The Meaning of Rapid Weight Loss in Kickboxing Competition

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***Abstract*—Kickboxing, like many other combat sports, is divided into weight classes. When a player selects a class to fights, a class that is several kilograms below the usual weight is generally selected. Therefore, they need a weight loss before a match. Many of them use a method called rapid weight loss to quickly lose several kilograms of their usual weight at once in the weeks or days before a match.**

Why is such an act done? The reason often cited in the research treatises and media reports is because of acquisition of advantage of physique. Whereas studies on the health risks of losing weight rapidly have also been reported. For rapid weight loss, it is necessary to pay attention not only to physical risks, but also to psychological effects. Players have knowledge of this and aware that there are fighters who get sick due to rapid weight loss. Nevertheless, they are doing this in their own way.

This study tried to clarify what the act of rapid weight loss performed by kickboxing players before a match meant to them. The survey was conducted through interviews with kickboxing players and participant observations at the gym and pre-match weigh-in's venues.

The result was that rapid weight loss was ritually characterized as an act of trying to be immersed oneself in the world of combat. Moreover, it has the meaning of telling others that they have transition from their daily lives to their special one. From this, it can be said that rapid weight loss is an action with a ritual meaning of entering the world of fighting.

***Index Terms*—Advantage of physique, kickboxing, rapid weight loss, ritualistic behavior.**

I. Introduction

Kickboxing is a martial arts sport that originated in Japan in 1966, and like many other martial arts such as boxing and wrestling, it is divided by weight. Almost all players play a match after losing weight under the constraint of weight. This is done by a method called rapid weight loss, in which they lose weight rapidly in a short period of time before a match (Table I). However, it has long been pointed out that this method has various health risks such as dehydration, convulsions, cognitive decline, and depression [1]. Great care should be taken when using rapid weight loss. In fact, in wrestling, fatal accidents due to weight loss have occurred in the past [2]. Besides this, the risks of rapid weight loss in martial arts are reported annually in many domestic and foreign research papers.

Even in kickboxing, although there were no fatal accidents, there are cases in which the player became ill due to rapid weight loss and needed treatment. There are more than 10 cases of not being able to lose weight by the time of weighing before the match each year, and in several cases, the player became dehydrated, so that the match was canceled due to his ambulance transport (Table II). And since not all such information is announced, it is difficult to know for us the actual number. Furthermore, regarding kickboxing, unlike other combat sports, research on rapid weight loss is not found as far as I can see.

Despite these potential health risks, why do players lose weight, which sometimes may seem excessive? There is one answer that is frequently mentioned in research treatises and media reports. That's because many leaders and players believe they can gain a physical advantage over their opponents [3]. In other words, if they qualify for the lower weight class, they may not have to worry about fighting against a player who is much larger than them [4].

Is the purpose of rapid weight loss to gain physique advantage really the only truth? In this paper, the author will clarify the reasons for rapid weight loss which at first glance seem to carry various health risks, other than gaining physical advantage. Do players perform severe rapid weight loss only for the advantage of their physique? Clarify the meaning of what the players really want from this act which may be judged to be irrational.

II. About Rapid Weight Loss

A. Definition of Rapid Weight Loss in This Paper

Garret *et al*. state that there is no unified definition of the term rapid weight loss [1]. In this paper, based on Taguchi's classification, which refers to the classification of weight-class competitions, the weight loss that a player performs in a short period of time and rapidly before the match is defined as rapid weight loss. Although the specific period, weight lost, and proportion are not specified for the rapid weight loss mentioned here, Table 1 shows the weight loss period and weight of the players interviewed for reference, although the specific period, weight lost, and percentage are not specified for the rapid weight loss mentioned here.

B. Problems Pointed Out in Rapid Weight Loss

Studies in areas such as exercise physiology, medicine, and nutrition have shown that rapid weight loss can have many adverse effects on a player's body if not done carefully. As a result, players can suffer not only physiological but also psychological damage, which can significantly reduce their athletic ability.

Dehydration is one of the side effects of rapid weight loss

Manuscript received March 18, 2022; revised May 23, 2022.

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doi:10.18178/ijssh.2022.12.3.1087

that is considered to be particularly serious. Dehydration due to sweating can lead to an increase in core temperature during exercise, even with a loss of water in the amount of only 1% of body weight. At 3% to 5%, the cardiovascular system is strained and the ability to dissipate heat is reduced. A loss of 7% can lead to heat collapse [5]. Psychologically, a loss of water of only 2% of body weight can cause symptoms such as mental fatigue, drowsiness, nausea, vomiting and lethargy [1].

Carl *et al*. [6] reported the results of study on the common methods used by martial arts athletes (judo, amateur boxing, professional boxing, taekwondo, wrestling) to adjust their weight. Among them, the methods often used include skipping meals, fasting, saunas, sweat suits, laxatives, diuretics, diet pills, and vomiting. The main work of weight loss performed by athletes is the elimination and intake restriction of water in the body, which indicates that dehydration is regarded as a major health risk.

III. Survey Outline

A. Reasons for Choosing Survey Methods

This paper conducted an interview survey based on Blumer's symbolic interactionism [7]. In the methodology of symbolic interactionism, Blumer said, "What is needed to make proper observations is in the form of descriptive explanations obtained from the actor rather than standardized investigation procedures (questionnaires, polls, scales, use of various social survey items, fitting of pre-determined variables, etc.)". We chose the interview survey based on this Bloomer's claim. In addition, participant observation was also conducted to help consider the interview, in which the actual behavior of the kickboxer who was the actor in this study was observed.

Ethical considerations were implemented with the approval of the Matsumoto University Research Ethics Committee (Approval No. 71).

B. Interview Survey

A semi-structured interview was conducted with professional kickboxers between May 18, 2017, and November 11, 2017 [Table Ⅲ]. The number of people analyzed was 29, which was increased by snowball sampling [Table Ⅳ]. The average interview time was 69 minutes. With the permission of IC recorder recording from all the players interviewed, the spoken voice was recorded.

The recorded utterance voice was converted into characters to create sentence data, and while emphasizing objectivity, the parts related to the meaning of rapid weight loss for each player was classified and analyzed from inductive perspective.

C. Participant Observation

Participant observation was conducted with the consent of J gym in the Kanto region, who also cooperated in the interview survey. We gave an oral explanation to the president of J gym using the "Consent to Participate in the Study" and then he signed the consent.

In participant observation, we observed the behavior and appearance during practice 5 to 7 days before the match and the behavior appearance of the players at the weighing venue just before the match. The time to observe the player's practice is from 16:30 to 22:00. It was observed in November 2017, January 2017, and May 2018. The observed contents were described in a field note, which was used for analysis together with the interview.

IV. Results and Considerations

A. Rapid Weight Loss as a Strategy in Terms of Physical Disparity

In the interview many of kickboxer who were asked why they were going to lose weight quickly before a match couldn't immediately state the reason and look confused.

Why am I losing weight before the match? …I'm sorry, I can't think of anything at all. (NM, in his early 20s)

There is no special reason for that. Everyone is doing it and I'm not thinking about anything. I am rather enjoying it a little. (KK, in his early 30s)

I haven't really thought about that. It's become commonplace to lose weight, weigh, recover, and fight. That's difficult question. (YN, in his early 20s)

From the above answers to the reasons for rapid weight loss such as "I never thought about it", "Everyone is doing it "and "I thought it was natural to do it", it can be seen that it is quite natural for kickboxers to lose weight rapidly before the match. Therefore, it can be understood that it is very difficult to find a reason for the act immediately.

Even so, eventually players started talking over time. The meaning of rapid weight loss before the match, which was told by the players, was not limited to one, and many players expressed multiple answers. Among them, there were a few negative opinions about gaining the advantage of physique, but almost all the players said. It was reconfirmed that many players are strategically considering rapid weight loss in order to take advantage of the match.

After all, reach is one of the advantages in martial arts. There is absolutely no one who doesn't care about reach. (YK, in his early 30s)

Well, after all, it seems that a big body is more advantageous, well, I think that is one of the major reasons. I'll lose 10 kg in one day by drying out, and when I put back 10 kg after weigh-in, I'll be bigger than my opponent. (TO, in his late 30s)

After all, the advantage of physique is great. Especially for me, I feel that it is easier to fight if the height difference is large. (DF, in his late 20s)

For fighters, physique factors such as reach and height difference are important for winning a match. And this factor can be gained by carrying out rapid weight loss and choosing a lighter class. The fighters mentioned above are considered to do rapid weight loss as a strategic meaning to win the match.

We were able to reconfirm the meaning of rapid weight loss, which has been said in previous research and media reports, from the actual voices of the players. This paper starts with a confirmation of this fact and aims to find out and consider whether gaining this advantage is the primary reason for rapid weight loss for players, or if there is anything else.

B. Rapid Weight Loss from the Perspective of Ritual Behavior

Kickboxing players who have decided to participate in the match will start practicing for that match. The period is usually about one month. What is the difference between practice after the match is decided and regular practice for players who are engaged in weight class competition? One of them would be to pay attention to the weight he has contracted for the match. That means entering a weight loss period, which allows players to switch from their normal life to a life with condition adjustments for the match.

Players will lose weight rapidly during this period, especially when the match is approaching. We asked what makes players act a rapid weight loss.

Why do you lose weight? I get motivated. By losing weight I can feel a match is approaching. If I don't do the act weight loss, I won't be able to maintain a good sense of tension for a match. Hahaha…I switch on with weight loss. Weight loss is important. (NN, in his late 20s)

After all, Weight loss drives a fighting spirit. That's why fighters who don't lose weight often say that they can't switch on in matches. I think I understand that. Everyone will say that weight loss will sharpen their feelings. I feel that way too. Players can concentrate by losing weight. (TB, in his late 30s)

Players think it's cool to lose weight and they want to tell the people around them that they're doing kickboxing. They want to go into extraordinary life. That's how they change their lives. They switch on by themselves with losing weight. (GS, in his late 40s

The expression "Switch" spoken by the players above is used to describe the transition from their normal life to the period of life in which they must lose weight for the match.

When you think of something that indicates the transition from one state to another, isn't the concept of a ritual reminiscent? Within that concept is the term rite of passage (Les rites de passage), systematized by Gennep, which represents "every ritual sequence that accompanies the passage from one state to another, from one world to another." [8]. In his own book, Aoki introduces the theories of numerous scholars who have described rituals, in which six characteristics of the ritualistic behaviors presented by S. F. Moore and B. G. Meyerhof are presented [9]. Knowing these characteristics will help to interpret the flow from rapid weight loss to weigh in as shown in participant observation, which will be described later, as ritual. The six characteristics of the ritual behavior are listed below [9].

1) Being repetitive…By doing so, meaning and function arise.
2) Be consciously done…By doing so, it is distinguished from spontaneous behavior.
3) Have a "special" behavior or style…which presents a level that is clearly different from other everyday behaviors.
4) Being orderly…The whole "process" with "order" becomes an "exaggerated" form that is different from the everyday one.
5) Have an arousal and explicit style (acting) …It is an activity that attracts particular attention as an event and is an activity that is stimulating and activating unlike general daily activities.
6) Belonging to the "collective" dimension…It is a collective action with social meaning and sends a social message.

Rapid weight loss is repeated by players in preparation for a match, and the act has a special function such as gaining the advantage of physique. It also has a unique style that is consciously performed in each match, which is not performed in everyday life. It can be said that it represents the characteristics 1 to 3 shown above.

The characteristics of 4 to 6 are lined with words that give the impression of being performed to appeal to the world, such as "exaggerated form" "arousal and explicit style" and "social message". From this, it could be considered that ritualistic behavior includes the characteristic that it is also an action to convey one's existence to the outside world, that is, a so-called third party. It can also be found from the results of participant observation described later.

Below, from the behavior of the players seen in the participant observation, we will consider the characteristics of the arousal and explicit style at the weighing venue and the collective behavior that sends a social message. In particular, we will quote a field note about the state of post-weighing photography, which could be thought to strongly show the aspect of acting, which is a feature 5.

While the person in charge is adjusting the scale, MS is having a meeting with his colleagues in the gym about the pose and angle of the shooting after weighing. He had his hairstyle neat and got a good tan, with a golden pendant hanging on his chest to decorate his body. His red boxer shorts fit his body and feel clean.

It was MS's turn, and the name was called. He replied, then carefully placed his hand on the scale and gently stepped on the scale. The person in charge confirmed the weight of MS and finished weighing him. He was relieved and smiled. Next is the turn of BI, the opponent of MS. He is from South America. He has fair skin in contrast to MS. Despite passing the weighing like MS, he had a stern look without a smile.

Immediately after the weighing, two people fighting tonight were photographed side by side. MS glared at BI and took a fighting pose with a menacing look that was about to attack. In response, BI stared at MS with a cold look and held a fighting pose in the same way. Shutter sounds can be heard from several cameras surrounding them.

As soon as the photo was taken, MS drastically changed his angry expression, smiled at BI, bowed friendly, shook hands, and then broke up with him. BI didn't smile clearly, but after responding to MS's bow and handshake with a relaxed look, he returned to his companion.

Goffman defines performance as "all the activity of a given participant on a given occasion which serves to influence in any way any of the other participants" [9]. According to Aoki's consideration, this is a "self-expression in human society" [8]. Humans, both consciously and unconsciously, "play" the role of "themselves" at various levels, depending on the role required by the situation [8]. It leads to the "acting" described in the characteristics of the ritualistic behaviors of Moore and Meyerhof. Kickboxers create an arousal and explicit style through the ritualistic behavior of rapid weight loss, showing themselves in that world (the world of kickboxing) to the audience and players other than himself. For them, the opportunity to express it is a match and a weighing.

Fighters enter the weighing venue where the first production is held, with the body and spirit created by rapid weight loss. There they will show the best possible performance to other fighters, including his opponent, and to a large audience through the press to represent the world of kickboxing.

Weighing is a checkpoint that must be passed before the match, and at the same time it can be said to be another production. If the weighing is just to confirm each other's contracted weight, it should be a necessary action to return immediately after the weighing and to drink water and rest as soon as possible to win the match. However, by considering weighing as an "an activity that is stimulating and activating as an event" from a ritual point of view, the weighing venue will be a place where players show off their bodies that they have made in the best condition by rapid weight loss in the period immediately before the match. In an interview survey, some players talked about rapid weight loss as follows.

It was also fun, by losing weight. By losing weight, you lose fat, and you can see muscle fibers of your body. I liked seeing my muscle fiber in the mirror while losing weight. (DF, in his late 20s)

I wonder what to say…It's fun to lose weight…I think that losing weight means I'm a fighter, and I am falling in love with myself as a fighter. I'm losing weight! It's like that. (RN, in his early 20s)

Players usually have very little fat, but before the match they drain more water from their bodies and do other things to get rid of fat, and they want to finish their bodies and then show up in front of everyone. (GS, in his late 40s)

Weighing opened to the press is one of the events with an arousal and explicit style for kickboxing. This event is an important opportunity to inform society about what the kickboxing competition is like as well as individual kickboxers as a collective action from a ritual point of view. Players play kickboxers through weighing, revealing the world of kickboxing.

In the post-weighing photo shoot, the players fighting tonight behave as if they were about to start fighting here right away. Some players glared violently at each other, and some players gave each other a frosty look, taking fighting poses in front of many cameras. However, many of them change their behavior as soon as they finish shooting. For example, shaking hands with each other with a smile, or giving a bow. The exposed fighting spirit is transformed into a respectful and kind of friendly attitude, after which they leave the weighing venue for the match tonight.

Goffman states that the expressive coherence that is required in performances points out a crucial discrepancy between our all-to-human selves and our socialized selves [9]. Each player who plays a kickboxer at the weighing venue has no feelings of hatred or anger towards his opponent. As characters put on for an audience, we must not be subject to ups and downs [9].

The act of hating an opponent is also talked about in the boxing world, which is deeply related to the origin of kickboxing. Wacquant states that it is a myth created by the media that boxers must hate their opponents to play a good match and cited an example of player talking to his opponent tonight in a friendly tone, like a friend, at the weighing venue [10]. MS mentioned in the field note above also played a "myth created by the media" by taking action that required him to hate his opponent. And at the same time, for him, the act was done in the belief that he was sending himself as a kickboxer and the world of kickboxing competition to society. In order to disseminate the message to society more widely, there is weighing venue open to the media (there are also some kickboxing groups that held press conferences after weighing). The act of rapid weight loss before the match is used by players as a ritual act to enter the world of kickboxing and send a message to society before the purpose of gaining physical advantage.

V. Conclusion and Future Issues

A. Conclusion

This treatise is written in the form of a descriptive explanation, relying on Blumer's symbolic interactionism. Using the stories of the players who are the actors in the world of kickboxing and participant observation mainly centered on the weighing venue, we tried to understand what the act of rapid weight loss means to them.

This allowed us to come up with an answer to the question of why players should lose weight quickly before going to a match. In most cases, previous studies or media have taken it for granted to gain physique advantage as a reason for rapid weight loss. And many words that seem to support this were heard from the interviews with the players in this study. In other words, it was reconfirmed that rapid weight loss has some aspects that are aimed at gaining the advantage of physique.

But that's just one aspect. The players have also shown other reasons from their narratives and actions. Here is one conclusion that the researcher could draw by entering this competitive world.

In this paper, we conclude the meaning and purpose of rapid weight loss performed by players before the match in kickboxing competition from the viewpoint of ritual behavior, mainly by Aoki's research [8]. That is, rapid weight loss is, from a ritual point of view, an orderly, repetitive and conscious, special style. And by that act, the self as a kickboxer is played by the players with an arousal and explicit style, and finally it has a collective meaning to convey the world of kickboxing to society in the place of weighing.

However, the players have little awareness that they are playing something. Without being clearly aware of such intentions, they are entering rapid weight loss using Goffman's "performance", a means of attempting self-expression. As mentioned in IV-A, many players could not answer immediately when asked why they would lose weight. The act of rapid weight loss was such an act that was taken for granted before the match for the players. Therefore, the meaning of rapid weight loss has rarely been considered more deeply than the meaning of gaining the advantage of physique, which has been often talked about so far.

It is true that there is the acquisition of physique advantage which many players have cited as a reason for rapid weight loss. But before that reason, there must be a ritual reason as a fundamental one. Because the advantage of their physique is not always gained just because they lose weight rapidly.

Rapid weight loss is done by almost all fighters. In addition, if a player fails to lose weight by mistake in the period or amount of weight loss, his match may be cancelled or even dehydrated and taken to the hospital. In other words, players always take the risk of health and the risk of unsuccessful matches when using rapid weight loss, and they do not always gain the advantage of physique. Will players try to lose weight rapidly just because they blindly believe in this advantage, which is unclear whether they can acquire it?

There is certainly a rapid weight loss act in the sense of gaining the advantage of physique that has been said so far. But before that uncertainty, there is definitely a rapid weight loss as a ritual meaning that need to always be done as a pre-match preparation. The acquisition of physique advantage is only done in the hope that players will be superior to the opponent even a little in the battle, however rapid weight loss as a means of transition from one state to another surely invite players to the world of battle. From a ritual point of view, this is the fundamental reason why rapid weight loss is being done by the players.

B. Future Issues

Due to health risks, rapid weight loss is regarded as a problem even in martial arts sports other than kickboxing, so that rule revisions are considered. For the development of a sound kickboxing competition, it will be necessary to refer to such efforts in other combat sports.

As a medical staff and physical trainer for kickboxing competitions, the author was always thinking about what was needed to prevent the health damage caused by rapid weight loss. As a preliminary step, I tried to understand the meaning of the act of rapid weight loss for players. In the future, after further examining the results of this study, we will consider measures to prevent players from causing health problems such as dehydration due to rapid weight loss from various angles, including social factors.

APPENDIX

TABLE I: CHANGES IN THE WEIGHT OF PLAYERS DUE TO RAPID WEIGHT LOSS

Assumed name	The reduced weight	the weight reduced just before a weigh-in	The weight increased just before a match
YO	5~9 kg	6 kg in 1 week	5 kg
YN	4~6 kg	2 kg in 1 week	1~2 kg
TA	1~3 kg	The pace of weight loss is constant	0 kg
AF	5~7 kg	2 kg on the day of weighing	Depending on the match
DF	8 kg	5 kg in 1 week	3 kg
YK	7 kg	5 kg in 10 days	2~4 kg
GN	6~7 kg	5 kg in 1 week	3 kg
KK	8 kg	5~6 kg in 1 week, 2 kg on the day of weighing	10 kg
SK	4~5 kg	3~4 kg in 3 days	4~5 kg
GS	8 kg	8 kg in 3 weeks	unanswered
TK	5~11 kg	5 kg in 1 week	unanswered
AK	3 kg	1 kg in 1 week	1.5 kg
TO	7~8 kg	1~2 kg in 1 week	3~5 kg
NT	4 kg	1 kg on the day of weighing	2 kg
IM	4~5 kg	3~4 kg in 4 days	Don't know (not care)
RM	4~5 kg	3~4 kg in 2 weeks	Don't know (not care)
KR	8 kg	3 kg in 2 weeks	2~3 kg
YH	9 kg	3 kg in 1 week	Depending on the match
MS	6~8 kg	1~2 kg in 1 week	2~3 kg
TB	8~10 kg	5 kg in 1 week	Depending on the match
YM	3~6 kg	The pace of weight loss is constant	3~6 kg
NM	6~7 kg	4 kg in 2 days	5 kg
NJ	4~6 kg	2 kg in a few hours	3~4 kg
YT	8 kg	4 kg in 1 days	Depending on the match
AH	6 kg	1~2 kg in 1 week	2~3 kg
KB	4 kg	Depending on the match	2~3 kg
TH	1~3 kg	1~3 kg in 1 week	1 kg
NN	6~10 kg	2~3 kg in 3~7 days	4~5 kg
RN	10 kg	6 kg in 1 week	5 kg

From the interview answers of each player.

TABLE II: NUMBER OF PRE-MATCH OVERWEIGHT CASE IN KICKBOXING COMPETITION

Year	Number of over-weighing cases	Number of cases of doctor's orders to stop	Number of matches done despite overweight
2021 (as of September 30)	14	2	7
2020	12	2	6
2019	29	2	11
2018	26	3	11
2017	13	0	6
2016	10	1	2

Created based on two martial arts information sites, https://efight.jp and https://www.boutreview.com

The number of cases of doctor's orders to stop includes cases of emergency transportation.

TABLE III: THE QUESTION ITEMS USED IN THE INTERVIEW

- How much do you lose from your normal weight once the match is decided?
- How long do you have a weight loss period?
- How much weight do you lose in one practice?
- How much weight do you gain during the period from weigh-in to the match?
- Is there anything that go well or failed with rapid weight loss?
- What is the reason for losing weight and then playing a match? (Why do you lose weight?)

The order of the questions is changed according to the development of the narrative so as not to interfere with the flow of the narrative of the players.

TABLE IV: CHARACTERISTICS OF THE INTERVIEWED PLAYERS (AS OF NOVEMBER 10, 2017)

Assumed name	Active or retired	Period as an active player	Age	Sex
YT	Active	10 years or more	Early 30s	Male
TO	Active	10 years or more	Late 30s	Male
KR	Active	10 years or more	Early 30s	Male
TA	Active	10 years or more	Late 20s	Male
YK	Active	10 years or more	Early 30s	Male
TB	Active	10 years or more	Late 30s	Male

YO	Active	Between 6 and 9 years	Late 20s	Male
AF	Active	Between 6 and 9 years	Late 20s	Male
KK	Active	Between 6 and 9 years	Early 30s	Male
NT	Active	Between 6 and 9 years	Late 30s	Male
YN	Active	5 years or less	Early 20s	Male
IM	Active	5 years or less	Early 30s	Male
MS	Active	5 years or less	Late 20s	Male
AK	Active	5 years or less	Early 30s	Female
KB	Active	5 years or less	Early 30s	Female
GN	Active	5 years or less	Early 20s	Male
RM	Active	5 years or less	Late teens	Male
NM	Active	5 years or less	Late 20s	Male
AH	Active	5 years or less	Late 30s	Female
TH	Active	5 years or less	Early 20s	Female
NN	Active	5 years or less	Late 20s	Male
RN	Active	5 years or less	Early 20s	Male
YM	Retired	10 years or more	Early 30s	Male
NJ	Retired	10 years or more	Late 30s	Male
GS	Retired	10 years or more	Late 40s	Male
TK	Retired	10 years or more	Early 50s	Male
DF	Retired	Between 6 and 9 years	Late 20s	Male
SK	Retired	5 years or less	Late 20s	Male
YH	Retired	5 years or less	Early 30s	Male

Fig. 1. The appearance of J Gym and Thai instructor resident in the Gym. Some gyms in Japan, like J gym, hire Thai instructors.

Fig. 2. Scenery of weight measurement before a match.

Conflict of Interest

The authors declare no conflict of interest.

Acknowledgment

This paper is a revised version of the master's thesis submitted to Matsumoto University Graduate school. The author would like to express his sincere gratitude to the members of Professor Fukushima's laboratory at Matsumoto University Graduate School at the time of writing the master's theses.

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