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FIGHT ZONE WITH POINTS OF THE SHOTOKAN KARATE FEMALE COMPETITION

Nelson Kautzner Marques Junior[1]

ABSTRACT

The objective of the study was to determine the fight zone with point during the female kumite of competition. This study used a quantitative research for identify the fight zone with point (ippon or waza-ari) or not during the female kumite of competition. Were selected on the Internet several championship of kumite of the JKA and of the ITKF. The study detected a high probability of point in the zone 7 and in the zone 2. The study determined that the most points at the corner occurred when the karateka practiced the attack in fight zone. Kruskal-Wallis ANOVA verified significant difference between the fight zone with points, H (10) = 29,49, p = 0,001. The Mann Whitney U test detected significant difference between the zone 5 with waza-ari versus all the zone. The greatest number of points in the fight zone was in agreement with the size of the fight zone. The central zone or zone 5 has 6x6 m, during the female kumite occurred more points, total of 68 waza-aris and 5 ippons. The study on the fight zone with points of the female kumite permits that the karateka has knowledge about the combat zones and guides the karateka before, during and after the female kumite. However, more studies should be done to confirm these findings.

Key words: Sport, Martial Arts, Athletic Training.

RESUMO

Zona da luta com pontos do karatê shotokan de competição feminino

O objetivo do estudo foi determinar a zona da luta com ponto durante o kumite feminino de competição. Este estudo utilizou uma pesquisa quantitativa para identificar a zona da luta com ponto (ippon ou waza-ari) ou não, durante o kumite feminino de competição. Foram selecionados na internet vários campeonatos de kumite da JKA e da ITKF. O estudo detectou alta probabilidade de ponto na zona 7 e na zona 2. O estudo determinou que a maioria dos pontos no corner foi realizado quando o karateca praticou o ataque na zona da luta. ANOVA de Kruskal-Wallis verificou diferença significativa entre a zona da luta com pontos, H (10) = 29,49, p = 0,001. O teste U de Mann Whitney detectou diferença significativa entre a zona 5 com waza-ari versus todas as zonas. O maior número de pontos na zona da luta esteve de acordo com o tamanho da zona de combate. A zona central ou zona 5 tem 6x6 m, durante o kumite feminino ocorreu mais pontos, um total de 69 waza-aris e 5 ippons. O estudo sobre a zona da luta com pontos do kumite feminino permite que o karateca tenha um conhecimento sobre as zonas da luta e oriente o karateca antes, durante e depois do kumite feminino. Entretanto, mais estudos devem ser realizados para confirmar estes resultados.

Palavras-chave: Esporte, Artes Marciais, Desempenho Atlético.

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INTRODUCTION

The analysis of the sports with high tactical component began in the United States in 1931 (Matias and Greco, 2009).

Messermith and Corey determined the distance covered by basketball athletes. In 50 years, socialist countries – Hungary, Soviet Union and Czechoslovakia, began in investigate during the soccer match with scout the positives and negatives of the adversary (Marques Junior, 2012).

The analysis of the sports with high tactical component is important for the coach elaborates the training and orients the athletes (Afonso and Mesquita, 2011; Garganta, 2001).

The analysis of the sports can be measured by quantity of points of an action, competition zones that occur more points and others performance indicators that determines the winners and losers (Mesquita and collaborators, 2013; Vilar and collaborators, 2012).

This analysis of the sport allows the coach in the elaboration of the strategy and of the tactics before and during the competition (Baranda and Lopez-Riquelme, 2012; Garganta, 2009).

Combat sports has high tactical component (Franchini and Del Vecchio, 2011), the study of the fight is important for the coach because it is possible of identify the reasons for the winning and losing in a fight (Davis and collaborators, 2013).

The analysis of the fight, punch, kick and others actions, allows the coach of structure and prescribe the training for the fighter of according the actions of the fight (Del Vecchio, Hirata and Franchini, 2011).

This analysis of the fight orients the coach during the training that occurs during the fight – physical, technical and tactical (Del Vecchio and Franchini, 2013) and enables the understanding of the coach on determined occurrences of attack and of defense during and after of the fight (Nesic and collaborators, 2012).

Shotokan karate during the kumite (kumite is fight in Japanese) of competition occurs in a zone of 8x8 meters (m) with a time of fight of 1 minute and 30 seconds to 2 minutes. The literature of the shotokan karate detected that in the fight of competition the points are results of punches and kicks (ippon or waza-ari) (Sertic and collaborators, 2012). The punches of the kumite with more points are the gyaku zuki (reverse punch), the kizami zuki (thrust punch) and the oi zuki (lunge punch) (Marques Junior, 2012a).

The kicks with more points in karate fight are the mae geri (front kick) and the mawashi geri (roundhouse kick). The karateka in the fight practices tactical action with objective of study the opponent for perform the attack, in this action the aerobic metabolism predominates (Marques Junior, 2012b).

The karateka practices the attack action in the fight in few seconds with use of the rapid strength and of the anaerobic metabolism (Chaabène and collaborators, 2012).

The offensive techniques during the kumite are with light contact on the trunk of the karateka (Doria and collaborators, 2009).

After of the offensive technique of a karateka, the referee stops fight and determines the point attack or if there is no score in the attack (Iide and collaborators, 2008).

The point of the shotokan karate has the following characteristic: ippon is a perfect attack that is equals the one point, the fight ends. Waza-ari is an efficient attack that is equals the half point, a second waza-ari is an ippon, the fight ends.

Research on competition zone of the sports with high tactical is much studied. In beach volleyball, male players practiced more spike in the zone 2, in the left side of the net (Chinchilla-Mira and collaborators, 2012).

The study about the male indoor soccer determined that in the central zone near of the goal occurred more goals (Vilhena Silva and collaborators, 2005).

In the first division of the Spanish men`s basketball the highest number of points occurred near of the basket, in the paint – left paint with 68,7% of points and right paint with 59% of points (Camerino and collaborators, 2009).

In Spanish professional soccer occurred more kicks and consequently more goals in the penalty area and in the goal area because is near of the goal (Gómez and collaborators, 2012).

In football, the corner kicks in the World Cup 2002, during the first time the zone of the area with more corner kicks was the goal area (Borrás and Baranda, 2005).

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The study about Spanish men`s handball league ASOBAL determined that the pivot practiced more shots from 6 meters (m) of distance of the goal – 2147 shots from 6 m, 201 shots from 9 m and 51 shots from 7 m (Oscar and Pascual, 2011).

Therefore, the study about the competition zone is interesting for the coach knows the attack and the defense of a sport, this permits better prepare the strategy and the tactical for the athlete during the competition (Camerino and collaborators, 2012; Yamada and collaborators, 2011). Then, a study about the fight zone of the shotokan karate competition with point (ippon or waza-ari) is relevant for this sport.

However, the literature of the shotokan karate has few studies about the fight zone with point during the male kumite (Ajamil and collaborators, 2011; Koropavanovski and Jovanovic, 2007; Marques Junior, 2013) and not published research about the fight zone with point during the female kumite. Then, a study about the fight zone with point during the female kumite is important.

The objective of the study was to determine the fight zone with point during the female kumite of competition.

MATERIALS AND METHODS

This study used a quantitative research (Thomas and Nelson, 2002) for identify the fight zone with point (ippon or waza-ari) or not during the female kumite of competition. Several championships of kumite of the JKA (Japan Karate Association) and of the ITKF (International Traditional Karate Federation) were selected in the Internet. The key words used to select the fighting were as follows: JKA female kumite, ITKF women`s kumite, JKA World Championship – female kumite, kumite feminino no campeonato brasileiro tradicional and kumite feminino tradicional.

The data were collected by researcher of the Compaq® notebook, model Presario CQ43-325BR. In notebook, the researcher used a scout adapted from Oslin, Mitchell and Griffin (1998) to annotate in the fight zone of the attack with point (waza-ari or ippon) or not. When the researcher had doubt of the point or not in fight zone, he saw the attack again and wrote in the scout. The kumite of competition occurs in a zone of 8x8 m, for more accuracy to annotate in the scout the researcher determined that the central zone has 6x6 m (zone 5).

The lateral zone was divided with the following sizes: zone 2, zone 4, zone 6 and zone 8 have a length of 6 m by 1 m of wide. While that the zone 1, zone 3, zone 7 and zone 9 have 1x1 m. At its original size, the scout measure 18x18 cm. The lateral zone was divided with the following sizes: zone 2, zone 4, zone 6 and zone 8 have a length of 15 cm by 1.5 cm of wide. While that the zone 1, zone 3, zone 7 and zone 9 have 1.5x1.5 cm. The scout is presented for the reader in figure 1.

Championship: …… Fight: ……..

1	4	7
2	**5** **aka** **shiro** red belt white belt **central zone**	8

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3	6	9

Figure 1 - Scout of the fight zone.

Table 1 - Fights of the female kumite.

Championship	Fight	Quantity of Fight
JKA World Cup of **1990** (individual)	Country x Japan (quarterfinals) Country x Japan (semifinal) Country x Japan (semifinal) Country x Japan (final)	4
ITKF World Championship of **1998** (individual)	Japan x Italy (final)	1
JKA Canadian Championship of **2004** (individual)	Canada x Canada (classification)	5
JKA Canadian Championship of **2005** (individual)	Canada x Canada (classification)	4
JKA Japan Cup of **2006** (team)	Japan x Japan (final)	3
ITKF Brazilian Championship of **2008** (individual)	Paraná x Mato Grosso (semifinal)	1
JKA Japanese Championship of **2009** (individual)	Japan x Japan (final)	1
JKA American Championship of **2009** (individual)	United States x United States (semifinal) United States x United States (final)	2
JKA American Championship of **2009** (team)	United States x United States (final)	3
ITKF Paraná Cup of **2009** (individual)	Paraná x Paraná (classification)	1
ITKF Baiano Championship of **2009** (individual)	Bahia x Bahia (classification)	1
ITKF Paranaense Championship of **2009** (individual)	Paraná x Paraná (classification)	1
JKA Japanese Championship of **2010** (individual)	Japan x Japan (final)	1
JKA Japan Cup of **2010** (individual)	Japan x Japan (classification) Japan x Japan (semifinal)	2
JKA World Championship of **2011** (team)	England x Thailand Japan x Germany Great Britain x Japan (final)	9
JKA Japanese Championship of **2011** (individual)	Japan x Japan (semifinal) Japan x Japan (final)	2
JKA Thai Championship of **2011** (individual)	Thailand x Thailand (classification)	1
JKA European Championship of **2012** (team)	Russia x Serbia (final)	3
ITKF World Championship of **2012** (individual)	Argentina x Country (classification)	1
ITKF Paulista Championship of **2012** (individual)	Brazil x Brazil (final)	1

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JKA Japan Cup of **2013** (individual)	Japan x Japan (semifinal) Japan x Japan (semifinal) Japan x Japan (final)	3
Total of **21** championships	-	Total of **50** fights

To test the reliability, a second observation and annotation in the fight zone of the attack with point or not occurred after of 15 day by the same researcher (Mesquita and Teixeira, 2004).

After of quantifying the data, they were applied in the following equation: Number of Agreements = [number of agreements: (number of agreements + number of disagreements)]. 100 = ?% of agreements. Cohens`s Kappa was applied with the objective of verify the intra-observer reliability ($p \leq 0.05$) (Castro and Mesquita, 2008) and was calculated according to the procedures of the SPSS 14.0 for Windows.

The fighting used in the study is shown in table 1.

Results are expressed as means ± standard deviations of the championship, percentage and total. The normality of the data was assessed by the Shapiro Wilk test ($p \leq 0.05$) and was observed the normality of the data through of the histogram. In case of data normal, the difference between the fight zones with points of the championship kumite were analyzed using an One-Way ANOVA with results accepted a level of significance of $p \leq 0.05$. Where a significant difference was found, a Scheffe post hoc test was used with results accepted a level of significance of $p \leq 0.05$. When the results have significant difference the research calculated the effect size (ES) in accordance with Dancey and Reidy (2006) (ES = [Mean – Mean]: Mean of the Standard Deviation) to the following classification: equal or greater than 0.8 is great, 0.5 to 0.7 is medium and 0,4 or less is small.

In case of data not normal, the difference between the fight zones with points of the championship kumite was analyzed using a Kruskal-Wallis ANOVA H test with results accepted a level of significance of $p \leq 0,05$. Where a significant difference was found, the Mann-Whitney U test was used as post hoc with results accepted a level of significance of $p \leq 0.05$. When the results have significant difference the research calculated the ES in accordance with Dancey and Reidy (2006) (ES = [Mean – Mean]: Mean of the Standard Deviation) to the following classification: equal or greater than 0.8 is great, 0.5 to 0.7 is medium and 0.4 or less is small. Some data (means ± standard deviations, One-Way ANOVA and Scheffe post hoc or Kruskal-Wallis ANOVA H test and Mann-Whitney U test) were calculated according to the procedures of the GraphPad Prism, version 5.0, Shapiro Wilk test, means±standard deviations and the histogram was presented by SPSS 14.0 for Windows.

The graph of the figure 2, 3, 6 and 7 were executed in accordance with the procedures of the Excel® 2010.

Based in Weinberg and Goldberg (1990), was calculated the probability of points in the fight zone of the shotokan karate male competition with the following equation: Probability of Point = [number of points (ippon or waza-ari) in the fight zone: total of attack in the fight zone]. 100 = ?%.

RESULTS and DISCUSSION

The reliability of the observation determined a percentage of agreements of 95.41% for waza-ari, 50% for the ippon and 97.19% for the attack without point. The results obtained are above of the limit stipulated because Mesquita and Teixeira (2004b) informed that a good reliability has values equal or greater than 80%. The results less than 80% are of a poor reliability.

Then, the author conducted new data collection of the ippon and after of 15 days the author practiced a second data collection of the ippon. The reliability of the observation determined a percentage of agreements of 100% for ippon. Intra-observer reliability exhibited Cohen`s Kappa values of 0.95 ($p \leq 0.05$), the minimum of 0.75 of agreement that is appointed by the literature (Afonso and collaborators, 2010).

The table 2 presents the descriptive statistics of the fight zone.

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Table 2 - Fight zone with point or not during the female kumite.

Zone	M±SD	Percentage	Total
1	1 of waza-ari	1% of waza-ari	waza-ari = 1
	3 ± 3.36 of attack without point	1% of attack without point	attack without point = 12
2	1.62 ± 0.51 of waza-ari	11% of waza-ari	waza-ari = 12
	1 of ippon	37% of ippon	ippon = 3
	7.11 ± 5.41 of attack without point	7% of attack without point	attack without point = 64
3	1 of waza-ari	2% of waza-ari	waza-ari = 2
	4.75 ± 2.36 of attack without point	2% of attack without point	attack without point = 19
4	1.4 ± 0.54 of waza-ari	6% of waza-ari	waza-ari = 7
	9 ± 11.43 of attack without point	8% of attack without point	attack without point = 72
5	4 ± 2.55 of waza-ari	65% of waza-ari	waza-ari = 68
	1 of ippon	63% of ippon	ippon = 5
	26.71 ± 22 of attack without point	65% of attack without point	attack without point = 561
6	1 of waza-ari	4% of waza-ari	waza-ari = 4
	3.5 ± 3.16 of attack without point	4% of attack without point	attack without point = 32
7	2 of waza-ari	4% of waza-ari	waza-ari = 4
	5.4 ± 4.77 of attack without point	3% of attack without point	attack without point = 27
8	1 of waza-ari	5% of waza-ari	waza-ari = 5
	5.18 ± 5.17 of attack without point	7% of attack without point	attack without point = 57
9	2 of waza-ari	2% of waza-ari	waza-ari = 2
	3.28 ± 2.13 of attack without point	3% of attack without point	attack without point = 23

The study detected a high probability of point in the zone 7 (probability of point: 18.51%, local: corner and point: waza-ari) and in the zone 2 (probability of point: 17.18%, local: lateral and point: waza-ari). In the second place, the probability of point was ranked the zone 6 (probability of point: 12.5%, local: lateral and point: waza-ari), the zone 5 (probability of point: 12.12%, local: central and point: waza-ari) and the zone 3 (probability of point: 10.52%, local: corner and point: waza-ari). The fight zone with high probability of point was composed by two corners (zone 7 and zone 3), two lateral zones (zone 2 and zone 6) and the central zone (zone 5), the greatest fight zone. The results of this study were similar to the research about probability of point of the fight zone during the shotokan karate male competition (Marques Junior, 2013). The figure 2 illustrates the probability of point during the female kumite.

The figure 3 illustrates the probability of points in the fight zones for reader to understand better.

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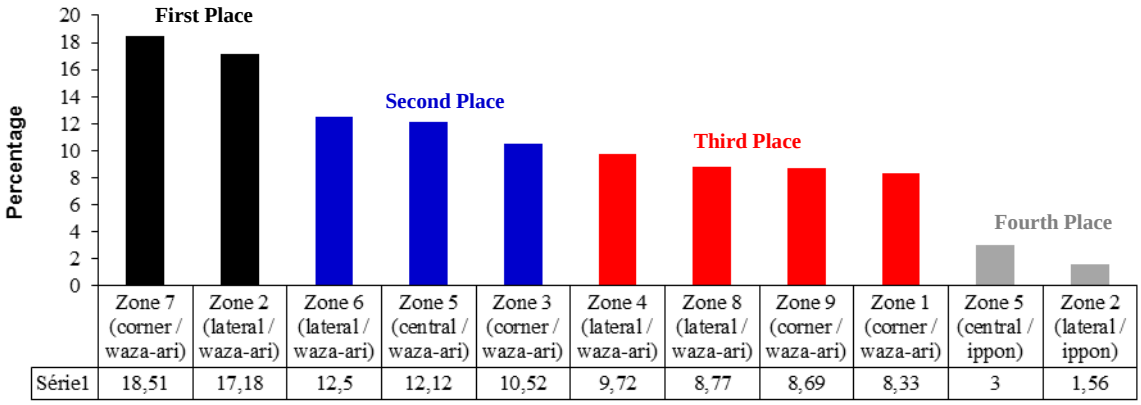
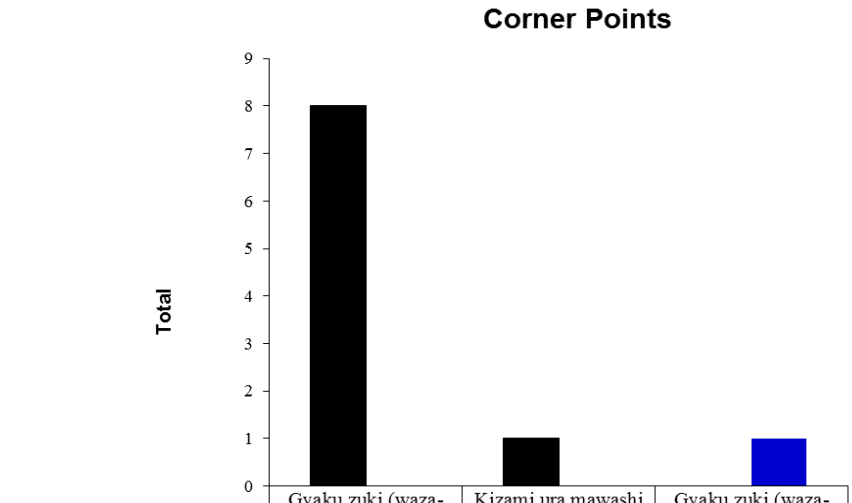


	Zone 7 (corner / waza-ari)	Zone 2 (lateral / waza-ari)	Zone 6 (lateral / waza-ari)	Zone 5 (central / waza-ari)	Zone 3 (corner / waza-ari)	Zone 4 (lateral / waza-ari)	Zone 8 (lateral / waza-ari)	Zone 9 (corner / waza-ari)	Zone 1 (corner / waza-ari)	Zone 5 (central / ippon)	Zone 2 (lateral / ippon)
Série1	18,51	17,18	12,5	12,12	10,52	9,72	8,77	8,69	8,33	3	1,56

Figure 2 - Probability of point of each zone.

1 8.33% w	**4 9.72% w**	**7 18.51% w**
2 **17.18% w** **1.56% i**	**5** **12.12% waza-ari (w)** **3% Ippon (i)**	**8** **8.77% w**
3 10.52% w	**6 12.5% w**	**9 8.69% w**

Figure 3 - Probability of points in the fight zones (Key: **w** = waza ari and **i** = ippon).



	Gyaku zuki (waza-ari)	Kizami ura mawashi geri (waza-ari)	Gyaku zuki (waza-ari)
■ Karateka in the Fight Zone	8	1	
■ Karateka near of the Security Zone			1

Figure 4 - Attack technique and type of point during the shiai kumite (fight competition) in the corner.

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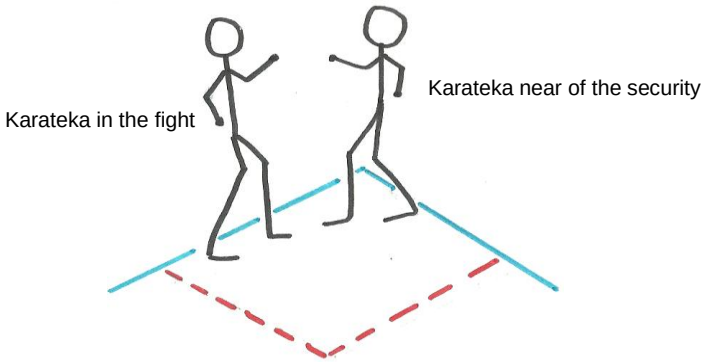

Figure 5 - Karatekas in the corner (zone 1, 3, 7 and 9).

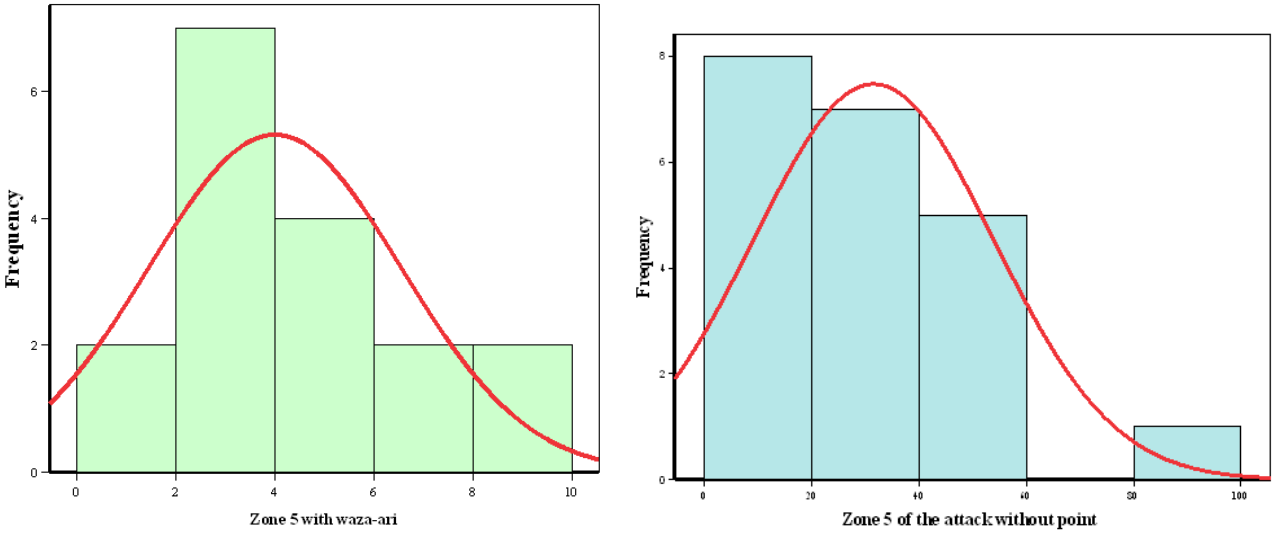

Figure 6 - Zone 5 with waza-ari and zone 5of the attack without point.

The zone 1, 3, 7 and 9 have 1x1 meters in the original fight zone, is the smallest combat zone. However, the zone 1, 3, 7 and 9 are located in the corner of the combat zone, with high probability of point. The study determined that the most points at the corner occurred when the karateka practiced the attack in fight zone. The figure 4 illustrates the total of corner points during the female kumite.

The figure 5 illustrates the exact location when the karateka is in fight zone and near of the security zone.

Franchini and Del Vecchio (2011) informed that combat sports the tactics is important during the fight. Therefore, the results about the corner (zone 1, 3, 7 and 9) points is important for the coach orients the athletes during the shiai kumite (fight of competition) because when the karateka is in the corner, located in the fight zone, the chances of the fighter perform a point is high. But when the karateka is in the corner, located in the near of the security zone, the fighter has more risk of receiving an opponent`s attack, and can result in a point.

Shapiro Wilk test determined data not normal. The histogram shows the data not normal of some zones in figure 6.

Kruskal-Wallis ANOVA verified significant difference between the fight zone with points, H (10) = 29.49, p = 0.001.

The Mann Whitney U test detected significant difference between the zone 5 with waza-ari versus all the zone, the results were the as follows: zone 5 with waza-ari x zone 1 with waza-ari, U = 1, p = 0.01, effect size = 2.36 great; zone 5 with waza-ari x zone 2 with waza-ari, U = 23, p = 0.007, effect size = 1.55

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great; zone 5 with waza-ari x zone 3 with waza-ari, U = 2, p = 0.01, effect size = 2.36 great; zone 5 with waza-ari x zone 4 with waza-ari, U = 11, p = 0.01, effect size = 2.04 great; zone 5 with waza-ari x zone 6 with waza-ari, U = 3, p = 0.005, effect size = 2.36 great; zone 5 with waza-ari x zone 7 with waza-ari, U = 8, p = 0.06, effect size = 1.57 great; zone 5 with waza-ari x zone 8 with waza-ari, U = 3, p = 0.005, effect size = 2.36 great; zone 5 with waza-ari x zone 9 with waza-ari, U = 3.5, p = 0.01, effect size = 1.57 great; zone 5 with waza-ari x zone 2 with ippon, U = 3, p = 0.006, effect size = 2.36 great and zone 5 with waza-ari x zone 5 with ippon, U = 3, p = 0.005, effect size = 2.36 great. The others comparisons Mann Whitney U test detected no significant difference (p>0.05).

The figure 7 illustrates the mean and the standard deviations of the fight zone with points of the female kumite.

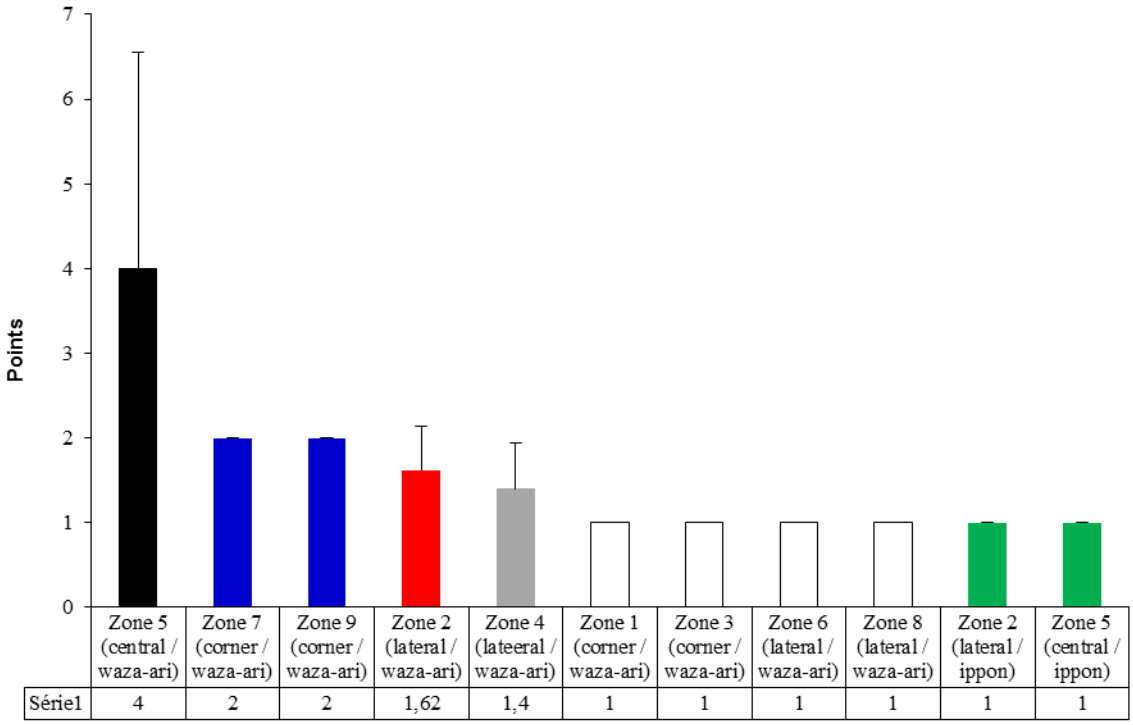

Figure 7 - Fight zone with the mean of points during the female kumite.

Zone 5 with waza-ari was the fight zone with more points during the female kumite (4 ± 2.55 of waza-ari). The result of the mean was similar to the study about the fight zone with points of the male kumite (4.09 ± 4.41 of waza-ari) (Marques Junior, 2013).

Zone 5 or central zone occur more points and lateral zone occur less points. This result was identical to of Koropavanovski and Jovanovic (2007), Ajamil and collaborators (2011) also found more points in the central zone.

What is the reason to occur more points in zone 5 or central zone?

The zone 5 or the central zone occur more points because 80% of the karate fights ending in less than 50 hundredths and 20% of the karate fight ending between 50 hundredths to 1 second and 30 hundredths (Bessa, 2009).

The karate fight has a short duration and the zone 5 is the area where the fight starts, therefore this is a cause of more points in zone 5. In the lateral zones occurs less point due to the short duration of the fight (Sterkowicz-Przybycien, 2010) and the smaller size of these zones (Nakayma, 2012).

The second highest average of points occurred in the corner, in the zone 7 (2 of

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waza-ari) and 9 (2 of waza-ari). Because occur many points in the corner?

The corner has 1x1 m, a small space for karateka defend the opponent`s attack or practices other action of defense, for example, anticipate the opponent`s attack (Marques Junior, 2013).

The study evidenced that the fight zone with points occurred more waza-ari than ippon. The female kumite practiced 93% of waza-ari (total of 105 waza-aris) and 7% of ippon (total of 8 ippons). The greatest number of points in the fight zone was in agreement with the size of the fight zone. The central zone or zone 5 has 6x6 m, during the female kumite occurred more points, total of 68 waza-aris and 5 ippons. The lateral zone (zone 2, 4, 6 and 8) length of 6 m by 1 m of wide is the second major fight zone and was second in the score – total of 28 waza-aris and total of 3 ippons. While that the corner (zone 1, 3, 7 and 9) has 1x1 m had the lowest score, total of 9 waza-aris.

The figure 8 illustrates the total and the percentage of the points of each zone.

The study had a limitation. The author detected that the fight zones 1 to 9 were not written on the ground of EVA, complicating the task of the research to determine the zone with point or not.

Therefore, the knowledge about the zone of the points allows that the coach elaborate the strategy and the tactical of the female karateka.

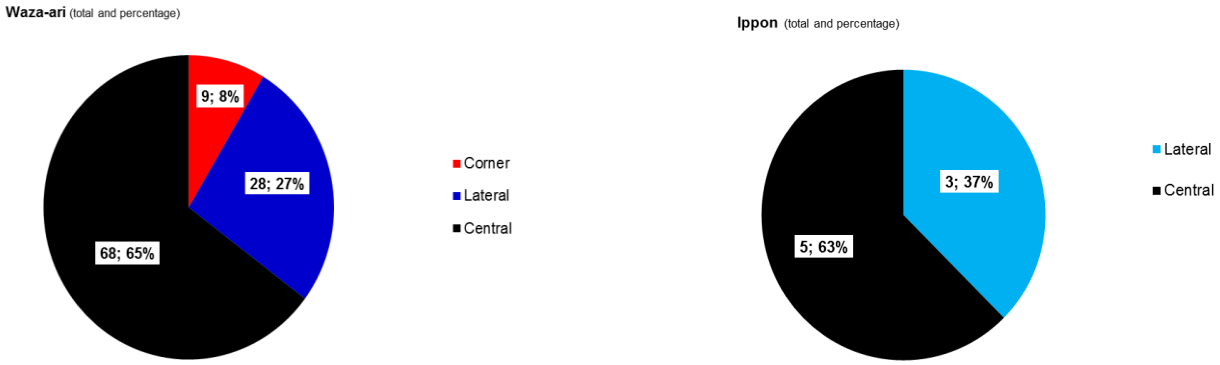

Figure 8 - Waza-ari and ippon of each fight zone.

CONCLUSION

The study on the fight zone with points of the female kumite permits that the karateka has knowledge about the combat zones and guides the karateka before, during and after the female kumite.

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