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**Technical principles of *Atemi-waza* in the first technique  
of the *Itsutsu-no-kata* in Judo:  
From a viewpoint of Jujutsu-like *Atemi-waza***

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**Abstract**

The purpose of this study is to clarify the following three points, based on Kenji Tomiki's theory, who pointed out properly that the *Atemi-waza* (striking technique) is, in principle, an extension of *Nage-waza* (throwing technique).

- (1) To analyze the most relevant previous studies, in terms of technique, written by Sumiyuki Kotani & Tadao Otaki, chosen among the seven previous studies which describe the teachings of the first technique of the *Itsutsu-no-kata* (forms of five), advocated by Jigoro Kano.
- (2) To demonstrate the first technique of the *Itsutsu-no-kata*, based on the interpretation by Tomiki, who referred, earlier on, to the unique relationship between the first technique of the *Itsutsu-no-kata* and the *Atemi-waza*, and to analyze its video image in terms of technique and biomechanics.
- (3) To clarify the technical principles of the *Atemi-waza* in Jujutsu by synthesizing both of the above mentioned, namely the first technique of the *Itsutsu-no-kata* and the *Atemi-waza*.

The major points clarified are as follows.

- (1) The previous study by Kotani & Otaki (1971) reports that the technical principles in which *Tori* (a person who executes a technique), who touches *Uke* (a person to whom a technique is executed) softly with his palm, and walks, defeats *Uke*, who has turned into a solid matter, reveal the concept of “softness controls hardness,” to which Kano attached great importance.
- (2) The interpretation in terms of biomechanics suggested, in a scene where *Tori* makes ceaseless pushing with his palm, followed by consecutive walking, that the reason of *Uke*'s retreat becoming difficult gradually, and thus *Uke* is made to walk with much shorter steps, is because *Tori* has delicate controls over the powers on his thumb or his little finger, and by so doing, *Uke*'s rotation movement on the chest is hindered, and because *Uke* is unable to reflect on his inborn movement or walking. In a scene where *Jizo-tashi* occurs, *Uke* is forced to lose his balance backwards, to a great extent, and as the ground reaction force gradually shifts forward, the backward moment around the *Uke*'s center of gravity applied by *Tori*'s palm, *Uke* is unable to cancel out the reverse moment from the ground reaction force, and thus we finally observed that *Uke* fell off, his center of gravity being rotated, and moving backwards. This movement is considered to be *Jizo-taoshi*.
- (3) Kano argues that *Uke* will surely fall down if *Tori* pushes ceaselessly in an effective direction,

whereas Tomiki analyzes this movement precisely, focusing on the palm's force, changing its direction (angle), working on in one-point-one direction, just like the *Atemi-waza*. The essence of Tomiki's discovery is in the fact that the unique character of *Atemi-waza* in Judo lies in the movement where *Uke* is made to fall down by *Tori's* movement of soft-touched palm and his manipulation and ceaseless movement of the body. This is interpreted as a sequence of "Touch & Push, Push & Fall down, and Touch & Fall down." This leads to feasibility of realizing *Randori* (free practice) with *Atemi-waza*, which has been an ideal task sought by Kano.

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## I Problem Identification

### 1. The purposes & methods of this study

The three major categories of Judo techniques are *Nage-waza* (throwing techniques), *Katame-waza* (ground techniques), and *Atemi-waza* (striking techniques). The previous studies, however, focusing on the relationship between *Atemi-waza* and *Nage-waza* or between *Atemi-waza* and *Katame-waza* are hard to be found. One of the reasons there are few studies is that *randori*-practitioners had hard time finding its necessity or importance of studying because *Atemi-waza* was excluded in *Randori* (free practice) or in matches since the very beginning of Judo, to begin with. Jigoro Kano (hereafter called Kano), the founder of Judo, however, thought deeply of *Atemi-waza* and its relationship with *Nage-waza*. When he compiled *Nage-no-kata*, or *Randori-no-kata*, he introduced four counter attack techniques against *Atemi-waza*, (namely *Seoi-nage*, *Uki-goshi*, *Ura-nage*, and *Yoko-guruma*). Why was it necessary for him to include *Atemi-waza* that is prohibited in *Randori*, in *Nage-no-kata* as the basis of *Randori*? As Shishida (2010, pp.167-169) stated, it was clear that Kano wanted Judo to keep its practical character of martial art as well as its nature of physical education.

We picked up the first technique of the *Itsutsu-no-kata* (forms of five), which has been studied and preserved in the Kodokan, because we focused on a practical study of Kenji Tomiki

(hereafter called Tomiki) who considered that the *Itsutsu-no-kata* has an art which bridges *Atemi-waza* of Judo and *Nage-waza*, and that characteristics of *Atemi-waza* lie in the *Itsutsu-no-kata*. Tomiki stated in *Judo-taiso* (1954, p.109), when we execute *Nage-waza* in *Randori*, the dynamics operating on our limbs and/or lower back are in two directions, while, in the *Atemi-waza*, the dynamics are in one-point-one direction, and he added that the above mentioned two, at first glance, seem to be different in nature, but, in fact, if closely examined, there is only one Judo principle operating, in that the opponent is pushed in the direction of his loss of balance. Thus he summarized that *Atemi-waza* is, in principle, an extension of *Nage-waza*. He, however, did not refer to the *Itsutsu-no-kata* in this simple statement, nor in his above mentioned book. How should we interpret the first technique of the *Itsutsu-no-kata* by using his theory?

Having this question in mind, we tried to clarify the art of *Atemi-waza* in *Jujutsu* by (1) making a technical analysis of Kotani & Otaki's previous study chosen among the seven literatures referring to Kano's first technique of the *Itsutsu-no-kata*, (2) demonstrating the technique, based on Tomiki's interpretation, and making a technical and biomechanical analysis of the video image 1, and (3) synthesizing the above mentioned two. *Atemi-waza* has been excluded in *Randori* practice so far simply because of its dangerous aspect. As stated later, *Randori*

including *Atemi-waza*, however, was indeed Kano's wish. Respecting Kano's wish, this study tries to contribute to promotion of Jujutsu & Judo cultures.

## 2. Historical place of this study

It was in 1889, seven years after inauguration of the Kodokan when Kano's idea was made clear about introducing *Atemi-waza* into *Randori*. Kano (1889, pp.468-469) stated, "Practicing pre-arranged forms only ends with mimicking and shows low level of performance, and I think it better to make up for the performance level by introducing a kind of *Randori* practice." According to Kano (1889, p.468), the purpose of *Atemi-waza* is "to make the opponent's most susceptible part of the body either painful, or faint temporarily or kill completely by thrusting or striking hard, using with any part of one's limbs or head". He added, "There are many ways to execute it, and the most common ways are to thrust the part between the both eyes of the opponent by one's fist, to thrust the chest, to thrust a bit lower part of the breastbone by one's fist, or to kick the testicles of the opponent by one's foot tip." It was rather hard for Kano to introduce such a dangerous art of *Atemi-waza* into *Randori* practice. His ideas were finalized by introducing an art of technique similar to Karate's strike or kick into solo and dual movement shown in the book *Seiryoku Zenyo Kokumin Taiiku*, or the national physical education based on the spirit of "Maximum efficiency with minimum Effort", a sense of exercise designed to develop the physique for the Japanese. According to Kotani & Otani (1971, pp.169-170), this technique is derived from *Atemi-waza* and is made up for the purpose of practicing defense techniques in physical education against striking or kicking offense or in unarmed free hand Judo. It was a long cherished wish for Kano to introduce *Atemi-waza* into Judo.

## 3. Hypothesis

This study starts with a hypothesis suggested by Tomiki, who states that the first technique of the *Itsutsu-no-kata* holds a common art of technique between *Atemi-waza* and *Nage-waza* of Jujutsu and Judo. We thought we could reach this hypothesis by analyzing the purpose of *Atemi-waza* in the following way.

According to Kano's definition, *Atemi* is to hit one's vital point with a fist or limb and to hurt/kill the opponent, and thus the opponent is suffered, faint or killed. The result of being faint or death is that the opponent collapses.

Meanwhile *Nage-waza*, defined by Kano, is to fall down, drop down, or beat the opponent's body onto the ground. The most popular technique is to fall down. There are many ways to realize this purpose, he said (1889, p.464). According to this definition of *Nage*, the purpose of *Nage-waza* is to fall down (*Taosu*), drop down (*Otosu*), or to beat down (*Uchitsukeru*). The most popular technique is to fall down. We now consult a most reliable dictionary, *Genkai*, which was used at the same period when Kano described, and had an established reputation, to seek the difference in meaning of the above three verbs in Japanese.

These three words, (*Taosu*, *Otosu*, and *Uchitsukeru*), express the idea of throwing and the aim of throwing at the same time. The first word, *Taosu* is a transitive verb, and it means "(1) to lay (something that is standing) down, to turn down, to make someone sleep, etc., (2) to kick down, to trip someone up, etc. (3) to chop down and kill, to slay, etc." (p.619). When this word *Taosu* is used as an intransitive verb, it means that "(1) something that is standing lies down, (2) to fall down, to tumble down, (3) to die". (p.619)

The next word, *Otosu*, when used as a transitive verb, means "to drop (something which is on a high place) down, fall off" (p.145), when this word is used as an intransitive verb, it means that "something on a high place comes down, to fall off, to fall downward" (p.144).

The last one, *Uchitsukeru*, is not found as an entry word in the *Genkai*, but a related word *Utsu* can be found. It is a transitive verb, meaning “(1) to beat, hit hard, strike, knock” and “(14) *Uchitsuku, Nagu*, meaning to beat down, to throw, “to throw a stone.” for example. Thus we can guess that *Uchitsukeru* is identical to *Nageru*, meaning “to throw,” which is derived from *Nagu*, according to the *Genkai*, which is a transitive verb, meaning “to throw away, to fling away, to hurl away” (p.742).

The result can be summarized as follows. To fall down (*Taosu*) is to get something standing to lie down, while the other two Japanese words referring to drop and beat also suggest that a person on a high place is dropped or beaten to lie on a ground. Thus the latter two Japanese verbs also end up with falling down, meaning that *Atemi-waza* and *Nage-waza* end up with making someone fall down.

If the aim of *Atemi-waza* is to fall someone down, how should we interpret the first technique of *Itsutsu-no-kata*? We assumed that a common art of technique exists between *Atemi-waza* and *Nage-waza* in the first technique in particular of the *Itsutsu-no-kata*, because this first technique is to break balance by touching softly and by adding power continuously in the direction of one’s dynamically weakest point, thus moving one’s body as quickly as possible, and finally to make someone fall down. From this point of view, we presumed a common art of technique between *Atemi-waza* and *Nage-waza* exists in the first technique of the *Itsutsu-no-kata*. Thus our hypothesis is that the first technique of the *Itsutsu-no-kata* has a common principle art of touching & balance breaking, simply because we see, in a scene of duel of Jujutsu, striking & falling down (striking first and then falling down) and/or throwing & falling down (throwing first and then falling down).

4. The reason we chose the following previous

studies

(1) Kotani & Otaki’s method

After comparing five previous studies describing the ideas and methods of the *Itsutsu-no-kata* (See table 1), we have chosen to analyze “*Saishin Judo-no Kata, Zen*,” or “All the latest Katas of Judo” by Kotani & Otaki (1971). According to this book, the *Itsutsu-no-kata* is an expression of principles of Judo’s offending & defending techniques in a manner of running water in five different forms, and was added in 1887 to a series of the Kodokan’s techniques. Kotani & Otaki clarified that this *Kata* has no references and that senior members of the Kodokan make a different explanation of it in some details, and said this book was based on “the explanation by their teacher, Master Hideichi Nagaoka.” Who and what sort of Judoka was Nagaoka? Nagaoka was admitted to the Kodokan in 1893. Zansei Koga (1959, p.70) reports that at five o’clock in the afternoon of the first day when Nagaoka was met by Kano at the Kodokan, Kano was making a research practice, together with Yoshiaki Yamashita and other fellow students of Judo, of the *Itsutsu-no-kata*. Nagaoka received an intimate training for ten years under Kano until he was dispatched to Kansai area in 1902. He was summoned to the Kodokan in 1913 and became an instructor, and then appointed as a professor at Higher Formal School of Tokyo, and then was promoted to the 10<sup>th</sup> *dan* before Kano’s passing away. Sanzo Maruyama (1967, p.922) states that the *Itsutsu-no-kata* performed by Nagaoka & Kaichiro Samura was in supreme excellence like a god, while the performance by Kano was very profound and made a comment that Nagaoka’s superb performance still remains vividly in his memory together with the memory of Kano’s refined performance. Nagaoka’s personality and his high performance level of techniques made a good influence on the Judo world, saying that “Among all the men, Nagaoka is the best, among all the techniques, *Sutemi-waza* is the best.” Thus,

by reading his profile, we see that one of the best students of Kano was Nagaoka.

Kotani & Otaki, both of whom were directly taught by Nagaoka, studied *Kata* for a long time, and published (from Fumaido) a book in 1954, entitled “*Judo-no-kata, Ju, Koshiki and Itsutsu.*” The explanation of the *Itsutsu-no-kata* of 1954 version and that of 1971 version are virtually the same, with some minor alterations (Kotani & Otaki pp.134-140). “Judo Koza [Judo Course], vol.5,” written by Kyuzo Mifune, et al, published in (1956 p.66) simply states an ideal interpretation, saying that “Nothing can object the Right” and states a simple procedure, saying that “*Uke* (a person to whom a technique is executed) steps forward quietly and stands before *Tori* (a person who executes a technique) with a proper spatial distance. *Tori*, at once, proceeds and attacks *Uke*, and keeps pushing *Uke*, who resists & withstands, until *Uke* falls down like a *Jizo*, (a guardian deity of children) which refers to an abrupt fall without any action of safety. *Tori* resumes initial stance of basic natural standing posture [自然本体]. *Uke* keeps the posture of “*Munen-muso*,” or the posture showing the mental condition of selflessness, free from worldly thoughts. This book simply states the procedure mentioned above, but doesn’t say anything about how to use palms nor how to step forward, right step first or not. “*Shashin Kaisetsu Kodokan Judo*,” a photo-illustrated manual of Kodokan Judo, published in 1956, which was about the same time as the book by Mifune et al. and revised in 1966, describes how to use palms, saying that *Tori* with the part near his right thumb, pushes *Uke* forward, with his left foot forward, and *Uke*, who is pushed, softly retreats his right foot (p.220). This is an entirely opposite explanation to that of Kotani & Otaki. The book by Maruyama, published in 1967, says that *Tori* tries to lose balance of *Uke* by using his thumb and four fingers alternately. *Uke*, who is attacked, is unable to keep his balance, because of *Tori*’s

fulfilled spirit and action, and finally retreats with his left heel first, with short, quick steps (p.915). This explanation is the same with that in the book by Kotani et al. in that *Uke* retreats with his left foot first, but this book does not say anything in detail about *Tori*’s movement. While the “*Itsutsu-no-kata, Koshiki-no-kata*,” published in 1992 by the Kodokan, and “*Itsutsu-no-kata, Koshiki-no-kata*,” published in 2008, follow the same explanation as that of Kotani & Otaki. We chose and examined the 1971 version of Kotani & Otaki, which is based on the explanation by Nagaoka, and has the most detailed explanation, as seen in Table 1.

## (2) Tomiki’s method and its significance

Kano passed away without introducing *Atemi-waza* into *Randori* practice. Tomiki made a research in this respect. As stated earlier, Tomiki (1954, pp.108-109) states that there are two aspects in *Atemi-waza*, and continues his study in the 1960s of *Koshiki-no-kata* (traditional forms of Kito-ryu Jujutsu) and *Itsutsu-no-kata*, and finds in some of those principle techniques a prototype of *Atemi-waza* of Jujutsu & Judo. (1991a, p.125) “A soft force against one point, if it continues, will become strong enough to make someone fall down. In this sense, *Atemi-waza* functions as *Nage-waza* rather than a striking type of technique. Thus we can find in *Koshiki-no-kata* and *Itsutsu-no-kata*, (literally five forms) a prototype of *Atemi-waza* of Jujutsu and its character (Tomiki, 1991b, p.195). This means that *Atemi-waza* of Jujutsu functions not only as striking power to make someone fall down but also as a soft touch upon someone, moving in the most effective direction, making him lose his balance, and eventually make him fall down. We understand that Tomiki found a technical aspect in the characteristic of Jujutsu’s *Atemi-waza*, namely to strike & fall down (fall down without killing) besides to strike or thrust with a firm fist. This study tries to clarify, from Tomik’s view

point, the principle art of technique [術理] in the movement expressed in such words as “push” or “press”, or “give weight from the top or from the side”.

Table 1: Comparison of explanations in the previous studies of the first technique of the Itsutsu-no-kata

Phase 1	Explanation of Riai or appropriate logic assumed of Tori and Uke’s movements
Phase 2	Movements up until the first contact with each other [Manners and movements before Tori & Uke stand in basic natural standing posture are omitted]
Phase 3	Up until Uke’s first step or the moving backward
Phase 4	Uke’s first step and the following move until Jizo-taore
Kotani & Otaki, 1954	
Phase 1:	The movements are compared to running water. The characteristic of a drop of water is very weak, and yet if the water keeps running and if a solid wall is soaked in such water, the wall will be eventually collapsed. This logic applies to a bout, in that you can beat an opponent, however strong he/she may be, by using your power in a logical manner, and by making a constant attack. (pp. 134-135)
Phase 2	Tori, first, with his right arm bending slowly, opens his right palm, extending all his right hand fingers upright, raises his palm up to his right shoulder, the palm being faced toward Uke. Tori, with his right hand raised enough forward, steps forward with his left foot first, and walks quietly to the very front of Uke. Both Tori & Uke come closer enough, nearly touching their right shoulders, and here Tori, with his basic natural standing posture, touches Uke’s central part of chest with his right palm. (pp. 138-139)
Phase 3	Tori, then, with his right foot gradually moving forward, touches Uke’s chest with his right hand palm, (and particularly with his little finger), and keeps pushing without rest. Uke, being pushed, in order to keep his balance, retreats his left foot accordingly. (p.139)
Phase 4	Tori, then, with his left foot advancing, keeps pushing Uke, with his right hand centering around thumb. Uke, being pushed by Tori, tries to keep his balance by retreating his right foot. Tori, without lessening his power, still advances and keeps pushing Uke’s chest stronger and quickly, with his right hand palm, centering around his thumb and little finger alternately. Tori, by so doing, deprives of Uke’s chance to recover his balance, and keeps pushing without rest. Uke, being pushed continuously, retreats his left foot, and right foot alternately, with short steps. Tori, then, re-balances his posture, and advances his right foot, with a long step, and touches Uke’s chest to make a final pushes. Uke, being unable to recover his balance, falls down supinely in a manner of Jizo-taosi. (pp. 139-140)
Mifune, Kudo, and Matsumoto (1956)	
Phase 1:	Nothing can object the Right (p.66)
Phase 2	“Uke steps forward quietly and stands before Tori with a proper distance. (p. 66)
Phase 3	Tori, at once, proceeds and attacks Uke. (p.66)
Phase 4	Tori keeps pushing Uke, who resists & withstands, until Uke falls down like a Jizo, (a guardian deity of children) which refers to an abrupt fall without any action of safety. Tori resumes initial stance of basic natural standing posture. Uke keeps the posture of “Munen-muso,” or the mental condition of selflessness, free from worldly thoughts. (p.66)
Kodokan (1966)	
Phase 1:	None. Nothing is mentioned in this book
Phase 2	Tori advances quietly and raises his right hand. Tori advances, bending his right arm gradually, in order for his right hand palm to touch Uke’s chest center when he comes close enough. Tori advances and comes close enough for his right toes to nearly touch Uke’s right toes, and opens his right hand, with all the fingers extending upright, and touches Uke’s chest gently. (p. 220)
Phase 3	Tori, pushes Uke, with his right hand, centering around thumb, by stepping left foot. Uke hardly keeps his balance while retreating his right foot lightly. (p. 220)
Phase 4	Tori, then, pushes Uke with his right hand palm, centering around his little finger, and advances with

	his right foot forward in order to make Uke fall down. Uke, however, recovers his balance by retreating his left foot. Tori advances again, walking a few more right and left steps alternately continuously so as to make Uke fall down. Uke retreats gradually and quickly with short steps, losing his balance and then falls over backward. Tori, then makes a right step, a longer step, and strongly pushes Uke with his right hand palm. Uke, then, falls down backward, which is so called Jizo-taoshi, and stands up again in a natural manner.
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Sanzo Maruyama (1967)

Phase 1:	This kata, expressing the natural phenomena, was compiled after the Kodokan Judo started. In this kata, we do not see any kind of technique for offence and defense of Judo, and yet we do observe the essence of Judo, namely its principles or philosophy of Judo.
Phase 2	Uke stands calmly in a stance of basic natural standing posture. Tori, starting with this stance, advances his left foot, bending his right arm naturally, pulls it backward, and then pushes his right hand forward with the palm opened. The quiet move coupled with the right hand palm and the first left step, touches Uke's chest naturally and softly. (pp.914-915)
Phase 3	Tori walks and attacks, with his right hand palm, touched on Uke's chest, putting strength on and around his thumb and four fingers alternately. Uke, being attacked, loses his balance and retreats, staring with his left heel, with quick and short steps.
Phase 4	Tori, maintaining his balance, still pushes forward. Uke, at last, being unable to keep his balance, falls down supinely, with breakfall. Uke must not raise his legs, must keep his chin down, must keep his hands & legs touched on the floor mat. In other words, Uke must keep his heels touched on the floor.

Kotani & Otaki, (1971)

Phase 1:	The movements are compared to running water. The characteristic of a drop of water is very weak, and yet if the water keeps running and if a solid wall is soaked in such water, the wall will be eventually collapsed. This logic applies to a bout, in that you can beat an opponent, however strong he/she may be, by using your power in a logical manner, and by making a constant attack. (pp. 311)
Phase 2	Tori, first, with his right arm bending slowly, opens his right palm, extending all his right hand fingers upright, raises his palm up to his right shoulder, the palm being faced toward the opponent. Tori, with his right hand raised enough forward, steps forward with his left foot first, and walks quietly to the very front of Uke. Both Tori & Uke come closer enough, nearly touching their right shoulders, and here Tori, with his basic natural standing posture, touches Uke's central part of chest with his right palm. (pp. 313-314)
Phase 3	Tori, then, with his right foot gradually moving forward, touches Uke's chest with his right hand palm, (and particularly with his little finger), and keeps pushing without rest. Uke, being pushed, in order to keep his balance, retreats his left foot accordingly. (p.314)
Phase 4	Tori, then, with his left foot advancing, keeps pushing Uke, with his right hand centering around thumb. Uke, being pushed by Tori, tries to keep his balance by retreating his right foot. Tori, without lessening his power, still advances and keeps pushing Uke's chest stronger and quickly, with his right hand palm, centering around his thumb and little finger alternately. Tori, by so doing, deprives of Uke's chance to recover his balance, and keeps pushing without rest. Uke, being pushed continuously, tries to balance while retreating his left foot, and right foot alternately, with short steps. Uke finally breaks his balance backward and becomes unable to maintain his body. Tori, then, re-balances his posture, and advances his right foot, with a long foot, and touches Uke's chest to make a final push. Uke, being unable to recover his balance, falls down supinely in a manner of Jizo-taosi. (p. 314)

Kodokan (1992)

Phase 1:	The logic is that even a man of weak power, attacking logically and continuously, will beat a strong one. (p.1)
Phase 2	Tori, after seeing Uke taking a stance of basic natural standing posture, advances quietly with his left foot first and approaches Uke, and keeps his right hand on his right side, and opens his right hand palm, showing the palm to Uke, and raises his right hand gradually as he approaches Uke. At the time when their right shoulders nearly touch each other, Tori extends his right hand fingers and thumb upright, as he touches Uke's chest center tightly. At this moment, Tori's right foot should be placed on outside of Uke's right toes. (p.2)
Phase 3	Tori, then, pushes Uke, by putting strength on and around his right hand thumb and little fingers alternately, and make Uke lose his balance. (p.2)

Phase 4	Uke, being pushed, retreats and tries to recover his balance, by moving his left foot and right foot alternately. Tori, as Uke retreats, keeps pushing, walking with his right foot first and left foot alternately, with his right hand palm touched on Uke's chest, without rest. As Uke loses his balance and leans backward, Tori makes a final step with his right foot, thus making Uke fall down. Uke, being unable to recover, falls down supinely without raising his legs, striking the floor mat with both hands, namely Uke makes a breakfall in Jizo-taore manner. (pp.2-3)
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Kodokan (2008)	
Phase 1:	The logic is that even a man of weak power, attacking logically and continuously, will beat a strong one. (p.1)
Phase 2	Tori, after seeing Uke taking a stance of basic natural standing posture, advances quietly with his left foot first and approaches Uke, and keeps his right hand on his right side, and opens his right hand palm, showing the palm to Uke, and raises his right hand gradually as he approaches Uke. At the time when their right shoulders nearly touch each other, Tori extends his right hand fingers and thumb upright, as he touches Uke's chest center tightly. At this moment, Tori's right foot should be placed on outside of Uke's right toes. (Picture 4-①②) (p.4)
Phase 3	Tori, then, pushes Uke, by putting strength on and around his right hand thumb and his little fingers alternately, and makes Uke lose his balance. (p.4)
Phase 4	Uke, being pushed, retreats and tries to recover his balance, by moving his left foot and right foot alternately. (Picture 5) Tori, as Uke retreats, keeps pushing, walking with his right foot first and left foot alternately, with his right hand palm touched on Uke's chest, without rest. (Picture 6) As Uke loses his balance and leans backward, Tori makes a final long step with his right foot, (Picture 7) thus making Uke fall down. (Picture 8) Uke, being unable to recover, falls down supinely without raising his legs, striking the floor mat with both hands, namely Uke makes a breakfall in Jizo-taore manner. (Picture 9) (p. 4)

## II. Action analysis of the first technique of the *Itsutsu-no-kata*

1. Kotani & Otaki's method (1971) and our notes on it

The authors, at the beginning of the book, describe the procedures leading to the technique as follows; “*Uke* enters the *dojo* or training hall and quietly proceeds to the center and takes a stance of basic natural standing posture. *Tori*, bending his right arm, extending the thumb and four fingers upright, the palm being faced toward *Uke*, raises the right hand up near his right shoulder. (Kotani & Otaki, 1971 pp.313-314)” The procedures following this action is shown in the left column of Table 2. All the movements and procedures described in the left column are numbered ① through ⑤ in order for us to analyze. ① describes the movements up to the first contact of *Tori* & *Uke*. ② describes the movements up to *Uke*'s retreat with his left foot. ③ describes the movements up to *Uke*'s retreat with his right foot. ④ describes the movements of *Uke*, being pushed, and his weight being on his

both heels, nearly falling down. ⑤ describes the movements of *Tori*'s final push, and shows the posture of *Zanshin*. The underlined parts are what we regard important. The right hand column of Table 2 shows the comments worthwhile, which correspond to the underlined parts in the left hand column. The movements ① through ④ correspond to *Tsukuri* or the act of turning in and fitting into the throw, while ⑤ corresponds to *Kake* or the execution and completion of the throw. In other words, the procedures ① through ④ teach us that even a soft and little power, if used effectively and continuously, can beat a sturdy matter. The very end of ④ shows the ultimate level of *Tori*'s *Tsukuri* or the act of turning in and fitting into the throw. That is to say that *Tori* urges *Uke* to fall down by himself. ⑤ shows that *Tori*, being in a situation where least counter action is expected, extends his arm and makes a final push to make *Uke* fall down. Here lies an excellent example of utilizing one's power of both soul and body.



Table 2: Kotani & Otaki's method (1971, p.314) and our notes

Explanation of movements and procedures		
①	Tori, raising his right hand high enough, advances quietly toward Uke, starting with his left foot and then right foot alternately. When both Tori & Uke come close enough to touch their shoulders, Tori, with his stance of basic natural standing posture, touches Uke's chest center with his right hand palm.	①Tori touches Uke softly with his palm.
②	Tori, then, advances slowly with his right foot first, keeps pushing Uke's chest continuously with his right hand palm, putting strength on and around his little finger. Uke, being pushed, retreats slowly with his left foot, resisting to fall down, trying to keep his balance.	②-1: Why does Uke try to keep his balance against Tori's push? ②-2: Why does Uke retreat with his left foot first, not with his right foot?
③	Tori, this time, advances with his left foot first, keeps pushing Uke, with his right hand palm, putting strength on and around his thumb. Uke retreats with his right foot first, as he is pushed, and tries to keep his balance.	
④	Tori still advances, without lessening his power, gains his power to push, walks faster, and keeps pushing Uke's chest, with his right hand palm, putting strength on and around his thumb and little finger alternately. Tori, by so doing, deprives Uke of his recovering chance, and keeps pushing continuously. Uke, being pushed and pushed, retreats with his left foot first and then right foot alternately, with shorter steps, losing his balance, and finally becomes unable to recover his balance.	
⑤	Tori, at this moment, keeping his balance, makes a long step with his right foot to give Uke's chest the last push. Uke, being unable to recover his balance, falls down supinely in a manner of Jizo-taoshi.	⑤-1: Why does Tori need to give the very last push? ⑤-2: Isn't the picture of Jizo-taoshi shown in this book different from a genuine Jizo-taoshi?

## 2. Technical analysis of Kotani & Otaki (1971)

(1) The reason *Tori* touches softly is because *Tori* intends to keep pushing, though Kotani & Otaki do not mention anything in ①. By touching softly, *Tori* can evade counter action, which would be expected when *Tori* touched otherwise.

(2) The reason *Uke*, being pushed by *Tori*, tries to keep his balance, (our Notes ②-1) is because *Uke*, now materialized, makes efforts to keep his center of gravity in balance, by moving his legs. A man in a fighting situation will definitely resist to fall, but in case it is something solid, the story would be entirely different. *Uke*, standing straight without bending his knees, is virtually something solid. *Tori*, being weak at first glance and relaxed, can beat *Uke* by moving his body. This is exactly what the principle of Judo means, namely "Softness controls hardness." As Kotani & Otaki states (1954, 1971), *Uke* appears to be standing in

a stance of *Shizen-hontai*, but is, in fact, a sold matter. We understand that Kano tried to show us the principle that *Uke*, being pushed, tries to resist to fall, and by so doing, *Uke*'s body becomes harder, making him more difficult to walk, and falls down at last. In other words, the first technique of the *Itsutsu-no-kata* shows the importance of basic natural standing posture in *Tachi-waza*, and at the same time this technique proves to be a refined form, expressing a *Jujutsu*-like principle of *Atemi-waza*. *Uke* retreats with his left foot (Notes ②-2) because *Uke* is pushed continuously by *Tori*, who puts strength on and around his little finger. Our bio-mechanical analysis on this technique will be discussed mainly in the section 4 (1) ②. While the notes on (3) ⑤ will be discussed in the section 4 (1) ③. Both Kotani & Otaki (1954) and Kotani & Otaki (1971) do not have any explanation of the

procedures of technique between ① and ②, but the 1971 version carries a picture, showing that *Tori* is slightly leaning forward, placing weight on his right hand palm (Kotani & Otaki, 1971, p.139). We see that *Uke* retreats with his left foot, and *Tori* advances with his left foot. As described in ②, *Tori* should advance with his right foot, but we see in Picture 1 a different stance. This difference will be discussed later in the section 4 (1) ②.

Picture 1: The first technique of *Itsutsu-no-kata* (Kotani & Otaki, 1971, p.139)



(2) *Tori* pushes *Uke* with his right hand, and advances.

### 3. Tomiki's method and biomechanical study

#### (1) Method of the experiment

- Subject A: (acts as *Tori*, height 166 cm, weight 74 kg, has experience of traditional Judo training since primary school days, an active member of Judo club in high school, enrolled in Waseda University and its Aikido club, where he learned under the late Tomiki, who was studying Judo techniques performed from a distance.
- He continued his studies on *Jujutsu*, Judo and Aikido, and he taught high ranked Judoka and Kendoka in Japan and abroad. He currently

holds 7<sup>th</sup> Dan of the Japan Aikido Association.). Subject B: (acts as *Uke*, height 162.5 cm, he learned Aikido at Waseda University under Subject A, and holds 2<sup>nd</sup> Dan of Japan Aikido Association.)

- We selected Subject A simply because we judged him to be an excellent performer of the *Itsutsu-no-kata*.
- Devices used: a combination of one infrared ray motion capture system (MotionAnalysis, USA) and three Ground Reaction Meters (AMTI, USA & Kistler, Switzerland).
- Experiment environment: Both subjects (*Tori* & *Uke*) execute the technique within the area of Capture Volume or movement analysis area, and move on the Ground Reaction Meters, and *Uke* falls down on the point where buffer or cushions like blankets are placed.
- Date of the experiment: February 15, 2011

#### (2) Demonstration method

Tomiki's method is virtually the same as that of Kotani & Otaki.

The left column of Table 3 describes the procedures and movements of the technique executed by A (*Tori*) & B (*Uke*). Tomiki makes a further explanation of the meaning attributed to each section. Kotani & Otaki's explanation is that *Tori* keeps pushing continuously *Uke*, who is standing in a stance of *Shizen-hontai*, while Tomiki tells us uniquely that *Tori* makes a tactful maneuver with his palm, and makes weight move by smooth walking, and by so doing, *Tori* keeps pushing exponentially as if *Tori* were sucked by *Uke*. In the demonstration, *Tori*'s legs moved faster than his palm. Unexpectedly this demonstration coincided with the movement shown in Picture 1. The right column of Table 3 explains the movements seen in the demonstration, which is different from the one mentioned by Kotani et al in Table 2.

Table 3: A demonstration of Tomiki's method and our notes

Explanation of the procedures of the technique		Notes
①	omitted	
②	A touches B's chest center, puts weight on the right hand palm, and pushes with the right hand palm, putting strength on and around his little finger. B keeps weight on his right leg and tries to keep his balance by retreating his left foot.	We see that A starts to walk in a stance roughly of right natural standing posture as he touches B with his right hand palm. This is contrary to the teaching of Nagaoka in that A starts in a stance of right natural standing posture.
③	A, then, pushes B, as he walks with left foot first, left shoulder forward, and touches B's chest center, putting some strength on and around his thumb. B, as his weight goes on to his left leg, tries to keep his balance by retreating his right foot.	
④	A pushes, putting strength on and around his little finger and then his thumb, and repeats this process for [three or] four times, and does it quicker as he repeats it. Meanwhile B begins to lean backward, and <u>his steps become shorter and shorter</u> . [The words underlined are quoted by the current authors.]	
⑤	At the very moment when B becomes unable to keep his balance, A extends his arm forward, thus B falls down, pressing his left heel hard on the floor.	The reason B did not fall in a posture of <i>Jizotaoshi</i> is because B took breakfall action, with risk-avoiding behavior, for the demonstration was conducted on force plates.

#### 4. Discussions

##### (1) Technical and biomechanical discussion

The first technique starts with a pre-arranged situation, where *Tori* (A) keeps pushing *Uke* (B) with A's palm, while B is expected to become a rigid body, and repeats walking backward to get a new supporting surface, for his center of gravity shifts out of his supporting surface, so B tries to keep his balance by getting a new supporting surface by means of moving his legs. B's repetition of such movements lead to the execution of this technique. Precisely speaking, the base, on which B's soles are, goes on towards the heels, as B repeats this move, and finally the base becomes a narrow shaped rectangle, made up with both heels. As stated in (2), this situation is caused by B's will, which intentionally resists to fall down. Our discussions are subdivided into the following three phases.

1) Initial move (phases ① & ②): The initial stance is in basic natural standing posture, where both A and B stand still. A starts, raising his right palm up to his shoulder, and bends his arm. Here

lies an important aspect from the biomechanical point of view. Suppose B is a rigid body, standing on a rectangular supporting surface, made up with his heels, A can easily make B lose his balance by pushing softly on a part of B's body distant enough from his supporting surface (Figure 1). The essence of the technique is to push and fall down something stable in terms of center of gravity. Here in the demonstration, A, his elbow being bent at the beginning, extends the arm at the right moment, and pushes B. Then A receives counter force, making him difficult to move his weight forward. This phenomenon applies seriously when A weighs less than B. In the case, however, A stands on B's side (not in front), bends his arm, touches B's chest center with his palm, leans forward, putting strength on his toes, (namely putting weight on the front), B will lose his balance, however weak A's power may be, in that B is pushed backward on the breastbone in the direction of sagittal plane, and in parallel to the floor, and the pressure on B's legs go on to his heels. When A puts more strength on and around

his little finger, and makes *B* turn around counterclockwise, *B*'s weight goes on to his right leg (Figure 2). We understand that a kind of initial balance break by means of *Ohsotgari* or major

outer reap occurs here. *B*, then, moves his left leg backward, on which less weight is put, and tries to maintain his balance.

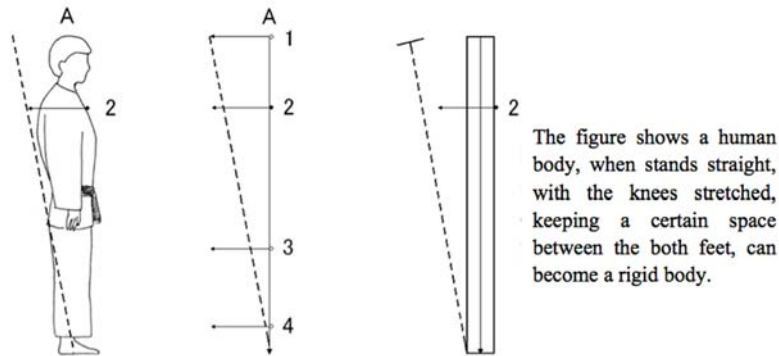


Figure 1: Side view of Uke's balance break



Figure 2: Soles of Uke, balance being broken, and areas of soles on which being how much pressed.

2) Scene of continuous move (phase ③&④): *A*, then, pushes, putting strength on and around his thumb, and then the center of *B*'s pressure on his left foot goes on to his heel. Likewise *B* must step back with his right foot. Thus we see that *B* has no choice but to step back again. After the initial balance break on *B*, *A* still needs to give a continuous move. The point is that *Uke*'s walking back steps become shorter and shorter. It is because *A* keeps making *B* put his weight on the foot which is about to retreat, for *A* makes effort in maneuvering his palm, weight move, and tactful walk. As seen in Picture 1, the fact that *Tori* (Kotani), leans forward, on his second step or the left step ahead, proves that he is quick in moving his hands and legs. Also this proves that

*A*'s movement is continuous and without rest. This series of *A*'s movement is achieved because *A* keeps giving a soft power, making *B* unable to retreat his foot which *B* intends to do, rather than that *A* pushes *B*, who retreats his foot.<sup>1</sup> *A*, by adjusting to put strength delicately on his thumb or his little finger, disturbs *B* in *B*'s rotation around his chest, and consequently, *B* finds it difficult to step backward. We assume that *B* is unable to make a long step backward simply because *B* is shut in the reflection of innate movement or walking. Thus *B* loses his balance.

3) Scene of *Jizo-taoshi* (phase ⑤): This *kata*, in the last scene, ends in a stance with his elbow stretched, which was previously bent. In this final

<sup>1</sup> The essence of this technique, according to Tomiki, lies in its driving force due to *Tori*'s shifting his weight, and he named this driving force in his later year, *Ido-*

*ryoku*, or prompt moving force by means of legs.

scene, as Kotani & Otaki (1971, p.315) demonstrate, *A* does not make a right long step, nor makes “a final push.” As shown in the comparison Table 1, Kotani & Otaki (1954) and Kotani & Otaki (1971) state that “*Tori* makes a rather long step with his right foot and gives a final push on *Uke*’s chest.” They do not precisely state “to make a strong push,” but simply say “to make a long step,” so that we can assume that it implies to push strongly. According to Kodokan (1966), “*Tori* makes a rather long right step, and pushes *Uke* down strongly, with his right hand.” A strong push is clearly mentioned. However, according to Mifune, Kudo & Matsumoto (1956) and Kodokan (1992) as well, it is shown that “*Tori* makes a right foot step (Picture 7), and pushes *Uke* down (Picture 8)”. This is specifically referred to in Kodokan (2008) in particular. In other words, they do not make any emphasis on making a long step. As we interpret the video image of our demonstration, which is based on Tomiki’s teaching, in terms of biomechanics, *B* is gradually deprived of his balance, leaning backward greatly, and as the ground reaction force changes its direction forward. *B* can no longer cancel the moment. And at last *B*’s center of gravity rolls back, and he falls down backward. We see that this process leads to *Jizo-taoshi*.

[Video image 1](#) is the image of demonstrating the first technique of the *Itsutsu-no-kata*, in the scene where *B* steps backward with his left foot, and then right foot. Due to risk-avoiding behavior, at the time when his left heel touched the ground, strong ground reaction force emerged. In an ideal performance, *B* becomes unable to make his left foot retreat, which he intended to do after the step back with left and then right foot. And the

threshold of *B*’s rolling backward is caused by the ground reaction force, at the time when he stomps the floor, and this makes an element of couple of forces which will make *B*’s center of gravity roll backward. After the experiment, when we made some trial performances, at the *dojo*, including *Jizo-taoshi*, we found and confirmed, as seen in a scene of consecutive moves (phase ③ and ④), the movement which could be expected by the mechanism explained above.

[Video image 2](#) is the movie of the first technique of the *Itsutsu-no-kata*. As seen in this video image, we were obliged to limit our scope of experiment due to secure safety, and yet we confirmed a strong ground reaction force emerged at the time when *Uke* stomped his left heel. [See the arrow indicating upward] Therefore we can expect a phenomenon leading *B* to his fall if performed in an ideal setting.

Subject *A* learned how to fall down in *Jizo-taoshi* from his father S [1909-1970], who says that *Uke* must not bend his knees, body should be kept straight like a log until he touches the floor, and must do his best not to raise his feet above the floor.<sup>2</sup> As seen in the movie shot for the experiment and the one shot at the *dojo*, *Uke*’s performances are not satisfactory in falling down in *Jizo-taore*. As seen in other pictures attached to the six previous studies in Table 1, *Uke*’s posture shows, hips are low, and the knees bent, except for the one Kodokan (2008, p.5) and Mifune et al (1956, p.66). This proves that falling down in *Jizo-taoshi* is difficult to perform.<sup>3</sup> Please note that *Uke*, in Picture 2, keeps his body straight, trying to be a perfect image of *Jizo*.

<sup>2</sup> According to Subject *A*, his father says that he was deeply touched by Nagaoka, who performed exquisite skills at the Kodokan, and that his masters were Ikkan Miyakawa, (*Shihan* or Master, Judo club, Waseda

University), Sanbo Toku, and Hideichi Nagaoka (Kodokan).

<sup>3</sup> In case of back breakfall, bending hip joints may result in further rotation of *Uke*’s center of gravity.

Picture 2: *Jizo-taoshi* (Kodokan, 2008, p.5)



(2) Tori pushes Uke with his right hand, and advances.

## (2) Tomiki's theory and feasibility of teaching *Atemi-waza* in *Randori*

Kano compiled the first technique of *Itsutsu-no-kata*, modeling after the state of water in nature, like the other four techniques. He says you can definitely make your opponent fall down by constantly keeping your push in the direction which you can make best use of your power. Tomiki analyzed this form in detail, and paid attention to the process of the move and its meaning. Tomiki paid attention to the fact that the power applied on the palm is working in one-point-one direction, while changing its angle, just like *Atemi-waza* is, though Kano did not specifically state that the first technique of the *Itsutsu-no-kata* is based on the principle of *Atemi-waza*. The reason hidden is within the process of execution of the technique that Kano left behind. According to Kotani & Otaki, who were diligent students of Nagaoka, who was directly taught by Kano. Kano's teachings tell us a sort of knack to execute the technique in that you need ① to skillfully use the radial and the ulnar of your palm, ② to move your legs, shifting your weight, ③ to complete the technique by making your opponent fall down in a posture of *Jizo-taoshi*. The details of how to fall down in a posture of *Jizo-taoshi*, according to Maruyama (1967), include the following procedures. First you need to draw your chin, to fall down, by making your heels as axis, and try your best to stick your limbs on the floor, without raising your legs. Roughly speaking, ①

and ② show that Kano was rational in making the opponent fall down (Kotani & Otaki, 1971), and in particular, based on Kano's thoughts, the break-fall in phase ③ is not a normal one, but *Jizo-taoshi*. He must have understood the physical mechanism of *Jizo-taoshi*, in which a man standing with a rigid body, by being pushed, tries to retreat naturally with his feet in order to maintain his balance, but falls down at the very moment when he can no longer keep his balance.

The books by Kotani & Otaki that include the thoughts of Nagaoka, do not carry detailed explanation made by Kano. Therefore we can say that it was Tomiki who found that the characteristic of *Atemi-waza* in Jujutsu is to make your opponent fall down by using your palm softly touched on *Uke*, and by manipulating the palm and by continuing your body move. This move is interpreted as "Touch & Push, Push & Balance break, and Push & Fall down." If the current free practice of Judo should allow blow-like *Atemi-waza*, Judo would certainly change into something MMA (Mixed martial arts). Problems may arise in how to avoid injuries or how to secure safety, about which Kano was always anxious. What if *Jujutsu*-like *Atemi-waza*, which Tomiki clarified, were adopted? What would be expected then? By comprehensive application of Kano's transmitted teaching, which is expressed in a phrase, "The techniques are modeled after the state of water," (Kotani & Otaki, 1971, p.311) and Tomiki's detailed studies, we may be able to create a new type of *Randori*, that Kano dreamed of, including not blow-like *Atemi-waza* but *Jujutsu*-like *Atemi-waza*.

## Summary

The purpose of this study is to clarify the following three points, based on Tomiki's theory, who pointed out that "*Atemi-waza* is, in principle, an extension of *Nage-waza*."

(1) To make a technical analysis of Kotani & Otaki's study, chosen among the seven previous studies, which describe the teaching of the first technique of the *Itsutsu-no-kata*, advocated by Jigoro Kano.

(2) To demonstrate the first technique of the *Itsutsu-no-kata*, based on the interpretation by Tomiki, who referred to the unique relationship between the first technique of the *Itsutsu-no-kata* and the *Atemi-waza*, and to analyze its video image in terms of technique and biomechanics.

(3) To clarify the technical principles of the *Atemi-waza* in *Jujusu* by synthesizing both of the above mentioned.

The major points clarified are as follows.

(1) Kotani & Otaki (1971) reports that ① *Uke* is forced to retreat his left foot simply because *Tori*, with his palm, pushes *Uke* on the breastbone area, and *Tori* keeps pushing continuously without rest thereafter. The important point in terms of techniques is that *Uke* tries to maintain his balance against *Tori*'s push. In other words, we can guess that *Uke* finds it difficult to step back because *Uke* becomes a solid matter or a rigid body. ② We see in the technical principles, a concept of "Softness controls hardness" on which Kano put emphasis, where *Tori*, who touches *Uke* softly with his palm and walks, beats *Uke*, who has been turned into a rigid body.

(2) Having interpreted the video image 1, from the view point of biomechanics, we acknowledged that the following processes are to be taken. ① the initial scene: *Tori* stands beside *Uke*, bends his arm, and the palm touched on *Uke*'s chest center. Then *Tori* leans forward by putting strength on his toes (putting his weight on front), then *Uke* loses his balance because *Uke* receives power backward by means of *Tori*'s right palm on *Uke*'s breastbone area, in the direction of sagittal plane, in parallel to the floor, thus the center of pressure on the feet shifts backward.

*Uke*'s weight shifts on to his right foot, if *Tori* makes *Uke*'s thorax turn counterclockwise by putting more strength on his ulnar, and *Uke* tries to maintain his balance by retreating his left foot, on which his less weight is placed. ② the scene of continued move : *Tori*'s manipulation by ceaseless push with his palm makes *Uke* gradually difficult to walk backward and the steps become shorter and shorter. It is because *Tori* makes fine adjustment in putting strength on his radial and ulnar, and *Uke*'s chest rotation is hindered, and *Uke* is shut in innate reflection or walking. ③ the scene of *Jizo-taoshi* : As *Uke* (*B*) is gradually forced to break his balance backward, and the direction of the ground reaction force is gradually shifting forward, *Uke* can no longer cancel out the moment of force of rolling backward around *Uke*'s center of gravity, which is given by *Tori*'s palm by means of the moment in the reverse direction. Thus *Uke*'s center of gravity shifts backward, and finally *Uke* makes a fall down, which leads to *Jizo-taoshi*.

(3) Tomiki's theory and feasibility of teaching *Atemi-waza* in *Randori*. Kano compiled the first technique of the *Itsutsu-no-kata*, modeling after the state of Water in nature, like the other four techniques. According to the teachings, transmitted through Nagaoka, Kotani & Otaki, you can definitely make your opponent fall down by constantly keeping your push in the direction which you can make best use of your power. Tomiki paid attention to the fact that the power applied on the palm is working in one-point-one direction, while changing its angle, just like *Atemi-waza* and analyzed this set of techniques in detail. Tomiki's discovery is unique in that the characteristic of *Atemi-waza* in Jujutsu lies in the fact *Tori* can make his opponent fall down by means of his palm soft touched on *Uke*, by manipulating his palm and by keeping your body move. This can be put in a developed interpretation like "Touch & Push, Push & Break

balance, and Push & Fall down.” By comprehensive application of Kano’s transmitted teachings, expressed in a phrase “The techniques are modeled after the state of water,” (Kotani & Otaki, 1971, p.311) and Tomiki’s detailed studies, we may be able to create a new type of *Randori*, that Kano dreamed of, including *Atemi-waza*.

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