are the most important factors related to the social aspect (e.g., being on a team, being with friends) are of moderate importance and outcome-related components (e.g., winning, pleasing others, gaining rewards) that are the least important. These are consistent across the different age groups indicating that sources of enjoyment do not change significantly between the ages 7—14 years. Despite this general consistency in sources of enjoyment some age-related differences are with a decrease in the importance of pleasing others and using the skills of the judo and an increase in the importance of excitement in the older age groups. Among young judokas the most common reasons given for ceasing participation or non-participation are conflicts of interest, lack of time, lack of fun, limited improvement in skills or no success, boredom and injury. In judo settings dislike of the coach and competitive stress are also as reasons for ceasing participation. Many barriers emerge during the time of transition to secondary school. For example, greater embarrassment and self-consciousness concerning their bodies, especially for girls, and perceived time pressure from homework are barriers to judo activity. The decision to participate or not is influenced by perceptions of competence, external constraints (e.g.,

money),degree of support from significant others and past experiencesincluding physical education). Adults and young judokas are motivated to participate in judo for a variety of different reasons. Similar motives occur in both adults and young judokas but health concerns are more salient and learning .and improving skills less salient in adults compared with young judokas

Maintaining Judoka Motivation

Once competition is over, one of the primary psychological issues is that judokas and coaches face concerns how to maintain motivation (of both judokas AND coaches!) for intense, long-duration training regimens. One of the major reasons for this is that emotions are a major source of behavioral motivation, and judokas and coaches need to deal with many different emotions between competitions as well. This is often not a problem for judokas 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 judokas who lose matches enough to be emotionally affected, 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 judoka 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, judoka motivation for training and success. We believe that judokas should be as involved as reasonably possible in setting their own goals and developing their own training plans. Younger judokas may have difficulty in doing so, and may need guidance from coaches in this respect older judokas 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 judokas' motivations will be easier to sustain if they feel that they have ownership over their goals and 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, judokas 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, judokas 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 is the judoka who competes. Thus, it is the judoka who needs to take individual responsibility for his or her training as well. Making the milestones public in the dojo, and reminding judokas that they need to achieve those milestones, is one way of fostering individual responsibility for training. Finally, coaches should take an interest in their judokas not only as competitors, but also as individual people. Judokas are not interested in how much coaches know: they want to know that coaches are interested in them. That means learning about judoka'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 nonjudgmental, inquisitive fashion. One major goal of the development of these relationships is to explore the basis of judokas' emotions, especially in relation to competition outcomes. Joy, sadness, fear, dejection, apprehension, and anger are all part and

parcel of the emotional pendulum that judokas are often on, and one important step in maintaining judoka motivation is for coaches to understand exactly what emotions judokas are feeling, and why. Listening, in combination with guiding questions, is a key. Unfortunately, many coaches, of national teams, universities, or private dojos, are just too busy in their lives to make the time to get to know their judokas on this personal level, and conversations about emotions are avoided. Even when conversations about emotions take place, coaches and judokas are often too quick to try to do something about them, instead of learning as much as possible about them in the first place. Part of the reason for this is that coaches and judokas tend to be performers, and talking about emotions seems counterproductive. It also makes many people feel uncomfortable themselves. But an important part of being interested in judokas 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 judoka's emotions is a key to maintaining motivation.

Therefore judokas' feelings that coaches are interested in them are a large part of their achievement of self-efficacy and self-agency with regard to their training and competition.

CHAPTER TWO

IMAGERY

Imagery can be thought of as a conscious internal process that mimics real life experience in the physical absence of real life perceptual and sensory experience. Mental rehearsal can be seen as a specific form of imagery and will most likely be used for training purposes, while emotional imagery will be useful during competition. Images can be generated from an internal or external perspective which the latter resembles an image of watching yourperformance as a spectator. Also, images of the outcome of a skill can be used rather than the production of the skill itself. Recently a distinction has been made between imagery that is concerned with performance and/or mastery of a skill vs. imagery concerned with the motivational aspects of a skill. It appears that practicing through imagery is better than no practice at all, but is not as effective as physical practice. However, a combination of imagery and physical practice leads to an increase in performance. Additionally it appears that there are several factors that influence the effectiveness of imagery when used by judokas. There are a number of theories attempting to explain the mechanisms through which imagery effects manifest themselves, these include theories based on physiological activity generated through imagery, cognitive consequences of the use of imagery or the potential for imagery to increase motivation or confidence. Not much has known regarding the use of imagery within exercise, although it is attracting some interest from researchers. Also, it appears that imagery may be useful within an injury rehabilitation setting. Imagery can be used in a variety of applied settings and for

a variety of reasons. For example, it can be used in addition to physical practice to aid learning or used to control anxiety to increase concentration and to boost confidence. However, one needs to consider the situation when deciding upon the most appropriate way to implement an imagery intervention.

What is imagery?

Imagery can be thought of as a conscious internal process that mimics real life experience in the physical absence of real life perceptual and sensory experience. For example, one can imagine smelling freshly cut grass in the middle of winter, seeing oneself perform a sporting task whilst sitting on a sofa or imagine feeling the consequences of a movement without actually performing that movement.

Imagery vs. mental rehearsal

Imagery can take many forms and within sport psychology it is often used in mental rehearsal (or mental practice). However imagery is a general process whilst mental rehearsal can be seen as a specific form of imagery. Mental rehearsal can also contain other sources of feedback: it is often not solely a form of imagery. For example, the practice of swing in golf may contain some aspect of imagery but it will also involve some sensory feedback through the physical practicing of the swing. As a consequence mental rehearsal will most likely be of use within training as an aid to improve the physical production of a skill. Other forms of imagery may be useful within a sporting setting to control emotions during competition.

Imagery perspective and types of imagery

Perhaps the simplest distinction that can be made is between external vs internal imagery. That is, judokas can imagine watching themselves perform-

ing the task as an external observer or they can imagine themselves actually performing the task. These different types of **imagery perspectives** have been labeled **external** an **internal** respectively. Also individuals can generate images of performing the actual task which may include the associated sensory input of the movements (imagine the act), or they can imagine the actual outcome of the movement (what happens **after**). This latter example is often referred to as **outcome depiction** imagery.

It appears that performance decrements are observed if participants are instructed to imagine unsuccessful outcomes. However, and perhaps more importantly, positive imagery does not necessarily lead to an increase in performance on tasks requiring a high skill factor. That is on tasks where there is a performance ceiling effect, imagery may not dramatically increase performance, although it may improve confidence or motivation to do the task. There are five different types of imagery.

Cognitive general refers to imagery concerned with an entire event or 'play'. **Cognitive specific**; **Motivational general mastery** (imagining successful completion of the move); motivational **general arousal** (e.g., imagining the nervousness one might feel with regard to the execution of the move—'what if I drop it?'); **motivational specific** which are images relating to successful outcome of the task (e.g. scoring a try, winning the match, etc.).

Does imagery work?

Imagery results in improving learning. Specifically, in general mentally practicing a task leads to a bigger improvement in task performance compared to no mental practice. Obviously common sense would dictate that even if mental practice does benefit the learning of a task, it would not be as effective

as physical practice. Indeed, physical practice is better than mental practice alone. However, in general a combination of the two seems to be of more benefit than physical practice on its own. Also, there appear to be several variables that moderate imagery effects, the most obvious being the nature of the task. For example it would appear that discrete tasks lend themselves more to the use of imagery than continuous tasks. Other variables that influence the use of and most suitable type of imagery are things such as skill level, gender, the intended goal of the imagery (e.g., motor skill improvement or anxiety reduction). Also it appears that judokas differ in their ability to use imagery. However with training it has been suggested that **imagery ability** as assessed by such things as the MIQ **(Movement Imagery Questionnaire)** or the SIQ **(Sports Imagery Questionnaire)** can improve.

How does imagery work?

Clearly any stimulation of muscles or neural connections involve in the production of a specific movement will be beneficial to improving performance. There is some evidence suggesting that by imagining practicing a movement the equivalent neural and muscular substrates which have been involved in the production of those movements are stimulated, albeit at a much lower level. This theory is often referred to as the **psych neuromuscular** explanation of imagery effects. Another theory that has received some support is the **symbolic learning theory.**

According to this approach, it is the opportunity to engage in the cognitive aspects of the sporting task through imagery that results in improved performance. Furthermore, mental practice through imagery allows for the move-

ments to be represented in symbolic form with the consequence of creating a more detailed mental map of the skill in question, thus aiding future recall of the requirements of the movements involved. An alternative cognitive explanation of why imagery might aid learning is to do with the communication between action systems and language systems. That is, individuals are given verbal instructions on how to control actions and somehow must turn these into information the motor system can understand. Imagery may play a crucial role in translating verbal instruction into information that action systems can utilize. This view is termed the **dual coding approach.** Additionally it may well be that imagery allows for individuals to practice under conditions that recreate all aspects of actual performance. If the image contains aspects of the psychological and physiological responses associated with performing this task in a real world situation (increased arousal, tension and anxiety) then this will lead to better transfer of learning. This approach is often referred to as **bio informational theory**. Also, imagery effects may be explained through motivational or confidence gains which are acquired from the use of imagery. The argument behind such a view is that by imaging success individuals increase their confidence to perform the task which in turn leads to an increase in their motivation. For example, it would appear within the judo domain that highly confident judokas tend to use **motivational images** compared to less confident judokas. Moreover, as noted earlier it does appear that images can be distinctly motivational in nature. All of the views presented have some validity. However, no one theory appears to provide a comprehensive account as why imagery may benefit a judoka's performance. Thus it is more than likely that they present a more complete explanation of why imagery may aid performance.

Recovery from injury

Imagery may be an effective tool in the recovery from injury. There are a number of areas where imagery may be a useful adjunct to traditional rehabilitation methods. For example, there is evidence that imagery has aided judoka's ability to cope with pain. Also, it can be used as a replacement for physical practice when a judoka is incapacitated or physically tired and may also increase adherence to the rehabilitation process by increasing confidence and motivation.

The use of imagery in judo

The prevalence of the use of imagery within judokas by elite judo is reported to be anywhere from 70 to 99%, and is an intervention commonly associated with judo psychology. Moreover, supporting the empirical work on the effectiveness of imagery as a tool to improve or change motor performance is the observation that mental packages for judokas will almost invariably include some imagery technique. It is clear that imagery can be used for a variety of reasons in judo: to help the judoka concentrate and focus, to reduce anxiety, to boost confidence, to aid practice or to 'ready' the appropriate cognitive mechanisms for action. But either the reason for its use, or its primary purpose is to improve an individual or individuals' motor performance. However, not all judoka are good imagers, something that any sport psychologist should keep in mind when planning an imagery intervention.

Imagery for motivation

Imagery can be used to motivate judokas in a number of ways. For example, we can conjure up mental scenarios about our dreams, goals or targets. This would involve repeatedly imaging positive outcomes, such as seeing ourselves reaching the pinnacle of our judo (or something less demanding if that is not realistic or achievable). For example, we might imagine stepping up to receive a gold medal. Inspirational imagery can also be useful. Here we think of our judo heroes and what they have done to reach the top. This might involve thinking about the hours of pain, or the endless hours of punishing effort. The technique would be to build into our own training, a way of regularly reminding ourselves, so that we might find that little bit extra when things get tough.

Imagery for emotional control

Imagery is also useful in controlling emotions, and in fact recurs as a technique in all of the main areas of psychological intervention, albeit in different forms. In relation to anxiety control, we can use **emotive imagery**, in which the images employed will consist of emotional content. For example, a calming imagery script might involve thinking about a quiet place that you like to be, where there is no one to disturb you, and where you can feel calm. It might be a candle-filled room, or an isolated beach, etc. Another imagery-based solution to anxiety problems is to use a technique known as **'parking'** or **'treeing'**. This involves the symbolic parking, or dumping of negative thoughts or feelings. For example, judokas can be asked to write down the things that are worrying them, and to then put the written list away somewhere, either permanently, as in burning the list, or putting it in the trash. Alternatively, lists can be locked away temporarily, until the competition is over, when the

content of the list can be dealt with without disrupting performance. Parking or treeing can also be used to aid concentration.

Imagery for concentration

Judokas can use different types of imagery to deal with issues of concentration. Three types of imagery often used are mental rehearsal, outcome imagery and emotive imagery. With mental **rehearsal**, the judoka imagines carrying out the actions involved, immediately prior to executing the actual activity or skill. In this way, judokas can bring their focus back to the task, and avoid distracting images or thoughts. Positive **outcome imagery** serves a similar function. A more useful strategy is to use positive outcome imagery. This is not mental rehearsal. **Emotive imagery** involves imagining something that affects emotions, such as thinking calm thoughts. It is more often used to regulate arousal, however, it can also serve a concentration function. For example, some judokas find that concentration is improved by imagining being a judo hero, and imagining how focused this hero would be in this situation. The hero of your imagery need not be restricted to your own judo. Imagery can also be used in the technique known as **'parking'** or **'treeing'**. This involves the symbolic parking, or dumping of negative thoughts or feelings. The term 'treeing' comes from an aboriginal tradition designed to remove judoka's troubles. This involved tribe members linking hands, with the troubled person at one end of the chain, and with a large tree at the other end. The person with the problem then symbolically passes it to the next person, and so on down the line, until the last person passes the trouble to the tree. One final example of the use of imagery as an aid to concentration is the practice of imagining a protective bubble around the performance. Some judokas imagine a transparent dome that they enter as they step up to match. They think of this bubble as a protective shield that keeps all sorts of external distractions

out, such as crowd noise and camera shutters. Inside the bubble, all that matters is about the match. When one enters their bubble they feel as if they have entered a room that is 'dimly lit and quiet'. As can be seen, the potential of imagery appears only to be limited by the imagination of the judoka, or their sport psychologist!

Imagery for confidence

Imagery can also be a useful tool to maintain confidence. For example, outcome imagery combined with mental rehearsal can be used immediately prior to an event, or at a particularly crucial moment in a competition to give us an instant experience of success. Another way judokas use imagery to boost their confidence is to use 'hero imagery', in which they make believe that they are their own hero. In this way, we can derive some confidence in any difficult competitive situation by imagining what our ideal judoka would do.

CHAPTER THREE

Stress

Eliminating Versus Managing Stress

Managing stress before, during, and even after competition is a most important battle that all judokas face. While this is true for all sports, it is especially true in judo, because the "usual" stress of judo 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 1 second can lead to be strangled unconscious, to be arm-locked, and dislocate or fracture an elbow. These aspects of judo 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 performance. For coaches and judokas it is probably more important to find the zone of optimal stress which is associated with peak performance. Each judoka has one. Yet what makes this difficult is the fact that

each judoka's zone is different than the others. And the methods of how to get them there, keep them there, or bring them back to that level if the judokas go past that point, are probably very individualized. Thus, individual judokas have their own profiles of what their inverted-U s look like. The job of many coaches and judokas, therefore, is to work together to find out what those individual graphs look like, and to explore methods of intervening when the judoka is too high or low on the graph.

What Is Stress?

As coaches and judokas move to work with 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 for our appraisals of events, situations, or occurrences that are threatening to our sense of well-being .When emotions turn on, they engage our physiology, skeletal muscles, and cognitions, all of which can be taxing on our bodies, especially if they occur repeatedly over long periods. Stress is the pressure 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 judokas) to identify exactly what kinds of emotions judokas experience 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 judokas 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 judo, 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. 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. 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 to this emotional need that we have. There are many different coping strategies, and many different ways to think about them. There are eight major coping styles (Table). When one is stressed, for instance, one might directly confront the situation that brought about the emotional reaction (Confrontive Coping), or might just escape from the situation and avoid those kinds of situations altogether in the future (Escape/Avoidance Coping), or ask friends for help to deal with the situation(Seeking Social Support Coping).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 . Some types of coping focus on doing something to reinterpret the situation or the response: these are called emotion-focused coping strategies, and involve mainly changing one's thinking rather than acting to change the situation. Judokas (and coaches) deal with their stresses before, during, and after competition uniquely, they are the individual ways which typically engage one or more of the coping strategies outlined above. Coping during actual competition, however, is extremely difficult, because it needs to be done in second-by-second precision with limited resources in a highly emotionally charged environment.

Pre-competition Stress

Given that judokas 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 to have too little or too much stress. Obviously, this presupposes that coaches and judokas 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 judoka's level of anxiety at any 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 judokas 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 judoka'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 judoka may need to be de-stressed. If it is too low, the judoka may need to be 'pumped up.' One method used by many coaches and teams to bring their judokas to optimal levels of pre-competition stress is to utilize a standard pre-competition warm-up procedure. If this procedure is standardized, judokas 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 judokas are prepared physically for combat.

Although too much and too little pre-competition stress are both problems for judokas, 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 change combat situations in an optimal fashion. Thus, coaches and judokas 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 judokas 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 judokas in the few seconds prior to matches, or even in the breaks during matches, and coaches can keep their judokas focused by having them breathe. Breathing is also an integral part of proper stretching routines, and can be utilized effectively when stretching. Clearly, each judoka 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. Judokas 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 judo. However, coaches

and judokas can bring some clarity to this process by understanding optimal stress levels, and helping to find ways in which their judokas can achieve that optimal stress level prior to competition.

Competition Stress

Dealing with High-Intensity Stress in High-Stakes Environments

Judo competition is difficult because judokas 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 judokas are not just competing, but are fighting as well. Moreover, within matches, judokas may be scored against putting additional pressure on them to come back to win. Judo defending is usually easier than coming from behind, and judokas 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 judoka'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 judokas in the world. Judo competition requires enormous aerobic and anaerobic conditioning, and judokas at the highest levels train to achieve these. They also develop extraor-

dinary strength, both through normal judo training and supplemental weight and plyometric training. Judokas 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 judokas without such conditioning. For the latter, it makes little difference how well judokas 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. Judokas who are stronger and who can go more rounds at high intensity will develop more self-confidence

in competition. Judo involves gripping the other opponent, and, when doing so, often judokas gauge the strength of their opponent. Judokas 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. Judokas 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 judokas can match the strength, conditioning, experience, and talent of their opponents, then psychological factors during matches are crucially important. Of course, judokas 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 judokas can manage the high-intensity stress that is inevitable in competition, and especially during matches. This 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. Judokas 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. Judokas 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 judo 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 judokas when they are out of competition in a non-stress environment. It is, however, a completely different thing to train judokas mentally in a high-stress, emotionally high pressure 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. Therefore, we believe many mental imagery tasks, a commonly used sport psychology, may not be as successful in judo. These tasks are often conducted in a stress-free environment, and, although some judokas 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 judokas 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 requires the judoka 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 judokas' hearts are racing at competition speed. Another possibility may involve intervening during actual practices. Again, it is necessary to bring judokas 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 judokas engaged in the most taxing rounds of Randori in which they are losing to their partners because they have lost controlling 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 judokas 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, judokas will not become used to regulating their emotions in a high-stress environment. There are many ways 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 judokas 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, judokas are flooded with a range of emotions, whether they win or lose. The emotions of judokas who win may range from ecstasy, achievement, pride, and joy to tears for all the hard work and sacrifices they and all those around them have made throughout years of grueling training. Judokas who lose may experience sadness, despair, dejection, anger, shame, contempt, disgust, and even fear. Clearly, judo competition can be associated with strong, raw emotions for all involved. When judokas are gripped by emotion after competition — regardless of its type— there is little that others can do except to share the emotion with the judoka. Emotions have their own life course, and when elicited they need to run their course. 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 judokas 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 judoka is different on when the exact time is. Coaches and judokas can work by noting that time. 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 judokas who have that valuable information can adapt appropriately to the needs of the judokas. Once judokas 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 judoka. 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. 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 do not work hard enough," "their technique is terrible"). All of these are ways in which we protect our own sense of self, regardless of our sociocultural background. However, self-serving attribution styles are not conducive to long-term success in performance, or growth as an individual. Instead, a model of self-efficacy and self-agency strongly suggests that objective attributions of both successes and failures to controllable internal factors (e.g., effort, thinking styles, planned actions, etc.) can lead to the most positive outcomes in the long run. This attribution style will help judokas and coaches identify the strengths and weaknesses of a given individual, one's limitations and shortcomings, and focus on efforts 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.

COPING STRESS

Stress occurs when an outcome is important to a person but they perceive an imbalance between the demands placed upon them and their ability to cope with these demands. The transactional model of stress suggests that the stress process consists of four stages: (1) environmental demand; (2) appraisal/ perception of the environmental demand; (3) physiological and/or psychological response; and (4) behavioral consequences. Sources of stress fall into two general categories: situational (e.g., event/ outcome importance and uncertainty) or personal (e.g. Trait anxiety and self-esteem).Coping strategies, to manage stressful situations, can be learnt. Adaptive strategies facilitate adjustment to the situation, but maladaptive coping strategies lead to underachievement, dropping out, burnout or poor somatic or mental health. Coping is a complex and dynamic process. Coping strategies can be seen as problem-focused or emotion-focused. Social support and strategies to reduce state anxiety and increase self-esteem are likely to be effective.

Stress

Stress is an integral part of life quality, it is needed to produce energy and excitement in our lives. However, too much or too little stress is undesirable and in these conditions people may develop symptoms such as anxiety, irritability, sleeplessness or muscle tension. Although many people talk about stress and 'being stressed' it is actually a difficult term to define. In general terms it is a concept meaning something that produces strain. Stress can also be viewed as a complex process where events and individual reactions to events interplay to produce physical and mental responses. Stress is most often seen to occur when an outcome is important to a person but they perceive an imbalance

between the demands placed upon them and their ability to cope with these demands. Taking this view it can be seen that it is not the environment per se that causes stress, rather it is the person's perception of the environment. Stress is manifested in emotional (e.g., changes in mood), physiological (e.g., changes in blood pressure or heart rate), psychological (e.g. anxiety, depression) and behavioral (e.g., restlessness, rate of speech, decreased task performance) responses. The **transactional model** of stress suggests that the stress process consists of four stages.

(1) Stage 1: Environmental demand. Some sort of physical or psychological demand is made of an individual.

(2) Stage 2: Individual's appraisal/perception of the environmental demand. This could be viewed as the amount of 'threat' the individual perceives. Not all people will see the same demand with the same degree of threat.

(3) Stage 3: Physiological and/or psychological response. If an individual perceives the demands to outweigh their resources to cope then they are likely to experience increases in arousal, state anxiety, muscle tension and negative changes in attention. Perceived coping resources are therefore integral to the stress response.

(4) Stage 4: Behavioral consequences. This stage refers to the actual behavior the individual exhibits in response to the environmental demand. It may be that an increase in state anxiety causes a decrement in performance, or the individual may have skills for managing the increase in state anxiety and therefore performance remains unchanged or improves.

The process is cyclical with the behavioral outcome feed back into the situation and the situation appraisal. Likewise if a similar experience in the past has led to stress and a poor outcome, the current situation is likely to be viewed

as more stressful. The cognitive appraisal and physiological/psychological response are linked with a reciprocal manner. For example, the initial appraisal may lead to increase in state anxiety, which then results in re-appraisal of the event as even more stressful. The stress process is influenced by personality and motivational characteristics of the individual (e.g., trait anxiety, self-esteem, achievement goal orientation).

Within sport psychology stress has been most frequently studied in terms of competitive stress, stress and injury, and the role of stress in burnout. In exercise psychology the focus has tended to be on the role of physical activity in stress management.

Sources of stress

There are innumerable sources of stress, that fall into the general categories of **situational** or **personal** sources. The two main situational sources are event/outcome importance and uncertainty. Generally the more important an event the more likely it is to be perceived as stressful. Likewise the greater the uncertainty in a situation, the greater the stress. For example, if you are focused on beating your opponent rather than on your own performance, then you have less control of the situation and therefore greater uncertainty. Trait anxiety and self-esteem are two important personality characteristics that influence the stress experienced. Trait anxiety predisposes a person to view competition or situations of social evaluation as more or less threatening. High trait anxious individuals tend to perceive more situations as threatening compared with low trait anxious individuals. Low self-esteem individuals tend to have less confidence and view competition and situations of self-evaluation as more threatening, and are therefore more likely to perceive the same environmental demand as threatening (stressful).

Coping with stress

Coping is an effort to manage stress. Coping is 'the changing thoughts and acts the individual uses to manage the external and/or internal demands of a specific person-environment transaction that is appraised as stressful'. Coping strategies, to manage stressful situations, can be learnt. Within the transactional model of stress coping behaviors are seen as mediating the link between environmental demands and the cognitive appraisal and the physiological/psychological response to this demand. They may alter thought patterns, alter perceptions of personal resources or target a change in typical behavior patterns. Adaptive coping is more likely to occur when the strategy employed matches either the demands of the situation or deals directly with the physiological/psychological effects of the stress. For example, if someone experiences negative or irrational thoughts as a result of stress, then dealing with these, rather than teaching a general relaxation strategy is likely to be most effective. Coping strategies can be seen as problem-focused or emotion-focused. Problem-focused strategies attempt to change the person-environment relationship. For example, an athlete who finds themselves in the situation where they are being outplayed may decide to try another tactic. This alters the person environment relationship and if it goes successful it may reduce the stress being experienced. Emotion-focused coping involves the emotional regulation or reappraisal of the situation. The emotional reaction caused by the stressor may be altered by the individual re-interpreting the event (e.g., using cognitive restructuring to reduce the importance of the event or re-interpreting the event as an exciting chance to meet a challenge).

Seeking social support can be an effective coping strategy. It is argued that social support may buffer the effects of stress because the support helps the

individual to either redefine the problem or find a solution for it. Alternatively it has been proposed that social support may have a direct effect on stress by enhancing social integration and well-being. Because the stress process is affected by trait-anxiety and self-esteem, strategies focused on these aspects are likely to improve the coping resources of individuals. State anxiety may be reduced by both cognitive and somatic relaxation control and task-oriented goal setting. Self-esteem may be maintained or enhanced through the use of cognitive restructuring and positive self-talk. At times of general life stress physical activity can be used to help manage stress by reducing stress reactivity.

CHAPTER FOUR

Moods and emotions

DEFINITIONS

This is used as an umbrella term in psychology to cover all types of feelings including emotions and moods. It contrasts with cognition, which is used in a general way to refer to aspects of thinking. While in everyday language we tend to use the terms mood and emotion synonymously in psychology, it is usual to think of them as different. The difference is not a precise one and there is a deal of overlap between them. However, emotion is used to describe a relatively specific, high-intensity, immediate, yet short-term reaction following the appraisal of an event or stimulus. In contrast to an emotion a mood refers to a more diffuse feeling state that does not always have a clear trigger. A mood also tends to be more long lasting than an emotion. For example, we might just be fed up for no obvious reason and consequently, not want to go to the gym. Arousal is an alertness or activation level ranging from deep sleep to intense alertness. It has no affective component, i.e. it is neutral with regard to feelings, emotions or moods. Anxiety is a negative emotion of apprehension and tension. Stress is a process that involves one's perception of an imbalance between the demands of the environment and one's capabilities. The stress process may well result in anxiety, but it can also result in other emotions such as fear or curiosity. Anxiety is one possible product of the stress process.

Affect

Affect is used at a very general level to describe good and bad experience. It has also been argued that affect is more primitive in nature, being experienced by lower species as well as humans. In contrast, emotions such as pride or revulsion and moods such as being fed up or enthusiastic are said only to be experienced by humans. Psychologists talk about positive and negative affect meaning positive and negative feelings. For example, they might say 'exercise led to a state of positive affect in aerobics class members'. Affect used in this way is a noun. It should not be confused with the verb to affect, which is entirely different and means to produce an effect on something, i.e. 'we affected people's perceptions of the tennis club'.

Emotion

While in everyday language we tend to use the terms **mood** and **emotion** synonymously, in psychology it is usual to think of them as different. The difference is not a precise one and there is overlap between them. However, emotion is used to describe a relatively specific, high-intensity, immediate yet short-term reaction following the appraisal of an event or stimulus. For example, the emotion of anger may follow being badly fouled in a match. If we believe the foul to be accidental we are less likely to feel the emotion of anger. The emotion is likely to dissipate as the match progresses, assuming no further provocation occurs.

Mood

In contrast to an emotion, a mood refers to a more general or diffuse feeling state that does not always have a clear trigger. Moods also tend to be more long

lasting than emotions, but not enduring enough to be traits. Again, in contrast to emotions, moods tend to be more pervasive and about things in general, rather than specific incidents. For example, we might just be 'feeling down' for no obvious reason and consequently, not want to go to the gym.

Arousal

Unfortunately, in much of the literature **arousal** and **anxiety** are loosely employed to mean the same thing. However, arousal is more usefully viewed as an alertness or activation level, ranging from deep sleep at one extreme, to intense alertness at the other. As such arousal is an emotionally neutral concept, having no associated affective components, i.e. it is neutral with regard to feelings, emotions and moods. Judo require a wide range of skills some of which are best performed at low levels of arousal. Others are probably performed more effectively when arousal is high, for example, pushing. One advantage of this distinction between arousal and anxiety is that it allows us to understand why an athlete can be 'pumped up', yet not anxious.

Anxiety

Anxiety has been a central concept for sport psychology and has received a huge amount of investigation because of its influence on performance. It is generally defined as a **negative emotion** characterized by feelings of apprehension and tension. Unlike arousal it is not emotionally neutral, but rather is at the unpleasant end of the affect continuum.

Stress

Another much used term in this area is **stress**, which some writers use synonymously with anxiety, but is defined here as a process that consists of people's perceptions of an imbalance between the demands of the environment

and their capabilities. **The stress process** may well result in anxiety (but it can also result in other emotions, e.g. sadness, anger, depression). Anxiety is one possible product of the stress process.

MOOD AND PERFORMANCE

Mood has been measured using paper and pencil tests in many ways. However, the most widely used method in the physical domain has been the Profile of Mood States (POMS). The POMS has six mood sub-scales: tension, depression, anger, vigor, fatigue and confusion. Researchers have begun to use the Positive and Negative Affect Scale (PANAS), which consists of 20 items and is more evenly balanced between positive and negative moods. Athletes with a particular profile, the iceberg profile, would out-perform those without it. The iceberg label comes from the way the profile looks when vigor is high and the other five negative mood scores are low. It has become clear that performance cannot be reliably predicted from a knowledge of the athlete's profile of mood states. Overall there is an extremely small relationship between them. Mood profiles can distinguish athletes from non-athletes, but not skilled athletes from less-skilled ones. Finally, it appears that, to a modest extent mood profiles can distinguish between athletes of a similar standard. On the basis of the above research some applied sport psychologists have engaged in mood manipulation to create iceberg profiles, in the hope that this will cause athletes to perform better. Unfortunately, the research into the POMS has been correlational not experimental in nature. To assume on the basis of this, that the mood caused the performance is a logical fallacy known as post-hoc ergo propter-hoc, which means after the fact, therefore caused by the fact.

Mood measurement

Mood has been measured using paper and pencil tests in many ways. However, the most widely used method in the physical domain has been the **Profile of Mood States (POMS).** The POMS is a 65 mood word inventory in which athletes are asked to say 'how they feel right now' in relation to each mood word.

The words cluster into the following six mood subscales: tension, depression, anger, vigor, fatigue and confusion. The POMS was originally devised to measure the mood of clinical populations in mental institutions and its content reflects this with five of its sub-scales being negative and only one, vigor, being positive. Searchers in sport and exercise psychology have begun to use other mood scales, including the **Positive and Negative Affect Scale (PANAS**) which consists of 20 items and is more evenly balanced between positive and negative moods. The PANAS reflects current thinking on moods, which is that they can be represented in a two dimensional way such that it is possible to be high (or low) in positive mood and high (or low) in negative mood. The theory suggests that moods can be represented in two-dimensional space around a circle.

The iceberg profile

Athletes with a particular profile, **the iceberg profile**, would outperform those without it. The iceberg label comes from the way the profile looks when vigor is high and the other five negative mood scores are low .Top athletes exhibit this profile and go as far as the label POMS 'the test of champions'. Given the known predictive power of psychometric tests, a claim like this, i.e. that a test will be able to discriminate at the extremes of a distribution, is not credible. While it is not too

hard to believe that the mood of an athlete will affect performance, it is hard to see how mood could provide this level of discriminatory power. Many people began to investigate the mood-performance relationship. Not surprisingly, they found that the predictive value of the POMS was much exaggerated. Looking back it appears that there had been some confusion and that there was ambiguity over his use of the terms 'unsuccessful' and 'non-athlete'.

Mood and performance

It seems reasonable to assume that mood will have an effect on performance. In simple terms, we would expect that if you are not in the mood to compete you are unlikely to do well. What is the scientific evidence? Athletes do have more iceberg profiles. This is not too surprising because we know that physical activity affects mood in a positive way. Further it would not be surprising if depressed, tense, angry, tired, confused people do not want to exercise or play sport and thus self-select away from these activities leaving happy, vigorous, people to participate. Athletes of different skill levels have similar profiles. Thus, knowing mood profiles prior to competition does not allow us to predict who will perform well. We should not expect POMS to predict performance differences in samples of different ability levels. This is because the performance of differently skilled athletes is more likely to be a function of their ability level, strength, fitness and experience than their mood. A poor judoka in a good mood is still not going to outperform a good judoka in a bad mood. In other words the effect of mood is likely to be swamped by other factors. In addition to skill level, the relationship is masked by other moderator variables. For example, it is argued that because moods change, mood and performance will be related in short-duration events, but not over events of longer duration. Ratings of performance are more closely linked to previous mood. Effect sizes are bigger for performances that are self-referenced (for example, doing better

than you did last time) as opposed to other referenced (based on outcomes, such as winning).There is a moderate relationship between mood and performance in certain specific circumstances.

Post hoc ergo propter hoc

At this point a word of caution is important. On the basis of the POMS and performance, some applied sport psychologists have engaged in mood manipulation to create iceberg profiles, in the hope that this will cause athletes to perform better. To assume that the mood caused the performance is a logical fallacy known as 'post-hoc ergo propter-hoc', which means 'after the fact, therefore caused by the fact' in everyday life we often use this way of thinking and it may well have survival value. Cave dwellers who assume that the stomach pain they experience following the eating of interesting looking, yet toxic, berries has nothing to do with the berries, are less likely to avoid them in the future and are less likely to survive. In sport we see this in the form of superstitions. Many athletes are notoriously superstitious about which sock they put on first, or about which place in the pre-game they occupy. They may do this because on a previous occasion doing whatever it was followed by a win. However, for scientists, this evidence is not acceptable because it rests on flawed logic. When two variables are related it could be that either: A caused B; or B caused A; or there is a circular relationship where A caused B and B caused A; or finally, a third variable C caused both A and B, creating a **spurious correlation** between them. In this context we should ask whether a third variable might produce both a good mood and a good performance. Imagine a situation in which you are about to compete in a judo fight against someone you know you can beat (perhaps because each time you have fought previously you have won, or because you are of a higher judo grading than they are). If you were to complete a POMS questionnaire prior to competition, you would

probably find you had an iceberg profile. In contrast, if your opponent completed the POMS, s/he might not be in a great mood nor show an iceberg profile because they anticipate defeat. Assuming the fight goes according to form, we would indeed find that mood and performance were related. Yet it was not the mood that caused the performance. Rather, a third variable, ability, caused both mood and performance.

Although common sense suggests that mood should be causally implicated in sport performance, the fact is that as yet we just do not have the evidence to demonstrate it. A research in which mood is manipulated in a true experiment is needed (with pre and post testing and a control group). Only when this kind of research is done we will be able to be define the causal role of mood in performance. The reason why this point is being labored here is that unfortunately in textbooks and research papers, some sport psychologists seem to assume that if a study shows that mood predicts performance, this means it caused it. A related misunderstanding occurs when authors of correlational research papers use titles such as 'the effect of x on y'. Again this is because 'effect' cannot be properly determined in non-experimental designs.

ANXIETY: THE BASICS

It is important to make the trait-state distinction. Trait anxiety is a relatively enduring disposition that causes people at the high end of this continuum to view a wide range of no dangerous circumstances as threatening. State anxiety is the negative emotion of apprehensiveness and tension experienced in threatening situations. Cognitive anxiety is characterized by worrying thoughts and negative expectations about performance, self-evaluation and the evaluations of others. Somatic anxiety relates to perceptions of our bodily state, such as awareness of a pounding heart or dry mouth. The most used method of measuring anxiety in sport is the self-report questionnaire, which has been em-

ployed to measure both trait and state anxiety. The most used measure of trait anxiety is the Sport Anxiety Scale (SAS). The most widely used measure of state anxiety is the CSAI-2.Anxiety has direction as well as intensity, leading to the somewhat strange notion of positive as well as negative anxiety. It is possible that the term directional anxiety is a misnomer and that the directional scale measures outcome expectations. Drive theory predicts that at any given skill level, performance depends on arousal (or drive) in a simple linear way, such as the greater the arousal the better the performance. Drive theory does not explain the relationship between arousal and performance for the more complex tasks typical in sport. The basic premise of 'inverted U' theory is that as arousal (drive) increases, so does performance, but only up to an optimum point after which increases in arousal result in reduced levels of performance. Although it has intuitive appeal, much research has shown that the predictions of the theory are not always confirmed, and it has largely been superseded by more complex approaches such as catastrophe theory.

Trait and state anxiety

Trait anxiety is a relatively enduring disposition; i.e. it is a personality dimension that predisposes people at the high end of the continuum to view a wide range of non-dangerous circumstances as threatening. In contrast, **state anxiety** is the negative emotion of apprehensiveness and tension experienced in threatening situations. Trait anxiety has a small inverse relationship with performance. Changing athletes' personalities is not really an option since there is much evidence from psychology tells us that it is very difficult to do. In contrast, it is relatively easy to imagine ways in which we might be able to control state anxiety to improve performance. Indeed much of the focus of applied sport psychology does exactly this.

Cognitive and somatic anxiety

Children about to sit tests, suffer from two kinds of anxiety, namely worry and emotionality, which have labeled cognitive and somatic anxiety. **Cognitive anxiety** is characterized by worry and negative expectations about performance, self-evaluation and evaluation by others. For example, young athletes might worry that they will perform poorly in front of their parents, or a professional might start to think of how many thousands the next move will cost if it is missed. **Somatic anxiety**, on the other hand relates to our perceptions of our bodily state, for example, when we are aware of having a pounding heart, clammy hands, trembling legs, butterflies in the stomach and a dry mouth.

Anxiety measurement

The most obvious choice for the measurement of anxiety might seem to be **physiological indices** such as heart rate, blood pressure, electroencephalograph (EEG), galvanic skin response (GSR), and serum adrenaline (epinephrine) levels. While these provide a relatively objective measure, there are problems with their use. The major difficulty with them is that they measure arousal rather than anxiety. In other words they can give us an indication of the intensity of an emotion but cannot specify what that emotion is. For example, raised heart ratemight signal high anxiety, but it could equally be caused by anger, lust, delight or excitement. Thus, physiological measures can indicate the strength of a reaction but not its focus. A second problem is that research has shown little correlation between the different indices; i.e. that there is no simple linear relationship between the various physiological measures. This leaves us in the awkward position that the relationships we discovered between arousal and performance will largely depend on the physiological measure used!

Behavioral measures have also been used, but only to a limited extent. Here psychologists observe activities then rate anxiety on the basis of their observations. Again the drawback with this method is that confusion can arise when interpretations are in doubt. For example, a shivering swimmer may be either terrified, or just cold. For the above reasons the most frequently used method of measuring anxiety is the **self-report questionnaire.**

These psychometric tests have been employed to measure both trait and state anxiety. Looking first at trait measures, sport psychologists originally borrowed scales from general psychology e.g. the Manifest Anxiety scale (MAS) and Trait Anxiety Inventory (TAI). The first sports specific scale to be developed was the one-dimensional Sports Competitive Anxiety Test (SCAT). The realization that anxiety was a multidimensional construct led to the creation of the Cognitive Somatic Anxiety Questionnaire (CSAQ) and the sports-specific Sport Anxiety Scale (SAS). The SAS consists of three subscales of trait anxiety rather than the more usual two (cognitive and somatic). This is because it splits cognitive anxiety into two factors, worry and concentration disruption. With regard to state measures of anxiety, again the first scale employed, State Anxiety Inventory (SAI), was taken from general psychology. The first sport-specific scale used was the Competitive State Anxiety Inventory (CSAI). Following this, and reflecting the discovery of the multidimensional nature of anxiety the **Competitive State Anxiety Inventory 2 (CSAI-2)** was developed. The CSAI-2 is by far the most widely used anxiety measure in sport. It is made up of three subscales, cognitive anxiety, somatic anxiety and self-confidence, each of which consists of nine items. Respondents are asked to say how they feel right now, on a four-point scale of 'not at all', 'somewhat', 'moderately' and Very much so', in relation to cognitive items such as 'I am concerned about this competition', and somatic items such as 'my body feels tense'. Brief three-item versions of the CSAI-2, have been developed for use in field settings, where time constraints prohibit the

use of longer scales; the two most used of these being the mental readiness form (MRF) and the anxiety rating scale (ARS). Being so short, they cannot have the same level of psychometric rigor that longer scales do. However, their convenience means they will probably continue to be used. Although they have been much used, the CSAI-2 is not without its problems which is susceptible to **social desirability faking**. It is suggested that rather than filling it out in a truthful way, athletes complete it in a way that works in their advantage. For example, studies have shown that athletes who score highly on social desirability scales tend to underreport cognitive anxiety.

Anxiety direction

Many top athletes welcome a fairly high level of anxiety prior to competition, it has been argued that a better understanding of the area works in case we either measure the **intensity** of an athlete's anxiety, or its **direction**; i.e. whether the anxiety that athletes feel is experienced as being facilitative or debilitative to subsequent performance. With this in mind a modified version of the CSAI-2 has been developed by adding what has become known as the directional scale. So, having rated the intensity of the anxiety on the standard four-point scale, athletes are then asked to rate on a seven-point scale how facilitative or debilitative they believe that level of intensity is likely to be for subsequent performance. Anxiety is not just facilitative, but it can be a positive as well as a negative emotion. However, since anxiety is defined as a negative emotion there can be no such thing as positive anxiety. It is possible that anxiety has been confused with the consequences of that. There is nothing inconsistent about a negative feeling leading to a positive outcome. For example, the worry that you might under-perform in a competition could motivate you to try harder or concentrate more, resulting in high levels of performance. The confusion is removed when we realize that the directional scale is not measuring

anxiety at all, but rather the athlete's outcome expectancy, based on their anxiety. 'Directional anxiety' is a better predictor of performance than anxiety intensity. This is not surprising since there is bound to be a stronger link between our judgments of whether anxiety will help or hinder subsequent performance and the performance itself, than between the intensity of our anxiety and our performance.

Drive theory

The main reason for sport psychologists' interest in anxiety is its important role in competitive performance. Performance is a multiplicative function of **habit strength** and drive, represented mathematically by the equation P=f (H×D). Thus, the greater the habit strength, or how well learned the task was, and the more drive (arousal) the better the performance. The theory predicts that at any given skill level, performance depends on arousal in a simple linear way, such that the greater the arousal the better the performance. While early tests of drive theory were generally supportive they tended to be carried out using very simple tasks that were much less demanding than the tasks that sports performers typically perform. In subsequent research with more complex tasks it was found that only about 50% of studies provided supportive findings. As a result it was not long before drive theory was superseded.

'Inverted U' theory

Another early idea about the arousal-performance relationship was **'inverted U' theory**. Its basic premise was that as arousal (or drive) increases, so does performance, but only up to an optimum point, after which increases the arousal result in reduced levels of performance. The theory has had lasting appeal and it is easy to see why, since it makes intuitive sense. If we are so low in arousal that we are very 'laid back' and lackadaisical we clearly won't perform

as well as we potentially could. Equally, if we are highly aroused we might expect fine motor skills to suffer. Common sense thus demands optimal arousal for optimal performance. Another appealing aspect of the theory was that the curve could be shifted to account for different skill levels and different types of activities. For example, optimal arousal level for beginners is predicted to be lower than for intermediate level players, which, in turn, it is predicted to be lower than for highly skilled players. Similarly, the theory predicts that optimal arousal for an activity requiring fine motor skills, should be lower than for one involving strength. Unfortunately, the world is seldom this simple, and much research has shown that the predictions of the 'inverted U' theory are not always supported. Additionally, the theory has been criticized for being impossible to falsify. This is because arousal levels are not measurable on an absolute scale. When a study to test the theory finds that increasing arousal is accompanied by an increase in performance, the theory can be said to be supported, but the same is true when increasing arousal accompanies decreased performance. Defenders of the theory simply need to assert that the arousal level may have been too low or too high when results do not fit the theory. Although it is useful for giving athletes and coaches a common sense way to think about the anxiety performance relationship, 'inverted U' theory has now been superseded by more complex approaches such as **catastrophe theory** and **reversal theory**.

MULTIDIMENSIONAL ANXIETY THEORY

Multidimensional anxiety theory grew out of the finding that anxiety is not a unitary concept, but rather consists of two components: cognitive and somatic anxiety. The main thrust of the theory is that cognitive anxiety has a negative linear relationship with performance, while somatic anxiety has a curvilinear or 'inverted U'-shaped relationship. The evidence for this aspect of the theory is not strong. The theory predicts that the antecedent conditions for cognitive anxiety are not the same as those for somatic anxiety. For example, factors which involve self-evaluation should raise cognitive anxiety without directly affecting somatic anxiety. In contrast, factors such as conditioned environmental stimuli associated with competition should increase somatic, but not cognitive anxiety. There is supportive evidence for both of these aspects of the theory. A third prediction from the theory is that cognitive anxiety will rise in the week or two before competition, and then remain steady over time unless features of the competitive situation change. In contrast, somatic anxiety will remain low until shortly before competition, when it will rise sharply, and then fall again as the competition begins. In general, studies show that somatic anxiety does rise as the event approaches. However, cognitive anxiety is just as likely to rise as to stay steady. The matching hypothesis suggests that cognitive anxiety is best dealt with using cognitive interventions such as positive self-talk, while somatic anxiety is best treated with somatic type interventions such as breathing exercises. The limited amount of research on this topic generally supports the matching hypothesis.

Multidimensional anxiety theory

The discovery that anxiety is not a unitary concept but made up of a cognitive and a somatic component meant that it was necessary to adapt existing theory, or to create new ways of thinking about the anxiety-performance relationship. The theory claims that the relationship between anxiety and performance takes a different form for the two types of anxiety. It was argued that cognitive anxiety would always be detrimental to performance, and that the relationship between cognitive anxiety and performance would be negative and linear. In contrast, the somatic component of anxiety was predicted to relate to performance in a curvilinear way, taking the form of an 'inverted U'. Studies to investigate whether the existence of these two different forms of the relationship have produced a mixed picture. Strong support for the theory would be provided if both predictions were confirmed within the same study. This has occurred in only one or two cases. More often studies find support for either the cognitive prediction, or the somatic prediction, but not both. In direct contradiction to the theory, some research has demonstrated that cognitive anxiety is associated with improved performance. Still other studies show no clear relationship between anxiety and performance at all. Particularly damning for multidimensional anxiety theory is a meta-analysis of the relationship between CSAI-2 scores and performance which shows an almost negligible correlation between performance and both somatic and cognitive anxiety. Despite this patchy picture, multidimensional anxiety theory has moved our understanding forward. What it has not done is treating the two components interactively, as **catastrophe theory** does. A further problem is that it cannot account for the observation that sometimes in sport, rather than performance gently falling away as anxiety rises, it slumps dramatically. Again, this is something for which catastrophe theory does have an answer.

Cognitive and somatic antecedents

Another consequence of there being two types of anxiety is that they are likely to be influenced by different factors. Certain events may lead to cognitive, but not somatic anxiety, and vice versa. This constitutes the second part of multidimensional anxiety theory, namely that cognitive and somatic anxiety have different **antecedents**. The logic of the argument is that cognitive anxiety relates to worry about not coming up to expectation, so that factors which involve self-evaluation should raise cognitive anxiety without directly affecting somatic anxiety. Similarly, because of its nature the precursors of somatic anxiety are argued to be those features of the sporting environment that have become conditioned stimuli associated with the competitive situation. For example, the sight of the doors of the sports hall, or the evocative smells and sounds of the locker room may well raise somatic anxiety, but they are less likely to affect cognitive anxiety. The evidence supports this aspect of multidimensional anxiety theory. The general picture is that the two types of anxiety do appear to have different antecedents. For example, it has been shown that perceived readiness, attitude to previous performance, and position goal, all predict cognitive anxiety, but they are unrelated to somatic anxiety.

Time to event' paradigm

A third aspect of the theory relates to the different paths the two types of anxiety are said to take in the period of weeks and days before a competition. This is known as the **'time to event' paradigm** or **temporal patterning** hypothesis. In general, a paradigm is a particular approach or method of doing something. In this context, it is the method of focusing on the anxiety-performance relationship over time. Because of the nature of the two types of anxiety, predictions about their temporal

patterning differ. Specifically, the suggestion is that cognitive

anxiety being related to perceived ability and performance expectancies will rise in the week or two before competition and then remain steady over time, unless some feature of the competitive situation changes. For example, if you learned that your major rival was recovering from the flu, this might reduce your cognitive anxiety. In contrast, it is predicted that somatic anxiety being affected by the **conditioned stimuli** associated with the competitive situation will remain low until shortly before competition, when it will rise sharply on arrival at the sporting venue, then fall again as the competition begins. The evidence on the temporal patterning of multidimensional anxiety theory is equivocal. Somatic anxiety does typically rise as the event approaches. However, it appears that cognitive anxiety is as likely to rise as stay steady.

The matching hypothesis

Finally, the practical implications of multidimensional anxiety theory led to **the matching hypothesis**. The hypothesis suggests that since the two types of anxiety are caused by two different sets of antecedents, the intervention required to effectively reduce each will be different. In other words the intervention employed should match the type of anxiety being treated. If correct, the use of cognitive interventions such as positive **self-talk, thought stopping,** or **cognitive restructuring** should be more effective in reducing cognitive anxiety, while somatic-type interventions such as progressive muscle relaxation(PMR), breathing exercises, and other bodily relaxation techniques should be more effective for the reduction of somatic anxiety.

CATASTROPHE THEORY

Catastrophe theory provides a three-dimensional descriptive model of the relationship between cognitive anxiety, physiological arousal and performance. It considers the cognitive and somatic aspects of anxiety in an interactive way rather than simply by adding the effects of the two. It can account for sudden performance collapses such as 'choking' and why recovery from such collapse is difficult. Finally, it can account for the finding that cognitive anxiety is sometimes positively and sometimes negatively related to performance. The central feature of the model is that it combines cognitive anxiety and physiological arousal in an interactive way. In particular it predicts quite different effects depending on whether cognitive anxiety is low or high. When cognitive anxiety is high, and arousal is rising, the theory predicts a sudden and catastrophic, as opposed to a smooth decline in performance. There is an interactive relationship between cognitive anxiety and physiological arousal, such that when cognitive anxiety is high, there will be catastrophic effects on performance as physiological arousal reaches higher levels, whereas at low levels of cognitive anxiety there will be no such catastrophic effects. Under conditions of high cognitive anxiety, hysteresis will occur. Hysteresis describes the phenomenon that occurs when the measured values of one of two related variables takes a different value depending on whether the other variable is increasing or decreasing. Being relatively new, there are as yet only a handful of studies that have tested the theory. Research has found evidence to support the claim that there is an interactive link between cognitive anxiety and physiological arousal. There has also been support for the hysteresis based predictions. Catastrophe theory does not concern itself with somatic anxiety directly, but instead focuses on physiological arousal.

Introduction to catastrophe theory

Catastrophe theory provides a three-dimensional descriptive model of the relationship between cognitive anxiety, physiological arousal and performance. It has advanced our understanding of the anxiety-performance relationship because it is able to account for several things that previous theories cannot. In particular it considers the cognitive and somatic aspects of anxiety in an **interactive** way, rather than simply adding the effects of the two. It can also deal with the fact that in sport, players can suffer from 'choking', a sudden dramatic inability to 'get their game together'. One famous example of this occurred in the 1993 Wimbledon tennis final between Jana Novotna and Steffi Graf. Novotna appeared to be cruising and needed one more point in her service game to go 5–1 up in the final set. Going for broke on her second serve she double-faulted and lost the game, and every remaining game to throw away the championship. As this example shows, performance doesn't always just gently slip down some hypothetical curve, whether that be down the cognitive anxiety slope of multidimensional anxiety theory, or over the top of the 'inverted U' theory curve. In addition to accounting for catastrophic losses in performance the theory helps us to understand why recovery from a catastrophic drop in performance is likely to require more than simply reducing anxiety back to pre-catastrophic levels. Finally, the theory can explain why cognitive anxiety is sometimes positively related, and sometimes negatively related to performance.

The catastrophe model

The model is a three-dimensional one, which can be understood by breaking it down into four constituent parts. Firstly, there is the situation of low physio-

logical arousal. Here, in contrast to multidimensional anxiety theory, cognitive anxiety is predicted to have a positive effect on performance. This can account for the finding that cognitive anxiety is not always detrimental to performance. Secondly, in the situation of high physiological arousal it is predicted that cognitive anxiety will have a negative effect on performance. The third constituent of the model relates to the situation of low cognitive anxiety, in which the arousal-performance relationship is said to take the shape of the 'inverted U'. Finally, we have the situation of high cognitive anxiety. It is here that the theory departs significantly from previous theories, and where it gets its name, because it claims that when arousal rises above a certain level there will be a sudden discontinuity in the arousal performance curve and that the athlete will suffer a catastrophic drop in performance. Putting these four situations together it is possible to imagine the full catastrophe model in which performance level can be represented as a mountain surface. Performance is represented on the vertical axis, physiological arousal rises from left to right, and cognitive anxiety rises from the back to the front of the page. When cognitive anxiety is low, at the back of performance takes the shape of a shallow 'inverted U'. As physiological arousal increases as well as performance until some optimum point is reached when performance begins to fall away again. In contrast, if we consider the case of high cognitive anxiety and move to the front we see that increases in arousal lead to performance that follows the 'inverted U' profile until just over the optimum arousal level, and then drops off the edge of the performance surface. This catastrophic fall is where the theory gets its name. The model proposes that cognitive anxiety acts as a **splitting factor** which determines whether the effect of physiological arousal will be small and smooth, or large and catastrophic.

Predictions from catastrophe theory

The main predictions from catastrophe theory are firstly that when cognitive anxiety is high, there will be catastrophic effects on performance as physiological arousal reaches higher levels. Extending this slightly the theory predicts an interaction between cognitive anxiety and physiological arousal, so that performance should be bimodal (either high or low with not much in between) when cognitive anxiety is high, and uni-modal (consist of a full range of scores) when cognitive anxiety is low. Secondly, it is predicted that under conditions of high cognitive anxiety, **hysteresis** will occur. Hysteresis describes the phenomenon that occurs when the measured values of one of two related variables takes a different value depending on whether the other variable is increasing or decreasing. This is better understood by imagining a situation where we ask a golfer to run on a treadmill at low speed for a short period, so they have low physiological arousal, and then measure how well they perform in a golf putting task. We then ask them to do the treadmill running again at a slightly faster rate and again perform the putting task. We repeat this procedure for several more cycles, increasing the treadmill rate each time, thereby increasing their physiological arousal, until the golfer is close to their maximum work rate. Now we allow the golfer to rest and repeat the procedure, except that this time, they start with high treadmill rates and work down to low rates. Hysteresis is in evidence if the curve of measured putting performance follows a different path as physiological arousal rises, from the path that it takes as physiological arousal falls..

The status of catastrophe theory

(1) Low performance levels being observed when cognitive anxiety and physiological arousal were both high ;(2) high performance levels when cognitive anxiety was high and physiological arousal was low;(3) moderate levels of performance when cognitive anxiety and physiological arousal were low;(4) moderate levels of performance when cognitive anxiety was low and physiological arousal was low. When arousal is systematically raised the measured performance curve is consistently higher through the mid-range of arousal, before falling suddenly and catastrophically at higher arousal levels. When arousal starts high and is systematically lowered, performance starts low and stays low, only rising when very low levels of arousal are reached. This is exactly the hysteresis pattern. In contrast, when cognitive anxiety is low, as predicted, hysteresis does not occur. Some critics of catastrophe theory claim that it is not a theory at all, but a model, because it does not explain why cognitive anxiety and physiological arousal affect performance. It rather describes how they inter-relate. However, this is a criticism that can be applied to several theories in this area including multidimensional anxiety theory. Secondly, it does not concern itself with somatic anxiety directly, but instead focuses on physiological arousal. Although these two variables may co-vary much of the time, there will be times when athletes are highly aroused, but not somatically anxious. For example, they may be angry, sad or excited. Indeed, reversal theory rests on the argument that athletes can, and do experience reversals in their emotional state from anxiety to excitement and vice versa, while remaining at a high arousal level. It requires elaborate designs to test it, which may be part of the reason for the small number of studies that have so far investigated it.

REVERSAL THEORY

Reversal theory suggests that people operate in one of two meta-motivational states. In the telic state they are serious, plan things, are future oriented and have a preference for low levels of arousal. In the par atelic state, they are playful, spontaneous, think of the here and now, and have a preference for high arousal. Reversal refers to the process of switching between met motivational states. High arousal can be interpreted as pleasant (exciting) if an athlete is in the para telic state or as unpleasant (anxiety) if the athlete is in the telic state. The implication of this for applied sport psychology is that anxiety could be transformed into excitement by engineering a reversal from the telic to the para telic state. The term reversal simply describes the process of switching between meta-motivational states, i.e. from telic to para telic or vice versa. Reversals only occur at the same level of experienced arousal. According to the theory three factors lead to reversals: changes in the environment, frustration in the athlete, and satiation. The theory makes it clear why high arousal is not the same as high anxiety, and offers a novel way to solve the problem of anxiety in sport.

Introduction to reversal theory

Reversal theory provides a rather unusual approach to the anxiety-performance relationship in that its underlying philosophy is phenomenological rather than positivist. Thus, instead of asserting that athletes have an 'objective', 'reality-based' or 'factual' view of a competitive situation it stresses the importance of their subjective interpretation of the situation. The theory proposes that there are four pairs of **meta-motivational states** in which we routinely operate (Meta being the Greek for 'of a higher order'). They are

termed meta-motivational rather than motivational states because they are reflexive, i.e. they are not the athlete's motivational state as such, but rather the athlete's interpretation of his or her motivational state. It is the **telic-para telic** pair that is most relevant in the context of anxiety. Additionally, they have a preference for high arousal. A second important concept of the theory is **bi-stability**. The rather grand-sounding principle of bi-stability simply means we are always in one state or the other. Unlike a trait or personality dimension there are no shades of 'telicness' or 'para telicness'. We are in one or the other state, a bit like a light switch that is off or on. Another basic concept employed by the theory is that of **hedonic tone.** Hedonic tone refers to the simple notion of subjectively experienced pleasure. Thus, high hedonic tone implies more experienced pleasure than low hedonic tone. The theory also postulates the notion of **reversals** from which it gets its name. A reversal refers to the process of switching between meta-motivational states. One final aspect of the theory is that of **meta-motivational dominance,** which means that although we switch between the telic and para telic state, we do have a tendency to prefer one rather than the other.

The hedonic tone-arousal relationship

The theory states that athletes in the telic state have high levels of hedonic tone (pleasure) and feel relaxed when arousal is low. As experienced arousal increases, their level of hedonic tone (pleasure) falls, and at high levels of arousal, they feel anxiety. In contrast, athletes in the para telic state have low levels of hedonic tone (pleasure), and feel bored when arousal is low. As experienced arousal increases, their level of hedonic tone (pleasure) increases, and at high levels of arousal, they feel excited. Putting these together, we see that high arousal can be interpreted as pleasant (exciting), or unpleasant (anxiety), and low arousal can be interpreted as pleasant (relaxing), or unpleasant (boring),

depending on which meta motivational state the athlete is experiencing. The practical implication of this is that by engineering a telic to para telic reversal, at high arousal levels, anxiety can be turned into excitement. Similarly, a para telic to the telic reversal at low arousal levels can turn boredom into relaxation.

Reversals

Two high-arousal examples should help to clarify the theory. Imagine playing in a competition, perhaps a golf tournament. For the first hole or two, you just go out to enjoy it. You don't expect to do well knowing there are better players than you competing. You are in the para telic state. You are under no pressure, but you start to play really great golf, and soon you are in the lead, and excited. However, it is not long before you begin to have future-oriented thoughts about the possibility that you can win. You become more serious, and reverse to the telic state, where enjoyment turns to anxiety. An example of a telic to para telic reversal might be if you are competing in a judo competition and you are already in a fairly serious frame of mind because of the importance of the event. Your anxiety increases when you see your next opponent in the changing rooms, prior to competition, because she/he is huge, and fearsome in appearance. However, in the warm up period, and during the first few moments of competition, you realize that your opponent is actually very clumsy and uncoordinated. This may well result in a reversal to the more playful para telic state, so that the competition is now experienced differently and you no longer feel anxiety or fear, but rather begin to enjoy a feeling of excitement about fighting well. One final point about reversals is that they only occur at the same level of experienced arousal.

The causes of reversals

According to the theory three factors lead to reversals: **environmental contingency, frustration** and **satiation**. An example of an environmental event that might lead to a reversal is a change in the weather. Motor racing drivers who love driving in wet conditions, may reverse from the telic to para telic state following a downpour, with anxiety being replaced by excitement. The opposite might occur in rock climbers. Sudden rain, making the rock slippery, might lead to a reversal from the para telic to the telic state with excitement being replaced by anxiety. Frustration can also lead to reversals. For example, the frustration that results from bad refereeing could cause a reversal from the para telic to the telic state. Finally, reversals can occur when satiation sets in. A para telic to telic example of this might be when players start out in training sessions just wanting to play scrimmage games eventually becoming satiated, and then preferring to work on set pieces or training drills. Thus we see a reversal from the playful para telic excitement of the scrimmage game to the more serious telic anxiety about the team needing to do some hard practice.

The status of reversal theory

Two measures have been devised to support and test the theory. The **Telic Dominance Scale** (TDS) measures people's typical or preferred style. The **Telic State Measure** (TSM) measures people's current meta-motivational state, and their tendency to stay in it. The TSM also asks for ratings of both felt and preferred arousal. **Tension stress** is defined as the discrepancy between felt and preferred arousal. The larger the discrepancy the more likely it is that low hedonic tone will follow. As yet there have been only a handful of

studies that have tested the theory in sport, but those that do so have found a measure of support. For example, one unusual prediction from reversal theory is that para telic-dominant people are less happy in the absence of moderate stressors in their lives, and there is some evidence for this. It has also been shown that para telic-dominant players perform worse in a low-stress 'play for fun' situation than in a moderate stress 'do your best' situation. In contrast, telic-dominant players perform better in a low-stress, 'play for fun' situation than in a moderate-stress 'do your best 'one. Studies using the TSM have also supported the theory, showing an inverse relationship between tension stress and performance. Thus, in a high-arousal situation, people in the para telic state out-performed those in the telic state. It has also been shown that athletes who are highly aroused perform better on a measure of explosive strength when they are in the para telic state than the telic state. More empirical research is needed before we can be clearer about the value of the theory. However, it has the potential to provide a useful way of conceptualizing the anxiety-performance relationship. It has the advantage that it makes clear the distinction between arousal and anxiety, and in particular shows why high arousal is not the same as high anxiety. It also avoids over-emphasis on anxiety as the only relevant emotion which impacts on performance, focusing in addition on relaxation, excitement and boredom. In terms of practical implications, the theory gives us a new set of interventions in addition to the more traditional arousal reduction techniques. For example, it offers the option in anxiety-provoking situations to engineer a reversal to excitement, or in situations of boredom the option to engineer a reversal to relaxation. It employs a one-dimensional conception of anxiety, without reference to its separate cognitive and somatic components.

OTHER THEORIES

Individual zone of optimal functioning (IZOF) is an 'inverted U', which is individualized, in the sense that it refers to the range of an individual athlete's arousal levels, when they are performing optimally. This range then constitutes their zone of optimal functioning.

Processing efficiency theory was devised to explain why anxiety does not always lead to attentional distraction and performance deficits in cognitive tasks. The theory distinguishes between performance effectiveness and processing efficiency. Anxiety impairs processing efficiency more than performance effectiveness.

Individual zone of optimal functioning

The idea has its origins in the 'inverted U' hypothesis in that it refers to the range of an athlete's optimal arousal in which peak performance occurs. While the 'inverted U' was said to be a general group-level phenomenon with, for example, an optimal arousal level for any given sport, each athlete having their own IZOF by monitoring an individual athlete's anxiety levels prior to several competitions, we could establish a range of levels around which good performance occurs. This range then constitutes their zone of optimal functioning. The job of the sport psychologist or athlete is then to monitor anxiety immediately prior to an event, and to regulate it so that it is within the appropriate range. In this way the athlete should be able to perform optimally. To test the theory we need to measure an athlete's anxiety over a number of occasions to discover what level of anxiety is associated with their best performance. This range of anxiety scores, associated with playing well, is their zone. We can then look at how well they subsequently perform when in this anxiety zone, as opposed to outside it.

Processing efficiency theory

Processing efficiency theory is another theory borrowed from mainstream psychology. It was devised to explain why anxiety does not always lead to attentional distraction and performance deficits in cognitive tasks such as visual search and letter recognition. In addition to attentional disruption, worry serves a motivational function in that it increases mental effort. The theory distinguishes between **performance effectiveness**, which refers to the quality of the performance of the task, and **processing efficiency**, which refers to the relationship between the effectiveness of performance and the effort or processing resources invested in performance. In this way, worry can impair processing efficiency without affecting performance effectiveness. There is a self-regulatory control system in the central executive of working memory which monitors performance and in the face of poor performance allocates additional resources (effort), or initiates different processing activities (strategies) to try to free up more working memory capacity. The theory is squarely aimed at cognitive processes and cognitive tasks. Anxiety impairs processing efficiency more than performance effectiveness, and that the adverse effects of anxiety on task performance increase as the task demands more working memory capacity. Sport psychologists had known for some time that anxiety does not always lead to performance deficits. With its emphasis on the allocation of extra effort in the face of worry, processing efficiency theory appeared to offer one explanation for why this might be so. It is not surprising then that the theory was imported into sport psychology.

Applicability of processing efficiency theory

When cognitive psychologists talk about more effort, they are not talking about effort as an athlete understands it, i.e. being more determined, or increasing the work rate and trying harder. They mean allocating more processing resources to increase available working memory. In the sports domain, **working memory** is not something that is under continuous pressure. When we are going 'higher, further and faster', to quote the Olympic motto, working memory and its sub-systems of the phonological loop, the Visio spatial scratch pad and the central executive are seldom busy. In most cases the demand is small because cognitive load is minimal. Even when it is not the athlete usually has clear plans for each eventuality, or well-used tactics and previous experience of dealing with it. It is not being claimed that athletes never use working memory. Sport does sometimes require quick decision making and certain tasks require memory. However, in general, working memory is rarely involved and when it is, it is seldom under load. If you are sprinting, working memory is not an issue. If you are trying to putt a golf ball, again working memory is not involved. As such, it seems that sport psychologists may have made too much of a leap from cognitive gymnastics to physical ones, and overestimated the relevance of processing efficiency theory to explain aspects of the anxiety-performance relationship.

CHAPTER FIVE

WEIGHT MANAGEMENT

Athletes undergoing RWL(rapid weight loss) present decreased short-term memory, vigor, concentration and self-esteem as well as increased confusion, rage, fatigue, depression and isolation, all of which may hamper competitive performance. For example, decreased short-term memory can impact the ability of an athlete to follow his/her coach's instructions before a match. Likewise, the lack of concentration and focus can affect the ability of the athlete to deal with distractions during high-level competitions, resulting in poor performance. A low self-esteem may result in difficult to consider the possibility of winning a match, especially against high-level opponents. Confusion can negatively affect the capacity of making decisions during the match and rage may result in lack of control and, despite the importance of aggressiveness for judo, excessive rage may increase the possibility of illegal actions. Depression and isolation can result in difficulty in coping with rigorous training sessions.

In addition to these problems, a high percentage of judokas are quite concerned about their body mass and food intake. Consequently, they resort to frequent dieting or caloric restriction. Of great concern is the fact that 10–20% of them feel unable to control themselves while eating, which is a classic symptom of an eating disorder. This number increases to 30–40% after the competition. The constant attention directed to body mass control increases the probability of eating disorders such as binge eating, anorexia and bulimia with higher risk among female athletes. In fact, wrestlers present preoccupa-

tion about their body mass and are not satisfied with their body, despite the very low body fat percentage they usually present. This behavior appears to be more marked in athletes competing at higher levels. The prevalence of overweight and obesity are higher in former judokas.

Strategies to avoid decreased performance after rapid weight loss

No judoka should be encouraged to cut weight quickly in order to compete in a lighter weight class. Although performance may not be affected, a judoka's health is always at risk. If an judoka needs to adjust his/her body weight, there are strategies that one can follow to help minimize the potential adverse effects:

1) Gradual weight loss (i.e., <1 kg.week⁻¹), rather than RWL must be the preferential method for adjusting weight.

2) Judokas should aim to maximize body fat loss and minimize muscle wasting and dehydration when adjusting weight.

3) A judoka who needs to reduce more than 5% of body weight should consider not losing weight.

4) A judoka who needs cut weight so that his/her body fat would lower than 5% for men and 12% for women should consider not losing weight.

5) During the weight loss period, strength training and supplementation may help preserve muscle mass.

6) Judokas should not undergo low-carbohydrate diets in order to make weight as they seem to be more detrimental to physical performance.

7) If a judoka will have less than 3 hours to recovery after the weigh-in, RWL,

dehydration and restricted carbohydrate ingestion should be avoided.

8) During the recovery period after weigh-in, judokas are encouraged to consume high amounts of carbohydrates, fluids and electrolytes. Keratin supplementation may also be of use if the judoka will recover for a long period after weighing-in.

Management strategies to avoid rapid weight loss practices

Control strategies to avoid RWL practices can be divided in two areas: (1) coach and judoka educational programs ;(2) management procedures to control or discourage RWL.

Coach and judoka educational programs

Considering that most judokas follow their coaches' recommendations to execute RWL, the best strategy is to make both coaches and judokas fully aware of the risks involved with RWL and the recommended procedures to gradually reduce body mass. Judokas and coaches should receive information about: caloric balance; how to prepare each food portion; how to avoid increase weight (especially fat) after the competition; how to prepare food using low fat ingredients; how to prepare snacks with low caloric content using fruits and vegetables; how to avoid combating stress through excessive food intake; how to avoid gastronomic novelties during high-level competitions abroad or when inside the Olympic village; the importance of avoiding fast-food restaurants while travelling; how to increase satiety using low glycemic index foods; how to avoid excessive food intake during celebrations; how to keep a diet diary and how to identify the main difficulties to maintain adequate nutrition. Preseason: determine judoka's optimal weight category; estimate body composition to determine the minimum body mass the judoka can have to compete safely; initiate the weight category change

if needed; adjust technique and tactics for the new weight category; aerobic conditioning and strength training to reduce body fat and maintain muscle mass; reduce energy and fat intake to decrease body fat percentage.

Season: keep body mass near the upper weight limit; increase caloric intake to deal with training and competition demands; maintain strength training; adequate micro and macronutrients intake.

Off season: avoid increasing body fat; begin strength training; maintain aerobic conditioning; avoid high-fat diets.

Management procedures to control or discourage rapid weight loss

The following recommendations were drafted by the American College of Sports Medicine .This program has been shown effective in attenuating the aggressive patterns of rapid weight loss and discouraging judokas from losing weight irresponsibly. Therefore, these recommendations should be implemented in order to avoid widespread weight loss among judokas :

— Matches should begin in less than 1 h after weight in;

— Each judoka is allowed to weigh-in only one time;

— RWL methods and artificial rehydration methods are prohibited on competition days;

— Judokas must pass the hydration test to get the weigh-in validated;

— An individual minimum competitive weight is determined at the beginning of each season;

— No judokas are allowed to compete in a weight class that would require weight loss greater than 1.5% of body mass per week.

Making Weight in Judo

1. Judokas who need to make weight should consume a high-carbohydrate diet(60% total energy) with adequate protein (1.0—1.5 g/kg body weight).

2. In general, dietary supplements are not recommended for weight loss.

3. Between the weigh-in and before competition, weight-class judokas are encouraged to rehydrate. Sodium and adequate volume will help stimulate complete rehydration.

4. Carbohydrate ingested in the meal after the weigh-in will help enhance performance.

5. After the season judokas should be diligent to minimize increasing body fatness when diet restrictions

6. are removed and the amount of training may abruptly decrease.

Weight reduction continues to be a prevalent practice in judo, and likely will remain so as long as weight classes exist. The nature of the scoring system to determine success in a competition, the ease of applying dehydration and food deprivation for quick weight loss, the opportunity to recover partially prior to competition, and the relatively minor risks, at least in the eyes of the judokas and coaches, all encourage judokas to reduce body weight for competition.

With an absence of data to show weight reduction adversely impacts success in competition and the sport-cultural belief that weight loss is required for success, the practices of making weight will perpetuate.

CHAPTER SIX

COACH&JUDOKA INTERACTIONS

Early attempts to understand leadership suggested that leaders were those people who had the 'right stuff' in terms of personality traits. Person and situation to act in conjunction determine who a leader will be. The combination of the traits a leader has, and the demands of the situation together determine effective leadership. One example of such an approach is contingency theory. Contingency theory focuses on task versus person-centered styles of leadership as the trait dimension of interest and how favorable the leadership situation is as the situational variable. The most influential theory of leadership in sport proposed three sets of important antecedents to leader behavior: situational factors, leader characteristics and member characteristics. Three general categories of leader behavior: actual (what the coach does), preferred (what the athletes want the coach to do), and required (what the situation demands). The congruence between these three categories of coach behaviors is the key to the outcome for athletes, in terms of performance and satisfaction.

Trait v situational approach

Early attempts to understand leadership took the **trait** approach, in what became known as the 'great man' theory of leadership. This simply suggested that leaders were those people who had the 'right stuff' in terms of personality traits or personal characteristics. Aligned with this view was the notion of the 'born leader', and that people either had these qualities or did not. Howev-

er, when studies were unable to identify what these characteristics were, researchers abandoned the trait approach for a **situational** one. As the name suggests, this is the view that the situation determines who will lead, and that certain situations require certain qualities. One famous example of this is the way Winston Churchill emerged during World War II to provide great leadership in wartime Britain, having been relatively unsuccessful as a leader in peacetime. Just as was the case for the trait approach, this view also came to be seen as somewhat simplistic and researchers began to take an **interactionist** approach, in which person and situation were said to act in conjunction.

The interactionist approach

In this view it is the combination of the traits a leader has, and the demands of the situation that together determine effective leadership. One example of such an approach is **contingency theory**. Theory focuses on task-versus person-centered styles of leadership as the trait dimension of interest. It measures this in a rather novel way by asking people how much they like the person they dislike most in the group! This measure is called the least preferred co-worker (LPC) scale. The logic behind this is that someone who is able to see some good in their least preferred co-worker, has a person-centered leadership style. The second main variable of the theory is how favorable the leadership situation is, in terms of three factors:

- How well liked they are;
- How difficult the task is;
- How powerful the leader is.

Taken together the trait and situation are said to predict how effective the leader will be. For example, task-centered leaders are predicted to be more

effective in situations of low favorability, because direct approaches are needed without too much concern for the feelings of the group. Interestingly, the task leader is also said to be better in highly favorable situations because with power, and being liked, they again do not need to worry about people's feelings. In contrast, the person-centered leader prospers better when situation favorability is in the midrange. This is because this type of leader is likely to get more from the group when power is low and the task is less clear. In general, research has supported these predictions. Another influential contingency theory of leadership is **path goal theory**, which focuses on the needs of the subordinate rather than on the leader. It predicts that effective leadership is more likely when the leader's behavior helps subordinates to achieve their goals. The **transformational approach** to leadership has emerged in organizational psychology. Here the idea is that rather than trying to buy followers' compliance by exchanging rewards with them for their labor, as traditional approaches do, leaders should transform followers by getting them involved in the values of the organization. In this way, followers take ownership of the goals and problems of the group. In the transformational approach, leaders are interested in the personal and professional development of their staff, and help them to create opportunities to meet challenges. In addition, leaders have to be role models, having an optimistic but achievable vision for the group, and by doing themselves what they encourage others to do. They also need to help their team to see the intellectually stimulating aspects of the work of the group, and to see their own vision of the bigger picture. This transformational approach is one that fits well with the aims of people in sport, and contains much of what good coaches and captains already do.

Leadership in judo

In judo, captains and coaches predominantly occupy the leadership role, however, it is on coach behavior that most psychological research has focused. For example, there are three sets of important antecedents to leader behavior: situational factors, leader characteristics and member characteristics. In the first part of the model, which links antecedents to leader behavior, situational factors, such as the judo, the opposition and tactics are important, and that these influence, in particular, required and preferred behavior. Leader characteristics such as gender, ability, age, experience, psychological make-up, personality and mental toughness are said to affect actual behavior. Finally, judoka characteristics, again gender, ability, age, experience psychological make-up, personality and mental toughness are said to affect preferred behavior. With regard to the second part of the model, where links leader behavior to consequences, there are four claims:

(1) If the coach's actual behavior is what is required by the situation, and what judokas prefer, this should lead to good performance and high satisfaction in judokas;

(2) If the coach's actual behavior is incongruent with what is required, and with what judokas prefer, poor performance and low satisfaction should result;

(3) When actual coach behavior is congruent with what is required, but not with what judokas prefer, performance should be good, yet the judokas will be dissatisfied;

(4) When actual coach behavior is congruent with what judokas would prefer

their coach to do, but not with required coach behavior, performance will be poor, but the judokas will be satisfied with the coach.

Although this second part of the model sounds complicated, it is actually a statement of four self-evident links, and is therefore not very helpful. For example, it tells us that if the coach does what is required, performance will be good. If the coach does what the team wants, they will be satisfied. Given this, it is not too surprising that support for the theory has been stronger in relation to this part of the theory. One other judo-specific model should be mentioned, leadership behavior in judo (LBJ) model. It take a contingency approach, and the model consists of numerous hypothesized links between coach and athlete behavior. However, they do differ in that the LBJ model gives more emphasis to the perceptions of the coach and judoka. Summarization of the evidence on the model as showing that coaches who:

• praise good performance and effort;

• encourage athletes who have underperformed;

• offer future-oriented technical feedback on negative performance;

• focus on personal improvement and having fun in preference to stressing winning; produce athletes who perform consistently better, have better relations with teammates, and enjoy their judo more.

CHAPTER SEVEN

PERFORMANCE

Performance profiling

Another way to get baseline information is to carry out some sort of performance profiling, which, in its most general form, usually involves representing aspects of performance in a graphical way. However, the term has been used to describe a particular approach to analyzing the factors that athletes themselves see as important to performance. The method is loosely based on the phenomenological approach of personal construct theory. The basis of the theory is that each of us views people in very different ways, and that no single classificatory system is rich enough to capture each individual's way of seeing others. The theory talks about seeing the world 'through the goggles of our constructs'. Constructs are the sets of schemas that we use to understand the world. In terms of personality, it might be that intelligence is what one person might use as a major construct to judge others. Another person might think first in terms of honesty or generosity, and so on. In order to find out the central concepts that individuals use, the Repertory Grid (rep-grid) method devised. This involves asking respondents to list a group of people: perhaps a best friend, mother, brother, sister, teacher, coach, etc., and then, in sets of three, to say how two people are similar and one different. For example, you might say my mother and best friend are generous, but my teacher is mean, or my sister and coach are cheerful but my brother is grumpy. In this way, it can

be figured out that are important to you, your personal constructs, become apparent, i.e. generosity/ meanness and cheerfulness/grumpiness. We do not use the rep-grid method to carry out sports performance profiling, we employ the personal view part of theory. We get a better picture of where a performer is, in terms of their profile of abilities and characteristics, if we do not impose our preconceived notions upon them. In practice, this means giving the athlete a sheet of paper with concentric circles and several radiating lines on it that resemble a dartboard. Next, we encourage the athlete to think of the attributes (constructs) that he or she believes are crucial to high performance in their sport and to enter these on the outermost edge of the concentric circles. We also explain that there are no right or wrong answers and that it is just a way of finding out what they think is important. It may help at this stage to give some examples, and to explain that the exercise could help to direct their training effort. To help them to think about their constructs, you might suggest they consider the qualities of the very top performers in their sport. Profiling can be done individually, or in a team situation. If it is done in groups, it can be useful to brainstorm first, and have the team's top performer lead the session. This can help to reduce any possible resistance from less willing team members. There is of course no reason why individual profiles as well as an overall team profile could not be generated during group sessions. The next step in the profiling process involves getting athletes to consider each of their constructs in turn, and to judge themselves out of ten on each one, in terms of how highly they rate themselves at this moment in time. This provides a graphic representation of the athlete's own view of what is important, and how well they are currently placed in relation to each construct. It immediately throws into relief the areas where things are good, and perhaps more importantly, the areas where improvement is needed. One refinement is to then ask them to rate where they would like to be at some specific times in the future. This can be particularly useful for highlighting training needs. The strength of

this method of profiling is that it emphasizes the client's perspective. In terms of coaching style, or consultancy style, this method fits more easily in to the 'joining' as opposed to the 'telling' or 'expert' style of consultancy. This type of profiling is also useful as a way to open up avenues for coach and athlete/exerciser, or psychologist and athlete/exerciser to communicate, and set goals together. Studies have demonstrated the effectiveness of profiling, in terms of a diverse range of benefits, including improved goal setting, better anger management, better communication by getting the athletes and coach 'on the same page', increased commitment to intervention techniques, and of course performance enhancement.

CONCENTRATION

Loss of concentration can be due to both external factors, such as distracting events in the environment, and to internal distractions, such as task-irrelevant thoughts, that might come into our minds as we compete. Focus cues are verbal, visual or physical triggers, which judokas learn to employ to 'switch on' a state of concentration. A judoka might say to themselves, 'concentrate on' or 'focus, focus, focus. Some judokas use visual cues such as looking at a particular place on tatami. Others prefer action cues. For example, a judoka might press the team's logo on his shirt, prior to each shot. In relation to concentration, judokas use a range of techniques including mental rehearsal of the actions involved in the performance itself, outcome imagery of a successful conclusion to the performance, such as seeing you on the medals ceremony and emotive imagery. Emotive imagery can be as diverse as 'parking' distracting thoughts, or imagining a protective bubble around your performance that keeps external distractions out, or imagining how focused your hero would be in any given situation. By simulating in training sessions the sorts of distracting things that can happen in competition, we are more able to deal with them in matches. This might include having people making noise, when judokas are taking throws or by exposing judokas to 'trash talking'. The essence of simulation training is captured in the saying, Train as you match, match as you train'. Routines aid concentration by ensuring that judokas focus on the right things at the right time. Judokas should develop: general prevent routines to structure their immediate pre-competition time; in-event routines to specify exactly what needs to be done at each stage of the match; refocus routines to help them regain focus; 'what-if routines to cover unplanned events; pre-shot routines to help them to focus on the execution of specific closed skills.

A third major area of importance in applied sport psychology relates to issues of concentration, and our ability to focus on the crucial aspects of a judo performance, at any given time. Judokas sometimes allow themselves to ponder mistakes they have just made, or bad calls the referee has made instead of concentrating on what they have to do now. Thus, they make the mistake of forgetting to 'stay in the present'. Similarly, judokas sometimes allow the importance of an occasion to distract them from the task in hand, forgetting that the importance of the match does not change the demands on them. To help judokas to be able to maintain focus, or recover from lapses in concentration applied sport psychologists have developed a number of useful techniques.

Focus cues

Although some judokas do try to concentrate on their match for every minute of each round, most have realized that this is exhausting, and so they relax between rounds, and then refocus just prior to their next round. Focus cues can be used to help them to switch back to concentration mode. Some judokas have learned to use **verbal cues**, for example, they might say trigger words to themselves such as 'switch 'or 'ready again' or 'focus, focus, focus'. Teams might have a cue phrase that judokas use to remind themselves and each other about the importance of being alert. This is a time when judokas appear particularly prone to lapses of concentration, allowing their opponents to equalize. One team used the verbal focus cue, 'hit the beach', to remind the team not to

take risks, when they had a narrow lead near the end of a match. Some judokas use **visual cues** to get them back into a focused state. A judoka might look at the 'T' before each point, or look at the strings of her/his belt. Some judokas write messages to themselves, taped to the back of their hand. Others prefer **action cues** for concentration. For example, a judoka might press the team's logo on his shirt, prior to each round, to signal the start of his focused pre-round routine,

or a judoka might tap his toe with his heel before each point, as a way of ensuring that concentration is constantly re-established.

Simulation training

Another approach to the problem of distraction is simulation training. Here, the basic idea is that by simulating in training sessions, the sorts of distracting things that can happen in competition, we are more able to deal with them in matches, and focus on the important aspects of our match. For example, coaches often set up drills that involve distractions, such as having people making noise, when judokas are taking or kicks. Similarly, immunizing judokas against the 'trash talking' or 'sledging' that goes on in sport is worth doing. Another technique is to expose judokas, in training sessions, to bad refereeing decisions, or 'bad luck'. Judokas can occasionally be exposed to old clothes of poor quality. The essence of simulation training is captured in the old adage, train as you match, match as you train'. Like imagery, simulation training is another of those interventions that is useful for more than one area of performance enhancement. For example, it can help overcome anxiety, in that by simulating every eventuality, we know we can cope with all sorts of setbacks and difficulties when actual competition arrives.

Routines

One absolutely central feature of dealing with concentration is to employ routines. They are crucial because they provide constancy and stability to performance. Apart from the obvious wisdom of planning ahead, the routines serve the useful function of aiding concentration by ensuring the judoka focuses on the right things at the right time. We develop the following different routines:

• General **pre-event routines** that structure our immediate pre-competition time, and include all the physical things that need to be done. For exam-

ple, they might include our warm up; checking the tatami; and checking our clothes. They will also include mental preparation, such as time for mental rehearsal, or any emotional control or concentration techniques.

• **In-event routines** that specify exactly what we need to do at each stage of the match or competition. These will be based on decisions about what the crucial moments are in your event, and what your focus should be at each phase of the match. For example, a judoka would devise a routine containing the predetermined match plan with built in reminders or attentional cues for each stage of the match, such as what to do in the early stages, when to consolidate, and when to push, etc. The plan should also include some ways of extending personal limits when necessary. We must use of visual representations of the event plan. For example, some might represent their match like a funnel that narrows to the finishing line. A judoka might see their match as a spiral, with crucial tactical information, or performance cues written at the relevant points on the 'map'.

• **Refocus routines** that are designed to help us get back 'on track', following loss of attention or mistakes. These prevent us from dwelling on the errors we have just made. They should consist of at least four components, variously known as the 4 Rs, or Cs, or Fs. For example, the four Rs have been described as:

(1) **React**: 'stuff happens' so have your little outburst, but keep it in perspective;

(2) **Relax**: perhaps take a couple of deep breaths and say 'cool';

(3) **Reflect**: think about what you can do now to put things right (perhaps replay/rehearse the round you should have played);

(4) **Refocus**: use a refocus cue to get you back to total concentration. (The four Cs are Cuss, Calm-down, Correct and Concentrate; and the Fs are: Cuss! Fix, Forget and Focus).

• **'What-if' routines** to cover most eventualities, such as the competition being delayed, equipment problems, having judokas sent off, punctures to wheels, etc. In this way performance is less disrupted than it otherwise would have been if such things actually happen.

• **Pre-round routines** which are very specific sequences of physical and mental activities that help us to focus on the execution of specific closed skills, such as kicking, taking a point, gripping, or hitting. Most judokas do have a physical pre-round routine. However, fewer have routines that incorporate a significant mental component to guard against problems like competitive anxiety, loss of concentration, and loss of confidence and so on.

An example of pre-round routine

1.Concentration-on time

Look intently at the team's logo on the Shirt (This served to switch on the concentration routine)

Imagine a protective bubble around yourself into which nothing can penetrate (Here imagery was used to reduce distractions)

Repeat to yourself 'focus, focus, focus' (Here self-talk was used to maintain concentration)

2.Relaxation time

Take four breaths using an image-based breathing exercise (This was designed

to create a quiet calmness)

3.Confidence time

Say, one of the following to yourself. 'I have a strong technique, I have hit this round before, I am a solid striker, I am a good judoka' (Here self-talk is used to give confidence.)

4.Target time

Identify a small and precise target to aim for (This maintains the focus on the task)

5.Mental-rehearsal time

Visualize the round you want to happen (This was designed to prime the swing and help confidence)

6.Auto-pilot time

Execute your normal physical pre-round routine and hit the roundConcentration-off time

Switch off your concentration until you are about to play the next round

(Concentrating is very demanding, this component ensures concentration and it is available when needed).

CONFIDENCE

Confidence affects the thoughts and actions of judokas. Low confidence results in negative and worried thinking, and low effort. It is clear that there is no better source of confidence than previous success. Confidence can be built by carefully reviewing performance. In this process it is important to emphasize successes and to minimize failures. Confidence can be maintained by making a 'wow' list of positive affirmations about ourselves which should be read every day and learned by rote. It can be useful to make a performance video of all your successes, which you then watch on a regular basis. A confidence recovery plan should include: making reference to your 'wow' list to remind yourself of how good you are; evaluating your self-talk; mentally rehearsing the correct action; thinking about things that you are doing well. Outcome imagery, mental rehearsal and hero imagery can be used to give us confidence and an instant experience of success. Confidence affects the thoughts and actions of judokas. Low confidence results in negative and worried thinking which can adversely affect performance. Low confidence affects action by reducing effort and persistence. If judokas believe there is little probability of being successful at something they are much less likely to try. Sport psychologists and coaches have developed several techniques to help deal with issues of confidence.

Previous success

It is clear that there is no better source of confidence than previous success. Coaches and judokas make use of this to boost confidence by ensuring that training and practice sessions include plenty of positive outcomes, and successful experiences. Another way to help build in success is to set performance

or process goals, as opposed to outcome goals, because they are much more in the judoka's control.

Performance review

One useful technique for confidence building is to carry out a performance review, list all the good things about your last match or race, and then the poorer points. Next we need to learn from the bad points in terms of things we can do for next time. Having done this, we should physically get rid of the negative points by cutting them from the bottom of the list, and then trashing them. Finally, we should post the good points somewhere where they can be seen frequently. In this way, we are constantly reminded of what we can do well.

'Wow' lists

Again, based on the notion that we need to remind ourselves what we are capable of, confidence can be boosted by making a list of positive affirmations about ourselves spelling out just how good we are. This list could contain statements about what we do well, what we have achieved, or our best ever performances. For example, it might say things like, 'I am capable of this'; 'My goal is realistic, and I can do it'; 'I have won championships'; 'I made the National team on merit'; 'I average ... points a match', etc. Initially, these 'wow' lists should be read every day and learned by rote, so that they can be called upon on a regular basis to maintain confidence. The information on these lists can be used as the basis for positive **self-talk**, which is also an important technique for confidence maintenance.

Highlights video

It might feature your best shots, or fastest runs, or stepping up to receive trophies and so on. Again, this serves as a regular reminder to yourself of how good you are, and that you can be successful.

Confidence recovery plan

Another useful idea is to develop a confidence recovery plan, which can be implemented when events conspire to make us feel that we will not be able to meet the demands of competition, or attain the performance level we know we are capable of. The plan should be enacted frequently in training, until it becomes second nature. Among other things it might include:

• Making reference to your 'wow' list to remind yourself of how good you are;

• Evaluating your self-talk to check that it is not becoming negative;

• Mentally rehearsing the correct action, or perfect performance;

• thinking about two or three things that you are doing well;

• Thinking about the two or three things you could begin to do right now, that would start a success cycle;

• Asking yourself, 'Is there anything causing me to lose confidence? Then take it off your list of concerns;

• Checking that your expectations about how well you can perform are realistic.

Imagery for confidence

Just as imagery can be used for issues of motivation, emotional control and concentration, it can also be a useful tool to maintain confidence. For example, outcome imagery combined with mental rehearsal can be used immediately prior to an event, or at a particularly crucial moment in a competition to give us an instant experience of success. A judoka might use the time between rounds to sit quietly with a towel over his head, and imagine best actions and points. Another way judokas use imagery to boost their confidence is to use 'hero imagery', in which they make believe that they are their own hero. In this way, we can derive some confidence in any difficult competitive situations by imagining what our ideal judoka would do.