



# **CONTROLLING MOVEMENT**

**By Steve Scott**

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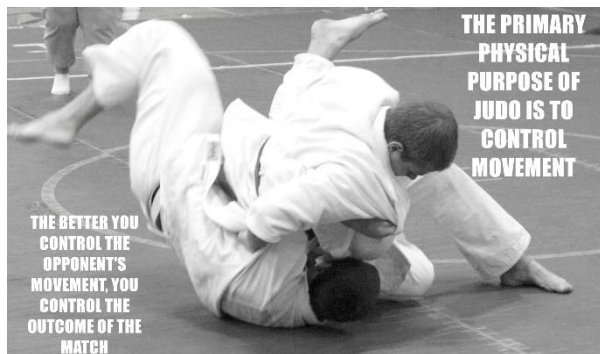
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There is a method to our madness. Judo, and the ancillary sports of sambo, jujitsu, submission grappling and other combat sport and activities are based on sound scientific methodology. It's our job as coaches to know as much of this methodology as possible and to teach it to our students in a functional way that they will understand and be able to put into use when they need to with a high ratio of success. The reason controlling movement is important is quite simple. In any form of sport combat, the primary goal is for one athlete to impose his will on his opponent. In other words, make your opponent fight your kind of fight. The only way to do this is to control your opponent; and in order to control your opponent, you must control how he moves. As a coach, you want to have your athlete control as many aspects of every situation as possible and use them to his or her advantage. Specifically, this article will focus on movement and how to use and control that movement to defeat an opponent.

What you are now reading was written in a loosely organized way and for the most part, it started out as random thoughts of mine that I had to expand on as I started typing. I am quite certain there are other resources that are far better organized and constructed, but for the purposes of this article, this loosely organized approach should work. If nothing else, it will make you, the reader, go over it more carefully to fit the pieces together more coherently for you. If you have an interest in further study (and I hope you do), there are plenty of good resources in print and on the Internet.

Your specialty may be something else than judo, such as Shingitai jujitsu, sambo or submission grappling, but judo is (historically and technically) the basis of all the modern (20<sup>th</sup> and 21<sup>st</sup> Century) grappling sports no matter what their country of origin is. Everything that appears here relates directly to any form of grappling sport or martial art. There won't be any philosophical reflections expressed in this article other than to say the reason we want to control an opponent's movement is to beat him. If someone wants to ponder on the esoteric implications of that, let him. I simply want my guys to beat the other guys and win as often as they can.



### **Primary Physical Purpose of Judo is to Control Movement**

Success in judo depends on the optimal application of technical skill. The goal is to throw, pin, choke or armlock a resisting and motivated opponent. So then, fundamentally, there is no question that the primary physical purpose of judo, sambo, jujitsu or other similar activities or sports is to control movement. The

better you control your movement and the movement of your opponent, the better result for you. Good skill, and all the factors that comprise it, are based on controlling movement.

## Judo is the Practical Application of Kinesiology

Kinesiology: Kinesiology is the study of movement as well as the study and understanding of mechanics and anatomy relative to the movement of the human body.

Judo, and ancillary sports and activities like sambo, jujitsu and wrestling, provide a practical study and application of kinesiology. Kinesiology, being the study and understanding of movement, forms the basis of what makes judo work.

The better that coaches understand the principles that make the human body work and move, the better they will understand the principles that make judo work. An example is the concepts of Kuzushi, Tsukuri and Kake (as well as the additional concept of Kime) that is taught in every judo club in the world. These principles of controlling movement form the basis of the technical application of judo. Good coaching is both science and art. Science in the sense that everything is based on sound, rational, mechanical, cognitive and affective reasoning. Good coaching is based on good physical education. Art in the sense that we are working with human beings and as such, a coach must be creative in how he or she best teaches the skills and provides for the needs of the students, athletes and parents in his or her program. There is no “cut and dried” formula for working with people. The art is in how you present the science to your students.



### Judo Techniques Rely on Both Power and Skill

Power: For our purposes, power is a combination of speed and strength. In a strict sense, it is velocity (speed and direction) combined with functional strength and performed with ballistic effect. A basic definition of power is that it refers to the amount of mechanical effort required to produce a desired effect. Some people mistakenly believe that power is bad in judo. The opposite is true. Power is the application of physical strength combined with the velocity of movement. To

some in judo, the word “power” implies brute strength but this is not what power is. The bottom line is that a person must have sufficient functional strength and speed in order to perform any judo technique, especially a highly-skilled and complex body movement such as a throwing technique. It is simply a myth that a soft, weak or poorly conditioned person will be able to throw a resisting, fit and motivated opponent. The popular idea that judo is “gentle” may have been a good way to attract students, but from a realistic perspective, it is a fallacy. A coach’s job is to train his/her students and athletes properly so that the most efficient application and use of power can be produced by the student when the student needs it to be done. Additionally, the closer two contestants are in skill, the one who is better conditioned will win. Conversely, the closer two contestants are in conditioning, the one who is more skillful will win. This illustrates how power and skill are inter-dependent. Another critical factor in controlling movement is how well the athlete maximizes the power he has and transfers it efficiently to his technical skill. For example, a trained and fit 135 pound athlete will not be as physically strong or powerful as a

trained and fit 235 pound athlete. If for no other reason, the smaller athlete cannot generate enough force based on his smaller physical size. However, if the smaller athlete maximally and efficiently transfers his power to his technical ability and does so better than his larger opponent, he will be better able to better perform his technical skills and possibly beat his larger opponent. In other words, the smaller athlete (as Teddy Roosevelt said); “does the best he can with what he has and where he’s at.” This is a key element in coaching. The coach’s task is how to “get the most out of” the athlete. This is why it is critical to “mold” the technique to the athlete so that the he will be better able to use as much of his power as possible (as well as other factors such as intelligence) and incorporate it into the most skillful application of the technique as possible.

**Skill:** Refers to the practical and most efficient application of technique. Skill is functional and for a technique to be effective, it must be molded to best work for the student or athlete so that it works for him with the highest ratio of success possible. When someone comments favorably about a judoka, he may say “he has good technique.” This really means that the judoka has good skill in the technique being performed.

Power provides the physical base and skill provides the technical base of every movement in judo, sambo or any grappling sport.

If an athlete has only power and minimal skill, or if an athlete has only skill but minimal power, he or she will not be successful. Power and Skill are inter-dependent on each other; neither is more important than the other. For an athlete to have a high ratio of success in judo, both power and skill are necessary. Skill doesn’t happen in a vacuum and it doesn’t just magically appear. Skill is the practical, optimal and functional application of technique. A “technique” is a generally accepted method of performing a specialized task such as a throw or armlock. We all know what “Tai Otoshi” looks like in a general sense. For Tai Otoshi to be functional and practical (in other words, for it to be used in the most efficient way relative to the person doing it), the physical application of power must be present. Under realistic, stressful competitive (or self-defense) circumstances, the athlete who most efficiently and effectively combines the power he has with the technical skill that he has will prevail.



When something is seen as being “skillful” it’s because the movement being performed is done with functional efficiency. In other words, if a technique is done with skill, it’s done in the most efficient manner possible to achieve the goal at hand or get the job done. This is how a technique, which is a distinct movement pattern, in and of itself, becomes a skill. Because of this, the aesthetics of the technique are determined by its function and by its success. Scores in the sport of judo are awarded based solely on effectiveness and results.

We don’t get style points like they do in some other sports. So if beauty is in the eye of the beholder, a skill that works looks a whole lot better than one that doesn’t. Because of this,

function dictates form. The bottom line is that if a movement isn't functional, it shouldn't be done. There has to be a practical and functionally efficient reason for every movement of the body when performing a skill in judo. If a movement of any type is done only for aesthetics, then there is no reason to perform it if you want to win on a consistent basis against skilled, fit and resisting opponents. Shawn Watson, one of my most successful (and skillful) athletes once remarked; "It's only pretty if it works!"

The words technique and skill are often used in the same way with little thought as to what each word actually means. This part of the book is devoted to exploring what skill is, as well as what technique is, and why it's important to understand how they work. Maybe to some this is splitting hairs, but it's my belief that to fully understand how and why judo works at a realistic, functional level, we need to put some thought, time and effort into this subject. Putting it another way, how many times have we seen a great judo champion slam an opponent to the mat or secure an armlock that forces his opponent to submit? It's poetry in motion, really, and it's something even an untrained eye can appreciate. An onlooker may say, "How did he make it look so easy?" The answer is that it took a lot of time and effort for that champion to mold that technique and make it work for him, and make it work for him against a skilled, fit and resisting opponent. In other words, that champion made his judo work for him. Skill is how you make a particular technique work for you. It cannot be repeated enough to say that skill is the practical application of technique.

Technique is a distinct movement pattern in, and of itself. It's the generally accepted way of performing a throw, hold, choke or armlock (or any movement for that matter). Every movement that the human body performs has a "technique" to it. Take walking for example. There is an accepted gait that the human body performs to walk efficiently. In other words, we all know what it looks like for a human being to walk. It is apparent when we see someone walking with a limp or an odd gait. However, there are no two human beings that have identical physical attributes and as a result there are minor (and in some case major) variances in how each person walks. From a child's first steps, that child develops the skill necessary to walk most efficiently. While there is an accepted gait or technique for walking, everyone does it a bit differently. Now, let's use this understanding of technique and apply it to judo. When someone thinks of O Soto Gari (Major Outer Reaping Throw), a specific, distinct and finite movement comes to mind that everyone recognizes as that particular throw. However, there are so many variations and ways of performing O Soto Gari, and done in so many situations by so many different people that the throw often takes on a new shape and purpose, depending on the size or strength level of who applies it and the circumstances where and when it's applied. All the factors that make up how the thrower actually applies the technique (and the success of his efforts) determine how skillful the whole action really is. Another good way to look at this subject is to compare a judo technique to a person's face. Everyone has a face. Each face is different; some are prettier than others, but in the long run, everyone seems to make the best of the face he has and make it work for him. Some of the most successful people aren't necessarily the prettiest. The concept of skill is how we make a technique work for us.

The idea of a judo match (or any fighting sport) is to control your opponent and force him to fight your kind fight. In other words, impose your will and your actions on your opponent and make him fight your fight. Fight him on your terms, not his. This is a fundamental concept of skill and how to skillfully apply a winning technique.



By using the word skill, judo movement and technique is thought of beyond a limited, finite and confined concept. The western, or non-Japanese, view of judo emphasizes a “skill approach” to learning and application of a movement. The Soviets (and later) the Europeans in the 1960s and 1970s took this biomechanical approach to making a judo technique work for them, molding and adapting the technique to fit the body or situation rather than the more traditional Japanese approach of learning a technique for the sake of mastering the specific movements comprising the technique. Judo was emerging as an international sport and the Europeans, especially the Soviets, didn’t seem as interested in doing aesthetically correct or pretty techniques as much as winning. Skillful application was paramount; how the move looked was secondary.

The difference between the art of judo and the sport of judo became clear during the 1960s and has continued to this day. For many years (and even in some places today), this difference has been a source of division, and in some cases acrimonious division among coaches, referees and administrators. When the Soviets burst onto the international judo scene in the 1960s with their unusual grip fighting methods, unorthodox throws and highly refined groundfighting skills, it upset more than a few people in established judo circles. The Soviet sambo attitude was utilitarian in every sense of the word. But then, didn’t Prof. Jigoro Kano do the same thing years before in Japan in the late nineteenth and early twentieth centuries with his eclectic and newfangled Kodokan Judo?

Starting in the 1960s, there was a widening gap between what has become the “traditional” approach to judo and what has become the “sport” approach to judo. I place the word traditional in quotes because I sincerely believe I am a traditionalist in judo. Kodokan Judo’s tradition has been, from its inception, to provide the most useful and practical approach to skill training, physical education and character development. Innovation is part of judo’s tradition.

The functional approach to teaching and practicing judo is to fit the technique to meet the needs of the individual performing it. It is the responsibility of a coach to teach mechanically sound, skillful and effective technique to the student or athlete. A coach must base what he teaches on the science of movement and not on a preconceived notion of tradition, what appears to be aesthetically attractive or what is acceptable to someone else. There is no excuse for teaching poor technical skill to a student.

It must be stressed again, that when saying that the technique should fit the body, that's not to say that learning the fundamental technical skills is not vital. It is essential (repeat, essential) that one should learn the fundamental technique correctly before adapting it to meet his or her needs. Before you can make your technique work for you, you first have to know how to make the technique work! No matter how good you become, you can never stop working on your fundamentals. The throws, holds, chokes and armlocks performed by elite judo athletes are really nothing more than fundamentals applied well and to their full potential.

At this point, it is important to say that there is a definite progression of skill. The old saying; "You have to walk before you can run" is certainly true. Learn the basics, then master the basics, and then make the basics work for you. World-class judo is essentially the fundamentals done at a high level of functional skill. There's no quick or easy way to develop skill. It takes time, patience and a lot of physical and mental effort. First of all, an athlete (hopefully with the help of his coach and team-mates) will find a technique or series of techniques that "strikes a chord." Finding a technique that works for you is very much like finding the perfect spouse. It may take a lot of trial and error to find something that works, or it may simply develop naturally. This is why it's essential to learn good, solid fundamentals in all phases of judo. Judo is one of the most technically diverse and rich activities ever invented. Additionally, what may not work for you at an early stage of your career may work for you at a later phase of your career. As you continue to train, develop and learn more about your judo and your own approach to judo, you will see new areas open to you that you didn't see before. And the reverse is true as well. That slick foot sweep you once had may not be so slick after several knee operations. Being able to adapt, improvise and overcome is part of being successful. A good example of this is the great judo champion Shozo Fujii, who because of serious injuries had to continually change his major throwing techniques. Fujii won four world championships (when the world championships were held every two years) over an eight-year period because of (among many other attributes) his ability to continually adapt to his injuries and improve his judo.

With that all being said, there are some definite factors you should consider when selecting a technique to make your own. First, be honest with yourself about your strengths and weaknesses. If you don't have good explosive power or plyometric speed, be honest with yourself and know that you will have to develop a range of techniques to fit your physical attributes (or improve your explosive power so that you can better perform a technique). Also, it is vital that every athlete be in excellent physical condition. Elite level judo is not possible with an unfit body. You simply cannot perform at a high level if you are out of shape, so before you select a technique to specialize in, make sure you are physically able to perform it. Not only is elite level judo not possible to perform with an unfit body, a judo technique at any level is dependent upon a healthy, fit body. Remember, you don't rise to the occasion. You rise to your level of training. Secondly, some techniques are riskier than others. Throws like Seoi Nage ("Shoulder" Throw), especially the knee-drop version and Tai Otoshi (Body Drop) are considered more stable and less risky based on the fact that both of the attacker's feet (or legs) are on the ground. Throws that come out of a slow tempo (tempo is the pace of the match or how slow or fast the athletes are moving) are often less risky than a fast tempo throw, but then again, this isn't set in stone, so a fast-paced foot sweep just might be the safest attack to make in



any given situation. Throws where you have only one foot or leg connected to the mat are considered riskier than throws that have both feet and legs on the mat. A throw like Uchi Mata (Inner Thigh Throw) where one leg is supporting the attacker's body throughout the entire movement of the throw is so popular because it's so adaptable and has such a strong ballistic effect. The high impact of attacking an opponent with an Uchi Mata often overcomes the risk factor of attacking an opponent even though the thrower is standing on only one foot. Thirdly, some people are more attracted to groundfighting than to throwing or vice versa. My personal preference, ever since I was a young boy, was for newaza (groundfighting). It seemed more natural for me personally and I have always found great satisfaction in holding an opponent to the mat or forcing him to tap out. As a coach, I have had many athletes over the years who were excellent at throwing and didn't share my enthusiasm for newaza. As a coach, it's my responsibility to help every athlete in my club make his judo work for him, even if it's not my area of personal preference or specialization. Fourth, your physical size may have something to do with your selection of judo techniques in which to specialize. The odds are that an athlete that is 5 feet, 5 inches in height and 195 pounds in weight with short legs will not tend to favor a technique like Sankaku Jime (Triangle Choke) due to the fact that it is really hard to form a triangle around an opponent's neck and arm with such short legs. However, that short, stocky athlete may have a terrific Uchi Mata, using it just as well as a tall, lanky athlete who also uses Uchi Mata. Uchi Mata is such an adaptable technique that each of these athletes may adapt and modify the throw to suit the needs of his individual body type. The short athlete's Uchi Mata won't look much like the tall athlete's Uchi Mata, but it will still be an Uchi Mata and successful for each athlete in his own way.

I'm sure there are other factors for determining what technique works best for an athlete in any given situation and the best way to find out is to make a thorough study of good fundamentals, drill on them consistently and then do as much randori as possible to find out what works best. Enter as many club, local and regional judo tournaments as possible early in your career and try things out. Remember, nothing works if you're not willing to try it. Don't hesitate to try a new technique, especially in randori. That's the best way to really find out what works best for you. From these experiences in randori and local tournaments, an athlete can refine his or her technical skill so that it starts to have a higher ratio of success.



A technique that's complicated doesn't necessarily mean it is effective. Efficiency is economy of movement. The more efficiently you apply a technique, the higher the ratio of success and an effective move is one that you can perform with a high ratio of success. If you can do a move in 2 steps instead of 3 steps and still make it work on a regular, consistent basis with a high ratio of success, then good for you (and bad for your opponent). A good opponent won't wait for you to throw him or slap an

armlock on him; you have to do it in the most efficient and quickest way possible. Be efficient and economical in your movement when performing the technique. Another way of saying this is to take your time, but do it in a hurry!

World Sambo Champion Maurice Allan gave me some great advice; “Make your judo work for you.” Here are some questions to ask yourself to determine if your judo works for you. “It” refers to the technique you are using.

1-Can you perform it automatically? Is it there for you when you need it?

2-Does it have a high ratio of success? It is reliable?

3- Does it work against opponents who are competitive with you? Does it work on resisting, fit and skilled opponents?

4- Do you enjoy doing it? Does it “feel right” when you perform it?

5-Is it adaptable? Can you use it in more than one situation?

In other words, training should and must be balanced so that the student or athlete has the physical strength, physical endurance, functional technical ability and mental/emotional capacity to be successful. An athlete lacking in any of these areas will not reach or fulfill his or her potential. It bears repeating to say that it is the coach’s job (as well as the athlete’s job-after all, it’s the athlete who is doing it) to train so that the athlete has the most functional power available to him (in other words, the athlete must train to increase his power). An athlete must know how (and be able) to apply his power into, and be a part of, the technique. This is in keeping with what Prof. Kano meant when he said; “The maximum-efficient use of mind and body is the fundamental principle governing all the techniques of judo.” The slogan “Maximum-Efficiency with Minimum Effort” is often misunderstood. Minimum effort directly implies that technical skill is easier and more efficiently achieved if the person uses his or her physical and mental attributes in the most efficient way possible. “Minimum Effort” cannot be achieved unless the athlete’s body has the physical capacity to work efficiently. Too many people have placed the emphasis on “Minimum Effort” and not enough on “Maximum-Efficiency.” The athlete must develop the skill of the technique so that it works best for him based on his physical attributes as well as limitations. This is why we come to practice. It takes a lot of time and effort to achieve functional skill. Going back to the Tai Otoshi example. Not everyone does Tai Otoshi the same way and this is because we are all different. For the technique to be effective, the mechanics of it must work best for the person doing it.

## **Controlling Movement**

Controlling movement is a difficult skill to learn and master. Factors to consider: 1-Control your own body posture, stance, footwork and movement. 2-Control your opponent’s posture, stance, footwork and movement. Controlling your own body movement is difficult enough, but in judo and sambo, we are required to control the body movement of an opponent as well.

Because controlling movement is the most difficult skill to learn and master, this is arguably the biggest reason people drop out of judo or sambo. Taking repeated and hard falls is one factor,

but the difficulty of learning and mastering standing body movement and throwing techniques requires a great deal of patience and effort (as well as qualified coaching by coaches who actually teach it well so that it is functional and effective). This is a “long learning curve” as opposed to learning groundfighting skills which require less time to learn and master in a “short learning curve.” A coach’s challenge is to retain students long enough so that they are able to perform controlled throwing movements and achieve some success in both individual mastery of skill in technique (even at a basic level of skill mastery). It takes time, effort and a lot of patience on the student’s part and the coach’s part to achieve this. In today’s culture of “instant gratification” where quick results are expected, a slow, sometimes tedious (even with the most gifted coaches and gifted students) of learning how to perform skillful throwing techniques by the student is difficult. There are numerous factors that determine success, but one of the most important (and least seen in today’s culture) is patience.

The goal of controlling movement is to throw, pin or apply a submission technique on an opponent with control and force.

Control: Manipulating or moving an opponent so that the attacker dictates where and how the opponent reacts as well as manipulating the consequences of the attacking (throwing) action. In other words, the attacker dictates how, where and when the defender moves.

Force: Force is the generation of power by the attacker (power results from speed, strength and acceleration). Force is necessary to move an object (in this case, a human body). A push, pull or other movement that changes the motion or movement of an opponent’s body is force. Overcoming the defender’s resting inertia requires force by the attacker. Force is also the result of the falling action of the human body.

An Ippon results from a throwing technique that has both Control and Force.

It is important enough to say again. The two goals to achieve in every technique, whether it be a throw, pin or submission is Control and Force. This is why Ippon is scored for a technique that has achieved both control and force in judo. As Rene Pommerelle said: “You can throw somebody, or you can THROW somebody.”



### **Importance of Gripping in Exerting Force and Control: Transference of Force from Attacker to Defender**

The first thing we touch an opponent with is our hands and this is why the use of the hands, arms, elbows and shoulders, as well as the use of movement are essential in exerting force and control over an opponent. The hands and arms are the primary (but not only) means of generating force (and

then transferring that force) from the attacker to the defender. This means it is incumbent on the athlete and coach to train in both power and skill work in order to maximize the transference of force. In judo, as well as sambo, the role of the hands and arms in gripping, grabbing and manipulating an opponent is of vital importance. Each hand and arm work separately yet inter-dependently to achieve maximum control over the opponent.

In judo, each hand has a specific use and name that describes that use. The pulling hand is called Hikite (literally “pulling hand”) but is also called the Sleeve Hand. The Power Hand or Steering Hand (also called the Direction Hand) is called Tsurite (“lifting hand” or “suspending hand”) in judo terminology. As a coach, it is essential to develop grip fighting skill in athletes because, as mentioned previously, the hands make the initial contact with an opponent. The hands are the primary instruments of control in transferring force from the attacker to the defender.

### **Movement is Controlled Motion**

**Movement Must Be Functional:** All movement must have a purpose. Judo is pragmatic. There has to be a reason why you move a certain way and that reason must be that it works best for you with as high of a ratio of success as possible. It is worth re-stating that the goal is to control an opponent’s movement and in order to do that, the attacker must be efficient in the application of the force that controls the opponent’s movement. It doesn’t always take control to put a body or object in motion. Force alone can do that. It is the controlled force that is generated by the attacker that produces not just motion, but controlled movement of both his body and the body of the defender.

**Linear Motion or Movement:** All parts of the body move at the same speed in the same direction at the same time. This is a controlled linear or straight-line movement that is not applied generally in judo (but can be).

**Angular Motion or Movement:** The body parts move at different speeds (the upper body may move faster in a direction than the lower body for instance). This is a rotating, turning, twisting, circular or swinging motion. The human body moves in a circular motion around the body’s axis (the axis is the center of the body’s gravity and balance) much like a wheel moves around its hub or axis.

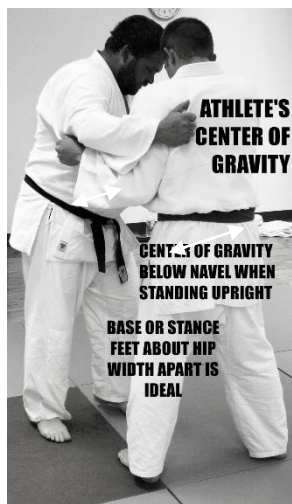
**General Motion or Movement:** This is a combination of both linear and angular movement. Example: Think of a race car. The wheels rotate and turn (angular motion) causing the car to move in a direction in a straight line (linear motion).

### **“Make the technique work for you.” Maurice Allan, MBE**

**Coaches:** When teaching any type of movement (and that includes everything we do on the mat), the goal of that movement must be to work in the best and most efficient possible way for the person doing it.

**Proximity:** How close the bodies of the attacker and defender are to each other. This is the space between the attacker and defender, often measured how far the hips are from each other.

Pace: How fast or slow the attacker and defender move about the mat. This is also called tempo. The pace or tempo will speed up or slow down depending on the flow of the action during the match.



### Center of Gravity on the Human Body

The defender's center of gravity is relative to attacker's position to the defender.

A person's center of gravity shifts as the body position changes.

Movement causes changes in body positions of attacker and defender as well as proximity (how close or far away the attacker's body is in relation to the defender's body); as well as the direction of movement as well as the speed of motion or movement of the attacker and defender.

The center of gravity is at the area of the hips; on a male is slightly below the navel and slightly lower than that for a female. The center of a person's body is the axis which is where the center of gravity is at about the hip level. This is why the movement of the hips is so important to

controlled movement in judo. Where the hips go, the body follows, especially when it comes to moving a resisting opponent.

### Inertia

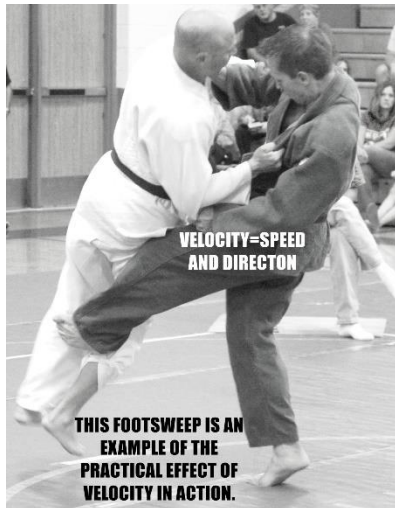
There are two types of Inertia: 1-Resting Inertia, 2-Moving Inertia.

A practical definition of inertia is that an object has a tendency to not do anything or move unless it is acted upon by some external force (for our purposes, this external force is an opponent or another athlete). In other words, a human body will stand or sit there without moving unless another person forces it to move; and once it's moving (because it's a mass or object and subject to gravity), it will continue to move in a straight line or direction. Inertia is resistance to action by a mass or object (in this case, a human body). When you throw an opponent, you want to create enough movement in order for your opponent's body mass to overcome his initial resistance and the inertia of his body in a stationary or fixed position (such as a fighting stance or posture)-and then to continue the attacking movement in order to accelerate (increase the speed and momentum) of your attack so that you are better able to form your technique or fit into position to throw. So, once you get your opponent moving, keep him moving in the direction you want him to go. Doing this forms a self-accelerating action of both your body (as the attacker) and the defender's body (which are connected together now in the actual throwing movement). This acceleration continues until termination of the throwing action; either by a successful throw by the attacker, or by a defensive, evasive or counter movement on the part of the defender.

The attacker must do something to overcome defender's resting inertia. Movement does this. The attacker forcing the defender to change his stance does this. Any changes in the defender's posture will do this. All of these factors create moving inertia in the defender which is more favorable for the attacker to launch an effective attack. This moving inertia is what is commonly

called breaking the balance (Kuzushi). If attacker controls the defender's direction of movement and speed of movement, the attacker will create more favorable conditions for an effective throwing attack.

An effective throw accelerates the velocity of an opponent's body (as well as the velocity of the attacker's body who has initiated and controls this velocity).



Velocity is the precise description of speed and direction of the throwing action.

Speed indicates “how fast” something moves and Velocity indicates both “how fast” and “in which direction.”

Another way of putting this is that speed indicates how fast an object (in this case, a human body) moves or travels in a specific instant in time with no consideration to direction.

In judo, we must control velocity. Speed is important, but velocity is how fast and in which direction the action is taking place; and is more relative to our study.

The attacker must do something to overcome defender's resting inertia. Movement does this. Movement is controlled motion. Force creates this movement. Think of motion in a general sense of moving. Motion is both controlled and uncontrolled. For our purposes, movement is what we want to achieve, because the attacker attempts to control both the motion of his body and the motion of his opponent's body. Doing this is movement. It may seem like a small point, but as John Wooden said; “Small things make big things happen.” Movement is the controlled speed and direction that is produced by the actions of the attacker.

Force: This is any action that changes the state of movement or motion. Force applied by an athlete does not always produce movement, but for the purposes of judo, often does. The amount of force as well as the direction in which it is applied produces movement.

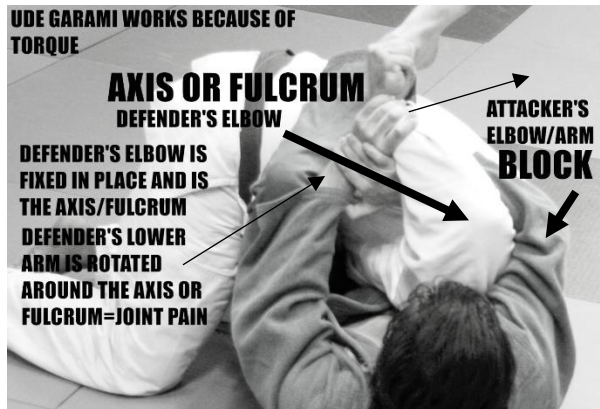
This controlled motion or movement that is caused by force is what we in judo call Kuzushi (“Kuzushi” translates to “break” or “de-construct something” and this implies the “breaking” of an opponent's posture, balance and stance.)

This movement creates moving inertia in the defender's body (as well as controlled moving inertia of the attacker's body). Moving inertia is the same thing as Kuzushi. The action of the two moving bodies will accelerate or increase in speed and ballistic effect as the moving inertia continues until its culmination. Again, this acceleration of movement combined with the direction of movement is what we call kuzushi.

If the attacker controls the defender's velocity (direction of movement and speed of movement), the attacker will more effectively throw the defender. This control of the defender's movement controls the defender's center of gravity and results in controlling the defender's direction of movement, the defender's speed of movement, as well as the proximity (how close or far away the attacker's body and defender's body are in relation to each other).

## Torque

Judo (or any grappling sport) is a contest of which athlete can apply torque better. The attacker's application of force competes against the defender's resistance to that force.



Torque: This is the rotation, turning or twisting movement or effect produced by a force at a distance from the axis or center of a body.

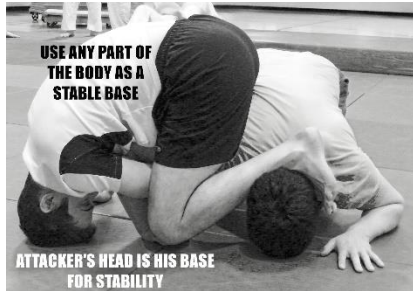
Torque is the force multiplied by the perpendicular distance from the axis that force is applied. Think of it when applying Juji Gatame. The elbow of the defender is the axis, fulcrum or center of the movement. Another very good example of an armlock using torque is Ude Garami (Arm Entanglement or Bent Armlock) because the defender's lower arm

(acting as a force lever) rotates around the defender's elbow (the fulcrum or axis). The defender's elbow is the axis (or fulcrum) and the attacker blocks or traps the defender's bent upper arm with his elbow/arm that is pressing into the attacker's chest. The attacker uses his hand to apply force and push on the defender's lower arm, creating torque.

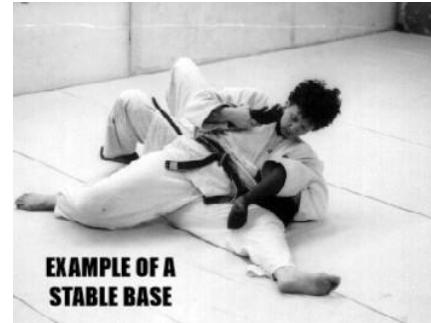
Every action causes an equal and opposite reaction. You push and your opponent resists by pulling away; you pull and your opponent pushes. This is important to understand when it comes to moving and turning the human body in relation to throwing it to the mat. Pushing and pulling don't just happen in a straight line, they happen when turning or rotating.

Rotary Movement: In judo, this is called Taisabaki and is one of the major movement concepts or patterns that govern the technical application of the sport. In practical terms, the attacker wants to move the defender in a circular or turning pattern in order to move the defender closer to the attacker's hip in order to throw the defender. If the defender resists, this is called rotary inertia; in other words, resistance to the turning movement. An experienced judoka will expect this to happen and will use a variety of skills (gripping, controlling proximity or space between the bodies, feigning or faking another movement to illicit a response or any number of things) in order to better achieve his goal of circling the defender in the direction he wishes.

Kuzushi is, in addition to many other things, the control of an opponent's stability. Usually, the most efficient way of controlling stability is to control the opponent's movement of his body. By controlling an opponent's stability, the attacker "breaks the balance" and sets the opponent up more easily so that the attacker can form or build (Tsukuri) the attack. The attacker's goal is to make his opponent unstable. The defender's goal is to maintain his stability.



Base of Support: The more balanced the base of support, the greater his stability. Usually, the base of support refers to the area on the mat where the feet are (which are positioned directly under a person's



body when he is standing upright). This isn't always the case, however. Any body part (or anything) that provides support to maintain balance or to resist the force of an opponent can be a base of support or simply called a base. An example is to "post" or place the top of your head on the mat as you move your body into positon to work a Head Roll



Juji Gatame or other similar move. The base must be stable, but fluid and adjust as necessary to maintain stability and control. An example of a base that is both stable and fluid is the base used in holding or pinning an opponent. The hips, legs and body movement of the pinner must shift and adjust as necessary to maintain stability and control of the opponent. Additionally, for our purposes, the base can generate power and is a power base. An example of a power

base is holding or pinning an opponent and the pinner will "drive" with his or her feet into the mat to stabilize the body better and hold the opponent down to the mat more effectively. This power base also is used in throwing techniques where the attacker drives off one or both feet to gain velocity and power into the throwing action. When this is done, it is called a driver leg. A base is any body part that supports an athlete's body weight, permits the generation of force, allows the athlete freedom of movement and most importantly, provides stability.

### Some Useful Terms

Some of these terms have been used before, but they are certainly worth repeating for the purposes of study.

**Technique:** A generally accepted way of performing a movement. A specific identified movement or pattern that is applied by optimally using skill. The method that allows skill to be applied and performed.

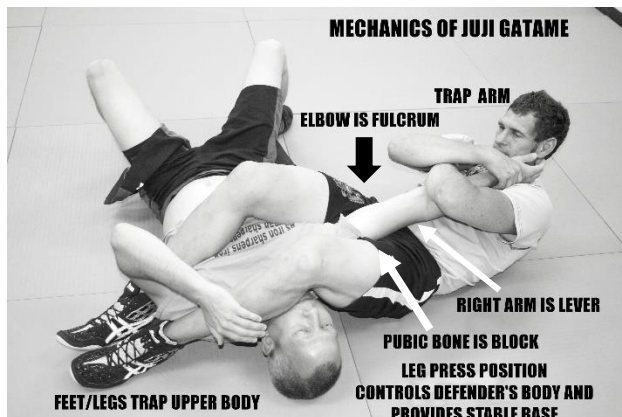
**Skill:** The functional and optimal application of technique.

**Style:** This is the personal variations an athlete makes on to a technique or movement pattern. Style is functional or applied skill that makes a technique work most efficiently for the person doing it.

**Axis:** The center of an object's rotation. Think of an axis as the hub or center of a wheel. An axis is like a hinge on a door, a fulcrum on a scale or a hub on a wheel. All action moves around the axis.



Torque: Rotation, turning or twisting movement or effect produced by a force at a distance from the axis or center of a body. Torque is the force multiplied by the perpendicular distance from the axis that force is applied. Think of it when applying Juji Gatame. The elbow of the defender is the axis, fulcrum or center of the movement.



Fulcrum: An axis or hinge about which the lever rotates. Think of the defender's elbow when applying Juji Gatame. The elbow is the fulcrum. When placed against the attacker's pubic bone (which serves as a block), the fulcrum is locked in place (thus, the name "arm lock") and when the lever (the defender's arm) is pulled, the defender experiences pain in the joint and surrounding muscles of the arm.

Lever: A bar-like object rotating about the fulcrum or axis. Think of the defender's arm when applying Juji Gatame. The arm is a bar (thus, the name "arm bar"). This is the force arm or the lever (defender's arm) that is pulled against the fulcrum that is blocked by the attacker's pubic bone. The opposite of this force arm is the resistance that moves in the opposite direction. Think of this as the defender's upper arm that is attached to his shoulder. When you pull downward to apply force against the defender's lower arm and it is blocked against the attacker's pubic bone, the defender's upper arm moves upward. This counter-action of force "bars" and straightens the defender's arm. The force arm moves one direction and the resistance arm moves the other direction.

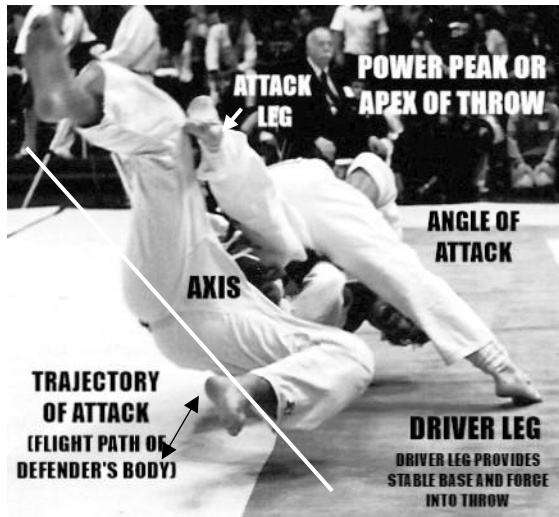
Block: The stabilizing object or agent that stops, limits or prevents the movement of the lever against the fulcrum or axis. Think of the attacker's pubic bone when applying Juji Gatame. The pubic bone serves as the block that (along with the force applied by pulling on the arm or lever by the attacker) "locks" or "bars" the defender's arm and straightens it. Another good example is the attacker's foot in a Sasae Tsurikomi Ashi. The attacker's foot "blocks" or "props" the defender's ankle in the application of this throwing technique.

A functional example of this is Juji Gatame. Always remember when doing Juji Gatame, the defender's arm is the Lever and the defender's elbow joint is the Fulcrum. The attacker's pubic bone is actually part of the Fulcrum, called (for our purposes) the Block. When the attacker pulls downward or "levers" the defender's arm with the defender's elbow situated on the attacker's pubic bone, the elbow straightens and pain is caused in the elbow joint (as well as the surrounding muscles and even the shoulder joint).

Primary Movers: The primary movers are the main muscles of the body that work in any movement. This is why specificity of strength training is important. Train and develop the muscles that are used in judo. Train to have "fighter's physique" rather than a bodybuilder's physique. This is all part of functional training and directed to controlling an opponent's movement.

**Limb Position:** This is a term used in all sports, what this means to us is the most efficient and effective placement and use of the hands, arms, legs and feet, as well as the head. Think of your head as your “third arm.”

**Speed of Entry:** This is how fast, and in which direction, the attack is made. A more accurate way of describing this action would be “velocity of entry” but “speed of entry” is more commonly used. In practical terms for our purposes, foot speed drills are essential, both static foot speed drills and moving foot speed drills for developing an athlete’s entry speed into a throwing technique.



**Angle of Attack:** For our purposes, this is the angle the attacker’s body is in relation to the defender’s body and how the throwing action develops into the flight path or trajectory as the throw accelerates. In throwing techniques where the defender’s body moves (is thrown) over the attacker’s body, a rounder angle of attack is often the norm. In foot sweeps, leg hooks and other similar throws, a more linear angle of attack is the norm.

**Kinetic energy:** This is the ability of an athlete to perform work by virtue of his or her motion or movement. An example is the force generated when throwing an opponent. As the attacker continues

with the throw, kinetic energy builds to create a hard landing for the defender.

**Ballistic:** This is any projectile, body or object in flight. In other words, the effect of an object (a human body) moving with speed in relation to the force of gravity in a space or through the air. A good example is a bullet. A bullet goes through the air fast. The faster it travels, the more effect it has when it hits its target. Kinetic energy builds as soon as the bullet is fired creating the ballistic effect.

**Ballistic Effect:** The action that is produced when a ballistic object hits its target (an example, as mentioned above, is a bullet hitting its target). The ballistic effect is the result that is produced by the ballistic action. The more power produced to put an object into flight, the more ballistic force it has and the more ballistic effect that object has when it hits another object. A good example is how hard an athlete’s body lands on the mat when he has been thrown. The more force generated by the attacker into the throwing movement, the faster and harder the defender will hit the mat. So, for our purposes, ballistic effect is force in relation to throwing an opponent to the mat. Ballistic force is how hard the defender hits the mat when thrown.

**Control:** Manipulating or moving an opponent so that the attacker dictates where and how the opponent reacts as well as manipulating the consequences of the attacking (throwing) action. In other words, the attacker dictates how, where and when the defender moves.

**Force:** This is a push, pull or other movement that changes the state of motion of the defender's body. Force is the generation of power by the attacker (power results from speed, strength and acceleration). Force is necessary to move an object (in this case, a human body). Overcoming the defender's resting inertia requires force by the attacker. Force is also the result of the falling action of the human body. Another good explanation of force is that it is the same thing as ballistic effect.

An Ippon results when both control and force are exhibited in a technique. This is thought of most often as in a throwing technique, but this also includes the application of all technical skills, not just throws. However, the results of control and force are usually most evident as the result of a throwing technique. When training in throwing techniques, always have the goal of achieving the most control and force possible.

**Power Peak:** This is the apex or pinnacle of a throwing technique. This is the highest point in the trajectory (flight path) of an athlete's body when it is thrown.

**Trajectory:** This is the flight path or movement through the air of the human body when it is thrown from a stable base to the mat.

**Base:** This is the area formed by the outer most points of contact by the athlete's body (any and all appendages as well as the body itself) with the mat.

**Balance:** This is the ability of the athlete to maintain equilibrium with his body in order to maintain control.

**Equilibrium:** The position of an object (for our purposes, the human body) in which opposing forces or actions are not stronger than the other. If this happens, balance is achieved. In other words, standing with upright posture so that the athlete's body is balanced, especially during movement. Being able to maintain balance by exerting enough force to resist the force of an outside agent (an opponent pulling or pushing).

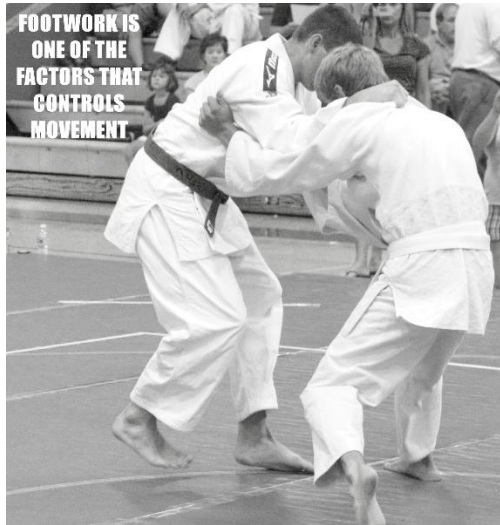
**Rotary or Rotation Stability:** The resistance of an athlete against an opponent (or anything else for that matter) from being turned over, thrown, tilted or moved around in a circle. But, if you are the attacker, rotary stability is also the ability to keep turning or throwing an opponent's body. In other words, this is the ability to maintain balance against the force or movement applied by an opponent when he attempts to throw you. Kuzushi takes place when you control the rotary stability of your opponent.

**Linear Stability:** This is what friction is. Gravity pulls an object down to the earth. A heavy barbell has a lot of linear stability.

**Friction:** This is the force that acts in an opposing way of one surface to another. When two objects slide against each other, friction is produced. This is called sliding friction. It is relevant to what we do because this is the reaction the defender has when the attacker attempts to move him across the mat in a sliding foot movement such as Okuri Ashi Barai (Sliding Foot Sweep). The attacker must overcome the defender's friction by use of controlling the movement of the action.

**Power:** This is the rate at which work is most efficiently done. We also often think of it as speed and strength combined either to use in the application of a skill or when describing the force applied in a skill.

**Center of Gravity:** This is the point which the mass of the body or weight of an object is balanced in all directions relative to its movement. On the human body, the center of gravity for men is just below the navel and slightly lower for women.



### **Footwork and Movement Patterns in Judo**

There are two primary footwork or movement patterns in judo. Sambo and other grappling sports have copied these or altered them with some slight modifications. However, these two movement patterns were designed by Prof. Jigoro Kano early in the development of Kodokan Judo.

The first is Shintai: This translates to imply “advance and retreat” and specifically in a linear pattern. A generic translation is “footwork” as this term refers to all footwork used. The second is Taisabaki: This is more difficult to translate from Japanese into English but implies “Body Turning or Management/Movement.”

Generically, all footwork in judo is either in a linear direction (Shintai) or in a circular direction (Taisabaki).

In practical terms, there are actually three basic footwork patterns that are used. They are as follows.

**Ayumi Ashi:** A normal step walking pattern. “Ayumi” simply means “walk.” “Ashi” means “foot or leg” and implies the movement of the foot or a pattern. This is a movement where the attacker and defender move either forward or backward in a straight line.

**Tsugi Ashi:** This is a gliding or sliding footwork pattern, often at an angle or sideways but sometimes can be done in a straight line as well. “Tsugi” means “successive” and implies a sliding movement where one foot meets the other but the feet never cross. “Ashi” means “foot or leg” and implies the movement of the foot or a pattern.

**Taisabaki:** This is a rotary, turning or circling movement. “Tai” means “body” and “Sabaki” implies “management” or “movement” and implies preparation for a subsequent movement. In judo, the movement of the hips as well as body in a turning movement is also part of Taisabaki.

### Happo No Kuzushi: Eight Directions of Breaking Balance

Prof. Jigoro Kano devised the Happo No Kuzushi (Happo means “eight” and No means “of” and Kuzushi implies the “breaking” of balance). Happo No Kuzushi are the eight directions that a body can have the balance broken. They are; 1-front, 2-back, 3-right side, 4-left side, 5-right front corner, 6-right rear corner, 7-left front corner, 8-left rear corner.

This concept of balance control provides a good framework for the teaching and learning of balance in judo throwing techniques and should be always considered when discussing the control of movement.

### Shisei: Posture



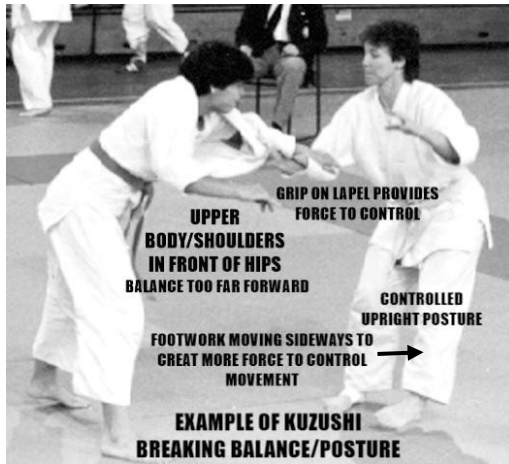
Another term to know and understand is Shisei: This translates to “posture or stance.” The posture of the body and the stance (or position) of the feet are factors that determine the efficiency of footwork and body movement.



The two primary postures in judo are as follows. Hontai: Basic Body Posture; this is an upright posture. Jigotai: Defensive Body Posture; this is a bent over posture. Posture is important in exerting

control and movement over an opponent because of the importance of the hips in initiating force and velocity in movement. An upright posture allows the hips to be closer to the opponent and because of the upright posture, the hips can better be brought into use both offensively and defensively. Additionally, the bent over posture places the shoulders out in front of the hips, making the athlete unbalanced to the front. This posture also places a majority of weight in the athlete’s buttocks making him vulnerable to the rear as well. The bent over posture also naturally forces what are called “heavy feet” where the athlete doing this generates too much downward force pushing into the mat with his feet. This prevents the athlete from moving freely to generate velocity or an ability to pivot or rotate quickly enough. The bent over posture also creates what is called “giving your opponent your hips.” In other words, this bent over posture allows the opponent space to initiate an attack with greater force and allows the opponent to get under the bent over athlete’s center of gravity more easily. This is why posture is fundamentally important to teach to students. Without good posture, power (resulting in the application of good skill in technique) cannot be sufficiently applied.

## The Primary Principles of Applying Technical Skill



Kuzushi: This implies “breaking” of balance. Kuzushi is an important concept in the study, practice, application and teaching of judo, sambo or any activity or sport. The concept of controlling the movement of an opponent and the ultimate breaking of his posture, stance or balance is the basis that makes all judo techniques efficient in their application. The action that starts the process of Kuzushi is force. The attacker uses his or her physical strength to initiate movement. The power generated and initiated by the attacker creates the movement necessary to break or control the defender’s movement, balance, posture and stance. If

insufficient force is generated, Kuzushi will not occur. The better you control Kuzushi, the more effective your skill. Kuzushi directly implies a “breaking down” of the opponent’s posture, balance and stance.

Tsukuri: This word implies “building,” “constructing” or “forming” a technique. Tsukuri is often referred to as to “fit in” to the technique. The Tsukuri action flows smoothly from Kuzushi and in reality, there is an immediate and seamless transition from Kuzushi to Tsukuri when done correctly. This is the point where the attacker uses the velocity (speed and direction of movement) of the both the defender’s body and the attacker’s body and starts to develop or form the specific skill he or she intends to use. Tsukuri directly implies a “building” or “forming” of the technique as a direct and seamless transition from the Kuzushi action. There is a “flow” or continuation in the movement and the Tsukuri action flows from the Kuzushi action; and in reality, Kuzushi and Tsukuri are not separate, but actually two inter-dependent parts of the same movement.

Kake: This translates to mean “suspend” or “hang” and specifically to suspending or controlling an opponent’s body. This also implies to “attack” or to “execute” a technique. This is the peak or apex of the throw or skill. At this point, the attacker has the relatively best control of the defender’s body he or she will have in the entire action. This is the moment of the most impact between the attacker and defender’ bodies with the maximum of power generated by the attacker. If this were a punch from a boxer, it would be the instant in time when the boxer’s fist hits the opponent’s jaw or body. This is the execution of the technique that is the result of the Kuzushi and Tsukuri actions.

Kime: This translates to mean “to decide” or “to finish.” While not one of Kodokan Judo’s three constructs or building blocks of a technique, think of Kime at the follow-through or finish to the technique. This is the action that ensures the termination of the sequence of actions in the technique. Think of a baseball batter who swings his bat and follows-through with his swing. Once the bat makes contact with the baseball, the batter doesn’t stop the action because if he did, the ball would not travel as far as it would if he follow through with the swing. The idea for the batter is to hit the ball with control and force just like a judoka’s goal is to throw an opponent

with control and force. The velocity of the action continues because of gravity; the defender's body is thrown to the mat and will continue to be thrown until it lands. At this point in the throwing action, the attacker must maintain as much control as possible of the defender's body to insure that the defender will land with control and force so that the attacker terminates the throwing action or has the ability to follow through to the mat with a pin or submission technique.



## Conclusion

An athlete controlling his or her own movement is difficult enough, but in the combat sports, an athlete has to not only control what he does and how he moves, but control what his opponent does and how his opponent moves as well. In some sports, an athlete competes with other racers, a downhill ski slope or throwing a heavy object. These athletes compete with each other to be the fastest, strongest or most skillful. Only in the combat sports, do athletes compete against

each other. There is a difference. Additionally, the consequences for not controlling an opponent can result in getting thrown to the mat, getting an arm or leg stretched or cranked, being choked or being held on the back for time and getting a good look at the ceiling. Some sports, like football or rugby, are tough games, but they are team sports and ultimately, they are games. The goal is to get the ball into the end zone. Additionally, if a player makes a mistake, his team-mates may be able to compensate for it. Team sports are good about teaching how to work as a unit, but in combat sports, where there is no team to rely on and the goal isn't to get a ball into an end zone, but rather to throw, pin, or force an opponent to submit or be injured from a submission technique, it's more personal. One athlete faces another athlete in a one-on-one contest, and it's a rough contest. What we do is fighting. Sure, there are rules that govern each of the combat sports to insure safety and sportsmanship, but make no mistake about, what we do is a fight, not a game. We may call each other judo "players" but trying to throw, pin, choke or armlock an opponent isn't playing, it's fighting. As a result, there is more personal risk involved; physically, mentally and emotionally. Because of this, controlling the movement of another human being who is doing the same thing to you is difficult. The entire science and art of judo (as well as sambo, jujitsu, wrestling and any combat sport) rests on the ability to control movement. It takes a great amount of physical ability, technical skill, tactical awareness and fighting spirit to be successful. So, this is why we coaches should study how to teach and train our athletes to effectively control their own movement and to control the movement of others. If we don't teach it right, then our athletes will suffer.

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