

# Modern classification of types of karate competitors in kumite according to semi contact and full contact rules

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- A Study Design
- B Data Collection
- C Statistical Analysis
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## Dictionary

**World Karate Federation (WKF)** – the World Karate Federation unites 198 countries and is the only karate organization recognized by the International Olympic Committee. In WKF, karate athletes from the following styles compete: Goju-ryu, Shito-ryu, Shotokan, Wado-ryu [17].

**Karate Combat (KC)** – is an organization disseminating a World's Premier Full Contact Striking League to promote karate as a utilitarian sport for modern generations [60].

**Tameshiwari** – the board-breaking test which consists in hitting boards with upper limb (fist, knife-hand strike, elbow) and foot. The number of boards broken is calculated to score points [61].

**Kata** – *noun* a sequence of movements in some martial arts such as karate, used either for training or to demonstrate technique [5].

## Abstract:

**Background and Study Aim:** In conjunction with the evolution of karate, a variety of systems for sport competition kumite have emerged, including semi contact, knockdown, full contact, and mix fighting. These systems are distinguished by divergent rules for resolving confrontations, which in turn affects the health and safety of competitors. At present, two predominant systems of sport fighting kumite exist: semi contact (as defined by the World Karate Federation (WKF)) and full contact (as defined by Karate Combat (KC)). These systems differ in their impact on the safety, health and injuries of competitors, particularly in the context of sport fighting among male competitors. The objective of this article is the author's classification of karate competitors in relation to the kumite sport fighting systems: semi contact and full contact.

**Material and Methods:** The methodology employed involved the analysis of digital records of league fights in the organizations WKF for semi contact and KC for full contact from the 2024 season. In addition, the method of competent judges was used to determine the types of karate competitors based on the combat tactics analysed. Based on this, three conventional types for semi contact and three conventional types for full contact were derived. When creating this classification, we consciously depart from the strict semantic links with combat sports theory, and even more so agonology (science about struggle).

**Results:** Semi-contact karate competitors of the first type (SC1) fight 'technically' (fighting based on innovative, non-standard actions without clear offensive or defensive preferences); of the second type (SC2) fight 'defensively' clear defensive preferences); of the third type (SC3) fight in a 'mixed manner' – technically and defensively. In the context of karate competitors engaging in full contact, the classification system encompasses three distinct types: FC1, characterized by combative fighting (demonstrating superiority without the need for a knockout); FC2, marked by close combat; and FC3, aimed at achieving knockout (extremely offensive/aggressive type).

**Conclusions:** Since scientific knowledge about struggle is not widespread among combat sports practitioners (not only karate), this classification can be an inspiration for deeper reflection on the sense of improving oneself through hand-to-hand combat training.

**Keywords:** combat sport, traditional martial art, self-defence, technique, theory of combat sport

**Tactics** – decisions and actions of players in the contest to gain an advantage over the opposing players [5].

**Neo-gladiator** – a person who trains mix martial arts (MMA) and similar forms of hand-to-hand fighting that do not meet the definition of sport according to the Olympic Charter [62].

## 1. Introduction

In the course of the twentieth century, karate underwent a gradual process of increasing popularity, originating in Okinawa and spreading to Japan, before reaching Euro-Asia, the United States and Africa [1]. As the number of trainees increased, systems of sport competition in *kumite* were developed in stages, reflecting the divergent philosophies of karate masters on how to settle sport confrontations [2].

The earliest documented instance of a *kumite* sports competition was semi-contact system, which was developed by Masatoshi Nakayama, a former leader of the shotokan style in the 1950s [3]. In this system, the karateka who has accumulated the most points at the conclusion of regulation time, or alternatively, the competitor who has achieved a point advantage during the bout, which cannot be compensated for by their opponent, is deemed the winner. It is imperative that all attacks on the opponent's head are executed with control of the force in use (where force is defined by physics as the quotient of mass and acceleration). Conversely, the torso is permitted to be struck with greater force. This system emphasizes speed and technical precision, ensuring that techniques performed incorrectly cannot be scored [4].

The term 'technique', in karate practice language, is basically understood as it is generally defined by one of the most prestigious 'Dictionary of Sport and Exercise Science' [5]: *noun* a way of performing an action. However, as is customary in science, there are many definitions proposed by sports science experts. For example, R. Martens defines it as 'specific procedures to move one's body to perform the task that needs to be accomplished' [6]. Z. Naglak associates the term with sport-specific movements resulting from specific sports tasks and specific conditions of reality, or with the sensomotoric habits developed and tested in practice that facilitate the achievement of goals in competitive sports [7]. W. N. Platonov believes that the term sports technique (technique of a sports discipline) should be understood as the entirety of elements and actions ensuring the most effective realisation of motor tasks, conditioned by the specificity of a particular sports discipline, its competition, and the nature of the competitions [8]. The author of *Theory of Combat Sports* [9] proposes a narrowly defined definition of technique for the use of combat sports as the use of a sports technique in combat that, due to acquired movement habits, facilitates the achievement of combat goals. Alternatively, it is the use of a previously unpractised movement solution that the fighter considers best at the moment. The author of *Theory of* emphasises that this is a consequence of the reasoning that every fight is different and each one, especially to win, should be solved in a peculiar way.

We are aware not only of the diversity of definitions of the term 'technology' in the field of sports theory and practice, but in general in the sphere of social communication. For example, J. Groszkowski [10] points to three basic meanings of the word 'technology'. The first one defines a broad field of knowledge and science that has grown in certain departments, primarily physics and chemistry, with the participation of mathematics, and considers the use of the name 'technical sciences' to be more correct. The second – denotes the entirety of means and skills that enable the performance of some activity within the scope of human activity (and in this sense, the definitions from the field of sport are included). The third – results, for example, from the saying 'a high-tech country'.

With this ambiguity of the word 'technique', it is difficult to reconcile the requirement for precise language in the field of science, when the subject of exploration is the

multifaceted diversity of karate, in relation to a practice that tolerates jargon. One of the specific distinguishing features of karate among many psychophysical activities is the emphasis on motor perfectionism. This specificity is best documented in the training exercises of *kata* (see Dictionary) and in the sporting competition based on this motor formula. And it is precisely in this area that the understanding of ‘technique’ can give rise not only to semantic dilemmas, but also to emotions that are transferred to disputes and decisions in the *karate-kumite* competition zone.

Attacks with the upper and lower limbs during this type of hand-to-hand combat, which is fought exclusively in a vertical stance (as opposed to combat sports, which combine a continuation in a horizontal stance, such as judo, wrestling, etc.) are permitted on the torso and head, while below the waist, undercuts are allowed, if followed by a finishing technique. It is imperative that karateka competitors in these competitions invariably partake in full protective attire, which serves to minimize the risk of injury to a negligible level [11]. Statistically, the most severe injuries sustained during these competitions pertain to swelling and hematomas, in addition to damage to the joint capsule, tendon attachments, ligaments, and, in extreme circumstances, bones or sprains of the ankle or knee [12].

The second established system of kumite sport competition is knockdown, which was created by Masutatsu Oyama, the founder of the kyokushin style in the 1960s [13]. In this system, the karateka who knocks out their opponent wins, here understood as a 3-second inability to fight. In the event that a knockout is not achieved within the stipulated time, the winner is determined by a points system, followed by a weight differential assessment, and finally a tameshiwari test [14]. Importantly, all hand and foot techniques in these competitions are executed with maximum force, however, it is prohibited to strike the opponent’s head with any part of the upper body. Additionally, the execution of uppercuts and throws is strictly forbidden [15] and karateka competitors in these competitions always fight with minimal protective gear – this somehow simulates an out-of-sport confrontation. Due to the high injury rate of the competitors in these duels, the scope of combat was limited to a dozen techniques [16]. Statistically, the most prevalent injuries sustained during these competitions pertain to swelling and hematomas, Achilles tendon strains, ligament ruptures, ankle or knee sprains, muscle tears, fractures of the distal radius bone epiphysis and proximal humerus epiphysis [17].

The third emerging system of kumite sport competition is full contact, which was promoted by the Americans Joe Lewis, Bob Wall, Chuck Norris and Bill Wallace in the late 1960s and early 1970s [18]. In this system, the karateka who incapacitates their opponent is declared the winner. If this is not achieved before the conclusion of the designated fighting time, the victory is determined by the number of points accumulated by the competitors, as in boxing. All hand and foot techniques employed in these stand-up confrontations are executed with maximum force [19]. In contrast to the knockdown system, hand attacks on the opponent’s head are permitted, as are uppercuts and throws with the possibility of finishing action [20]. It is important to emphasize that fighters in this context exclusively utilize gloves and mouthguards. In the early 1990s, a slight modification of the full contact system was introduced by Kazuyoshi Ishii for K-1 events [21]. The most common injuries sustained in this competitive environment are contusions, lacerations and abrasions, ligament ruptures, bone fractures and joint sprains, fractured eyebrow arches, nasal and inner ear injuries, and jaw injuries, along with brain injuries [22].

At the beginning of the twenty-first century, the pathology of mixed martial arts dominated the media coverage, depreciating the positive and educational aspects of combat [23-26]. In response to this shift, Takashi Azuma developed the mix fighting system, which combines elements of *karate* sports competition with the style of neo-gladiator fights [5, 11]. This variety of mix fighting is based on the full contact system, but also incorporates (jargon: ground fighting) and allows for victory by applying levers or chokes to the opponent (similar to judo, where these fighting methods were adapted from the ju-jitsu tradition). The fundamental equipment of the competitors consists of helmets and gloves [18]. The most prevalent injuries in this discipline pertain to limb, including contusions, fractures, sprains, joint dislocations, and brain injuries [27]. In retrospect, the competitive system of *kumite* mix fighting did not gather significant popularity and remained relatively obscure. A similar phenomenon was observed in other *karate* systems, which also experienced a decline in popularity over time [21].

There is a certain similarity between *the kumite* mix fighting and the UNIFIGHT hand-to-hand combat system, which is ignored in the media. And in this system, the first round is the only one in which the competitors run a specific obstacle course in parallel. Instead of a bloody spectacle, the creator of UNIFIGHT, Serghei Novikov [27], promoted all-round physical fitness before the confrontation in the ring, which was covered with tatami mats to cushion falls [28]. Thus, it is not only the educational ideals of karate that are being devalued by the promotion of neo-gladiatorism under the appealing name of mixed martial arts [29].

Following a period of decline in the popularity of karate, the great significant development was in 2016 when the International Olympic Committee (IOC) included karate in the Olympic program, utilizing the semi-contact system as defined by the World Karate Federation (WKF) [30]. The second major development occurred in 2018 with the establishment of the Karate Combat (KC) organization, which operates a professional karate league based on the full-contact system [31].

The appearance of two distinct categories of karate sport fighting *kumite*: semi-contact and full-contact, implies the necessity of scientific analyses that take into account the aspects of implementing this important activity in various areas of social interaction [32]. Especially that these categories are intricately intertwined with the various karate styles [33]. Each system is characterized by distinct regulations, which differ between the WKF and the KC. These regulations, when implemented, can have a significant impact on health and safety concerns for athletes [34]. Consequently, an important issue is the motor patterns already preferred by karate athletes. These cannot be separated from the mental layer of personality.

The objective of this article is the author's classification of karate competitors in relation to the *kumite* sport fighting systems: semi contact and full contact.

## 2. Materials and Methods

The methodology involved the analysis of digital records of karate bouts [35]. Specifically, the focus was on men's *kumite* sport confrontations from the 2024 season, with the WKF providing data for semi-contact and the KC for full-contact [36] events. A total of four WKF Karate 1 Premier League galas [37] (including 1520 fights by 442 competitors) and eight KC galas [38] (including 86 fights by 157 competitors) were analysed. In addition, the method of competent judges was used to determine specific types of karate competitors based on the analysed fighting tactics in *kumite* matches

[39]. In this qualitative study, the analysis yielded three types of competitors for semi-contact and three types of competitors for full-contact.

This article was not subject to the approval of the local ethics committee as no invasive or non-invasive tests were conducted on living or dead organisms.

### 3. Results

#### Semi contact

Karate competitors of the first contractual type in the semi-contact system are extremely well prepared to engage in combat in a highly technical manner. This means that karate competitors included in this type adhere strictly to the rules of *kumite* sports fighting and are characterized by the high precision of their hand and foot techniques. They always fight at a long distance and adapt perfectly to changes in tactical situations. Their dynamic movements and precise timing enable them to execute surprise attacks on uncovered scoring areas of the opponent's body. It is noteworthy that they only initiate offensive manoeuvres in situations where they are confident of scoring, refraining from marking techniques to avoid penalties for passivity in the conduct of a sporting fight. This type of karate competitors has been designated SC1. In other words, the conventional name 'technical type' conveys the message, which is easy to verify by observing the fight, that this karate athlete respects the traditional patterns of karate philosophy and ethics, and his motor skills during *kumite* are a clear, external confirmation of this. This interpretation directly refers to our previous publication on identifying violence and aggression in karate practice [40].

In contrast, competitors of the second type, part of the semi-contact system, adopt a defensive wrestling approach. This entails a significant degree of provocation and camouflaging one's own intentions on the part of the karate athletes, with the objective of prompting their opponents to initiate attacks. In these scenarios, the competitors feel confident and secure in their ability to score points through counter-attacks that effectively anticipate their opponents' offensive actions. They are distinguished by their extensive repertoire of tactical defensive manoeuvres and precise timing. Their speed is noteworthy, though they are limited to a few effective counter-attacking techniques on the uncovered scoring part of the opponent's body (we have deliberately used a phrase from karate jargon). It is important to note that they are very well prepared to take the opponent's punch as a result of bringing out similar timed techniques of their competitors. In addition, they also indulge in marking techniques in order to avoid penalties for passivity in the conduct of the sporting fight. This type of karate competitors has been designated SC2. This conventional 'defensive type' can be an example of practising karate primarily as an art of self-defence. Like the 'technical type' in the traditional karate model, it fits into the model of karate as a sport of life [41] in the broader sense of the social and health aspects of hand-to-hand combat as a participant in an open dialogue about personal safety and human dignity [42].

In the semi-contact system, karate competitors of the third type are classified as mixed type. This means that karate competitors included in this type first adopt the strategy of the first type, which is technical. This involves launching an effective surprise attack on an uncovered scoring part of their opponent's body to achieve a scoring advantage in the fight. They then adopt a second type strategy, which is

defensive. They maintain a long-range position, counter-attack before their opponent's offensive manoeuvres, and regain their point advantage. However, if they lose this advantage, they switch back to the offensive strategy of the first type. Furthermore, their fighting technique involves moving in the opposite direction to their opponent, resulting in perfect lateralization and the effectiveness of the same techniques on both the right and left sides (it is a combination of scientific jargon and karate practice jargon, as a mental shortcut – we trust – that is sufficiently understandable). The designation SC3 has been adopted for this type of karate competitors.

### Full contact

The initial type of karate competitors in the full contact system is distinguished by elevated levels of combativeness (mainly in terms of motor skills), visible in a wide repertoire of techniques and exceptional motor preparation, which renders them adept at sustaining dynamic combat. This is evident in their seamless transitions from attack to defence and vice versa. They proactively seek close proximity with their opponents and demonstrate readiness to engage in brief physical confrontations at close range. Their endeavours to escort their opponents to the corner are discernible. Their spatial orientation within the pit fighting area is noteworthy, with a clear utilization of the diagonal positioning of the pit's edges to enhance the efficacy of their techniques. This type of karate competitors has been designated FC1.

The second type of full contact karate competitors (FC2) is distinguished by an exceptional resistance to their opponent's attacks. This signifies that these competitors possess a high level of endurance, encompassing general, strength, and speed endurance. It is evident that the subjects of this study have demonstrated a high level of courage in their participation in exchanges of techniques with opponents in close proximity. They have exhibited a readiness to receive the attacks of their opponents, while simultaneously ensuring the protection of their body scoring areas. Their approach to combat is characterized by dynamism and a consistent endeavour to reduce the distance between themselves and their opponents.

The third type of karate competitor in the full contact system aims to conclude the bout before the designated timeframe by incapacitating their opponent. This type of karate fighter engages in long-range combat and awaits an opportune moment to conclude the fight with a rapid, precise strike to a vulnerable area of the opponent's body. Their techniques are characterized by their swiftness and power. In instances where maintaining control over a long distance proves challenging, they are prepared to engage in blows with their opponent aimed at executing a knockout technique. When the contact is lost, they extend the distance over the opponent and once again wait for a favourable opportunity to launch a lightning attack on the opponent. This type of karate competitors has been designated FC3.

## 4. Discussion

This article constitutes the initial scientific proposal of modern karatekas' tactical-technical manoeuvres in relation to semi-contact WKF and full-contact KC. These two systems necessitate divergent preparation for competition and divergent methods of conducting *kumite* combat sport [43]. Consequently, the established typology should be regarded as the consequence of aligning the physical and mental predispositions of karatekas with the regulations of *kumite* sports fighting systems [44, 45].

It is imperative to underscore the athletes' awareness of the intricacies of the sporting competition. In the semi-contact system as outlined by the WKF, the techniques employed are aesthetically pleasing, and the permitted light contact with the opponent contributes to their high dynamics [46]. Consequently, this system is regarded as the safest in *kumite* [47]. The White Paper's interpretation of karate as a whole, as demonstrated by superior movement skills over the opponent without causing harm [48], has been recognized by the International Olympic Committee. Conversely, in the full contact system, the techniques performed in *karate-kumite* are aesthetically pleasing and the strength of their execution translates into 'the destruction of the opponent' – even in a sense that goes beyond this symbolic term [49]. It is imperative to acknowledge that the progression of these confrontations is meticulously overseen by a referee, who should promptly intervene if one of the karatekas demonstrates an inability to continue the fight [50]. If this principle had not been consistently respected, then full-contact karate *kumite* should have lost their sport status by the KC.

In the context of karate competitions, the primary concern is invariably the prevention of injuries. However, given the nature of the sport, which involves high-intensity confrontations and intricate tactical manoeuvres, the risk of injury remains a constant [51]. The recovery period for karate competitors in formula semi-contact competitions is significantly shorter than for those in formula full-contact competitions, owing to the less severe nature of the injuries sustained [52]. Consequently, while it may appear that the risk of injury is higher in full contact than in semi contact, this does not equate to acceptable contact [53]. Instead, it is contingent on the physical and mental skills and experience of the competing karatekas [54]. It is therefore vital to prioritize the safety of the competing karatekas when evaluating the efficacy of these systems. Yet, the unavoidability of injuries can be attributed to factors such as mismatch or incorrect tactical actions, as well as variations in the participants' levels of psychophysical disposition [55].

In addition, reports from 2024 indicate that the probability of injury during karate combat can be radically minimized through the utilization of virtual reality (VR) technology [56, 57]. The manner in which VR karate confrontations are conducted entails the simulation of karatekas' combat manoeuvres in VR apparatus on separate mats, with all techniques rendered on the screen as in the view of a classic video game from the brawling group [58]. In this scenario, the resultant injuries may be attributable to the execution of inadequate techniques by the individual, rather than the result of blows (and in this case, the name of the so-called karate techniques is not that important, because it is about the life and health of a person who, with the best of intentions, had agreed to a sports confrontation within this form of hand-to-hand combat) accumulated in specific, more or less vulnerable parts of the body (and not in some kind of jargonised scoring zone) [59]. This approach (our original view articulated above) stands in stark contrast to the actual requirements for karate athletes, who compete in the sport without such technological assistance [60]. This discrepancy prompts a critical examination of the future direction of karate as a sport.

### **Limitations of the study**

This qualitative article is limited to analyses of the men's *kumite* competition from the 2024 season, as well as four WKF Karate 1 Premier League galas and eight KC

galas. The derived types are as follows: SC1, SC2, SC3, FC1, FC2, and FC3. This constitutes the first attempt to evaluate the so-called tactical-technical actions (and we stick to this order, although it is not excluded that even among karate athletes there are those who will often strike before thinking) in a broader interpretation of hand-to-hand combat based mainly on mutual limb strikes. Every form of martial arts training can be used in non-sporting confrontations, for self-defence, but unfortunately also for purposes contrary to the philosophy and ethics of karate, to other systems, not only those included in the term 'budo', and also to the basic legal system.

#### **Directions of further research and practical recommendations**

It is recommended that the work initiated is continued as far as possible beyond league games. The types SC1, SC2, SC3, FC1, FC2, and FC3 should be constantly revised and expanded with new criteria on the verge of motor efficiency and respect for social norms of interpersonal relationships. And this is the basic premise for the possibility of including new types of hand-to-hand combat (both positive and negative) that may significantly broaden the scope of knowledge in the field of shaping pro-social attitudes through combat sports, especially in the discipline of karate.

The results obtained should be used in the processes of karatekas' preparation for kumite competition in the semi-contact and full-contact systems. The transfer of the present knowledge may contribute to a greater understanding of the essence of these sports confrontations in karate and influence a more comprehensive tactical and technical preparation of karatekas.

#### **5. Conclusions**

The present classification of karate athletes competing in kumite is based on a novel tripartite approach, distinguishing between three types of competition in WKF and three types in KC. The present line of research, grounded in analyses of tactical actions in karate sports competitions, remains open to expansion and modification.

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