

**SPIKE AND BLOCK REACH OF THE MASTER VOLLEYBALL DURING THE MATCH ACCORDING TO THE CLASSIFICATION**Nelson Kautzner Marques Junior<sup>1</sup>**ABSTRACT**

The attack is the most important skill for the volleyball team gets the win and the block is the second most important volleyball skill. The objective of the study was to determine the spike and the block reach of the master volleyball according to the classification. The study was composed by 15 matches of the male master volleyball of the category 35 years or more. The data were collected with the camera in a gymnasium. After of the data collect, the researcher practiced physical performance (spike and block reach) analysis with the Kinovea® software. The volleyball team 3rd to last place had during the match a spike and block reach lower than the 1st and 2nd place, but the study did not identify statistical difference of this comparison. The team 3rd to last place had during each set a spike and block reach lower than the 1st and 2nd place. The significance p and the new statistic detected statistical difference of each set of the spike reach in five comparisons and of the block reach in two comparisons. In conclusion, the best reach of the spike and of the block is a motive of the better performance of the volleyball team 1st and 2nd place.

**Key words:** Sport. Athletic Training. Scout. Volleyball.

**RESUMO**

Alcance do ataque e do bloqueio do voleibol master durante o jogo de acordo com a classificação

O ataque é o mais importante fundamento para a equipe de voleibol obter a vitória e o bloqueio é o segundo fundamento mais importante do voleibol. O objetivo do estudo foi de determinar o alcance do ataque e do bloqueio do voleibol master de acordo com a classificação. O estudo foi composto por 15 jogos do voleibol master da categoria 35 anos ou mais. Os dados foram coletados com a câmera em um ginásio. Depois da coleta de dados, o pesquisador praticou a análise do desempenho físico (alcance do ataque e do bloqueio) com o software Kinovea®. A equipe de voleibol 3º a último lugar teve durante o jogo um alcance do ataque e do bloqueio menor do que o 1º e 2º lugar, mas o estudo não identificou diferença estatística dessas comparações. A equipe 3º a último lugar teve durante cada set um alcance do ataque e do bloqueio menor do que o 1º e 2º lugar. A significância p e a nova estatística detectaram diferença estatística de cada ser do alcance do ataque em cinco comparações e do alcance do bloqueio em duas comparações. Em conclusão, o melhor alcance do ataque e do bloqueio é um motivo da melhor performance da equipe de voleibol 1º e 2º lugar.

**Palavras-chave:** Esporte. Desempenho Atlético. Scout. Voleibol.

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**INTRODUCTION**

The volleyball has six skills for the volleyball player practices during the match (Conejero and collaborators, 2017). The serve starts the match or has the objective of practice a point or of difficult the reception (Denardi and collaborators, 2017).

The reception and the set are the skills with the objective of construction and offensive development (Marques Junior and Arruda, 2017). The defense has the objective of avoid the point and start the counterattack (Palao and Ibarra, 2015).

The attack is the most important skill for the volleyball team gets the win (Costa and collaborators, 2017; Eom and Schutz, 1992; Peiró and collaborators, 2016) because this skill the volleyball player practices more points during the match (Cieminski, 2017).

The attack is the skill more correlated with the victory, has a correlation of 0.93 to 0.97 (Marques Junior, 2015). Then, volleyball literature practiced very studies about the volleyball attack because this skill is most important for the performance of the volleyball team (Castro and collaborators, 2017; Pinto, Vale and João, 2016; Zahálka and collaborators, 2017).

The block is the second most important volleyball skill because the volleyball team practices a point or difficult the opponent's attack (Marques Junior, 2013). The block has a correlation with the victory of 0,74 to 0,94 (Lobiatti, 2009; Marques Junior, 2015). The block is a skill difficult to execute because the player needs of practice the block after the attack with the objective of perform a good action (Silva and collaborators, 2017).

The block reach and the spike reach are an important anthropometric component of the volleyball player during the match (Wnorowski and Cieminski, 2016). Then, a high block reach and a high spike reach are important for the physical performance of the volleyball team (Marques Junior, 2015b). However, master volleyball practices only a study about the block reach and the spike reach (Marques Junior, 2017).

What is block reach and the spike reach of the male master volleyball of the category 35 years or more according to the classification?

The volleyball literature did not have information about these results (Alcaraz,

Ortega and Palao, 2016; Marques Junior, 2017b; Sayavera and collaborators, 2017).

The objective of the study was to determine the spike and the block reach of the master volleyball according to the classification.

**MATERIALS AND METHODS**

The first and second of the Carioca Championship of 2016 (n = 2 matches) and of 2017 (n = 2 matches) had 4 matches – total of 8 sets. The 3th to last place of the Carioca Championship of 2016 (n = 7 matches) and of 2017 (n = 4 matches) had 11 matches – total of 26 sets. The first and second of the Carioca Championship of 2016 and 2017 were the champion and the second place of the Brazilian championship of 2016 and 2017.

The master volleyball is practiced with two sets of 25 points or two points of difference for the winner. When each team wins one set, the tie break (3rd set) is practiced with a set of 15 points or two points of difference for the winner.

The temperature of the match was determined with thermometer few seconds after of starting the game. The temperature of the matches was of 18 to 33°C and the matches were practiced during the winter, the autumn and the spring.

The matches of the master volleyball were filmed with the camera Sony® handycam, model DCR-SX20 on the tripod Mirage®. The data were collected with the camera in a gymnasium, at a distance of 2 meters (m) and a height of 2 m. All the matches were filmed in the Canto Rio gymnasium, club in Niterói, Rio de Janeiro, Brazil. The researcher positioned back of the court for filmed the match. Then, only a master volleyball team was analyzed with the Kinovea® software.

The researcher collected the match time of the timer digital of the camera and this was equal to the study of Turpin and collaborators (2017). Some match times had duration in min and in seconds. Then the author converted the time in seconds for minutes - seconds divided by 60. The mean and standard deviation of the match time (n = 15 matches) of the male master volleyball of the category 35 years or more was of 43.60 ± 8.62 minutes. The minimum match time was of

23.21 minutes and the maximum match time was of 56.21 minutes.

The researcher practiced the physical performance (spike reach and block reach) analysis with the Kinovea® software at a distance of 1 m from the Philips 42 LCD television with the Compaq Presario CQ43 notebook. The use of the Kinovea® software

was with the explanations of Marques Junior (2016) and the standardized for collect the data of the matches about the physical performance of the skills (spike reach and block reach) was with the norms of Marques Junior (2017). The scout used during the study had the size of an A4 sheet. The figure 1 illustrates the scout.

Match: ..... Analysis time: .....

Position	Physical Performance
Middle Blocker	
Outside Hitter/Serve Receive	
Opposite Hitter	
Setter	

**Figure 1** - Scout of the study.

The analysis time with the Kinovea® software was as follows: 1st set with 50 minutes to 6 hours and 39 minutes, 2nd set with 56 minutes to 3 hours and 31 minutes and 3rd set with 31 minutes to 3 hours and 32 minutes.

The results were expressed as mean and standard deviation, minimum and maximum, confidence interval of 95%. The effect size (ES) of Hedges and Olkin (1985) was calculated in the Excel®. The classification of the ES was based in Cano-Corres, Sánchez-Álvarez and Fuentes-Arderiu (2012), the classification was as follows: 0.20 or less is very small the effect, 0.21 to 0.49 is small the effect, 0.50 to 0.79 is medium the effect and 0.80 or more is great the effect.

The researcher verified the spike reach and the block reach of the volleyball team 1st and 2nd place versus 3rd to last place. Then, the normality of the data was assessed by the Shapiro Wilk test ( $n = 50$ ,  $p \leq 0.05$ ) and/or with the Kolmogorov Smirnov test ( $n > 50$ ,  $p \leq 0.05$ ), but was observed the normality of the data through of the histogram.

In case of data normal, the difference between the spike reach of the match of the volleyball team 1st and 2nd place versus 3rd to last place was analyzed using independent t test. In case of data not normal, the difference between the spike reach of the match of the volleyball team 1st and 2nd place versus 3rd to last place was analyzed using Mann Whitney U test. After the calculation of the significance p, the new statistic of Cumming (2014) was

performed for the significance p to be more precise. The same analysis was performed with the block reach of the match.

The researcher verified the spike reach and the block reach of the volleyball team 1st and 2nd place versus 3rd to last place during each set. In the case of normal data, the two way Anova (2 groups x 2 sets) was used to analyze the data. The Tukey post hoc was used to identify the difference of the physical performance (block reach and the spike reach) in each set. In case of data not normal, the statistical model recommended by Rodríguez, Álvarez and Ramirez (2009) was practiced, of Wilcoxon test compared the paired data and the Mann Whitney U test compared the independent data. After the calculation of the significance p, the new statistic of Cumming (2014) was performed for the significance p to be more precise.

The study practiced analysis of two sets (1st and 2nd set) because the volleyball team 1st and 2nd place during the Carioca Championship of 2016 and of 2017 had matches with two sets.

All these statistical treatments of the significance p were performed with accepted results with significance level of  $p \leq 0.05$  and according to the procedures of the GraphPad Prism, version 5.0. The histogram and the bar graph were elaborated according to the procedures of the GraphPad Prism, version 5.0.

### RESULTS

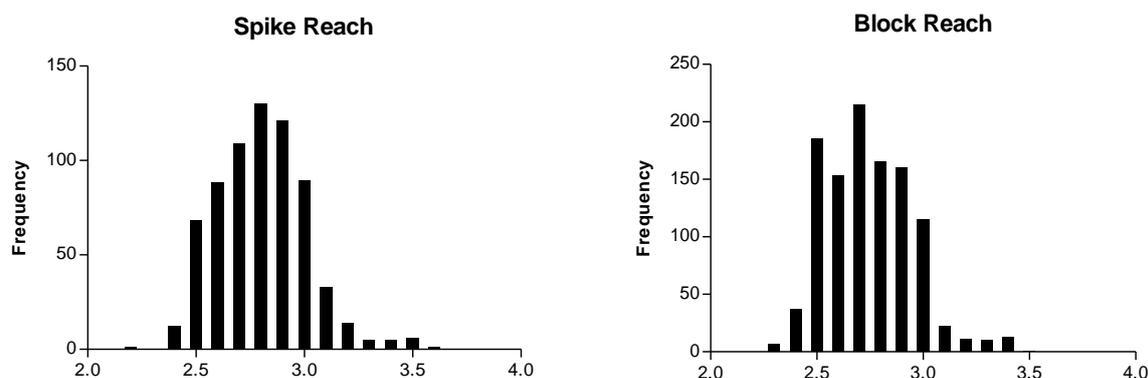
The data of the attack reach and of the block reach during the match of each volleyball team were presented in table 1.

The Kolmogorov Smirnov test detected data not normal of the spike reach and of the block reach during the match. The histogram illustrates the data not normal.

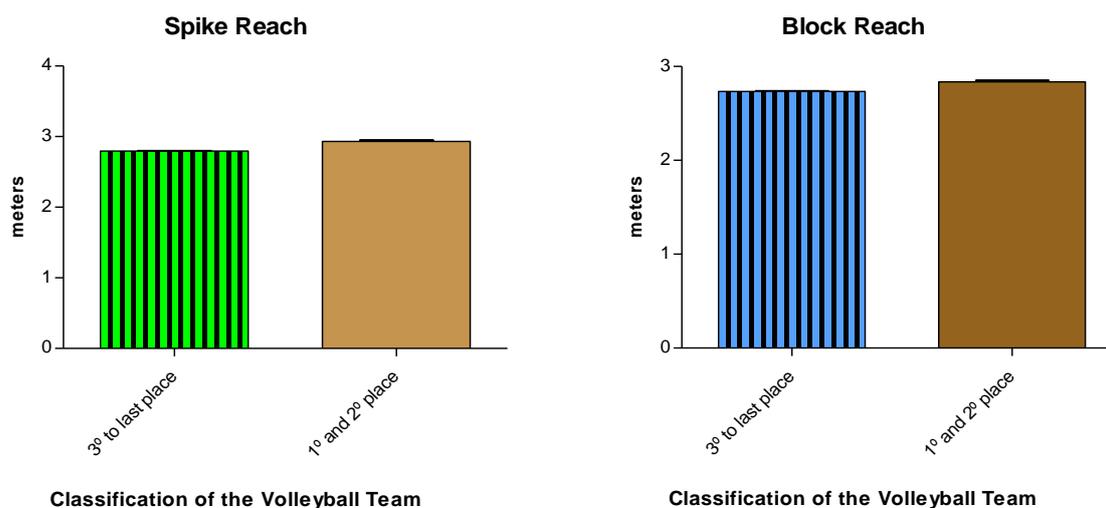
**Table 1** - Results in meters (m) of the volleyball team during the match.

Physical Performance	3 <sup>rd</sup> to last place (m)	1 <sup>st</sup> and 2 <sup>nd</sup> place (m)	ES and Classification
Spike Reach	2.79 ± 0.19 2.45 and 3.45 (min and max) 2.78 to 2.81 (IC 95%)	2.93 ± 0.24 2.44 and 3.57 2.89 to 2.96	3 <sup>rd</sup> to last place versus 1 <sup>st</sup> and 2 <sup>nd</sup> place = <b>0.14 (very small)</b>
Block Reach	2.73 ± 0.18 2.44 and 3.41 2.72 to 2.74	2.83 ± 0.24 2.44 and 3.51 2.81 to 2.86	3 <sup>rd</sup> to last place versus 1 <sup>st</sup> and 2 <sup>nd</sup> place = <b>0.10 (very small)</b>

**Legend:** Abbreviation: min and max – minimum and maximum, IC 95% – confidence interval of 95%, ES – effect size.



**Figure 2** - Histogram.



**Figure 3** - Result of the spike reach and of the block reach during the match.

Mann Whitney U test identified statistical difference of the comparison during the match between the volleyball team 1st and 2nd place versus 3rd to last place, spike reach of  $U = 34990$ ,  $p = 0.0001$  and block reach of  $U = 122700$ ,  $p = 0.0001$ . Volleyball team 1st and 2nd place had a better spike reach and block reach because the reach was higher. The figure 3 illustrates the results.

The new statistic of Cumming (2014) did not identify statistical difference of the physical performance (spike reach and block reach) because the overlap of the confidence interval of 95% was not 0,50 or less during the comparisons (Cumming and Finch, 2005; Cumming, Fidler and Vaux, 2007). Therefore,

the new statistic did not detect statistical difference between the comparisons of the physical performance (spike reach and block reach). The figure 4 shows the results.

Therefore, the statistical difference occurs when there is statistical difference in the two statistical models, significance  $p$  and the new statistic. The study detected statistical difference of the spike reach and of the block reach during the match only with the Mann Whitney U test.

The data of the spike reach of each set were presented in table 2.

The data of the block reach of each set were presented in table 3.

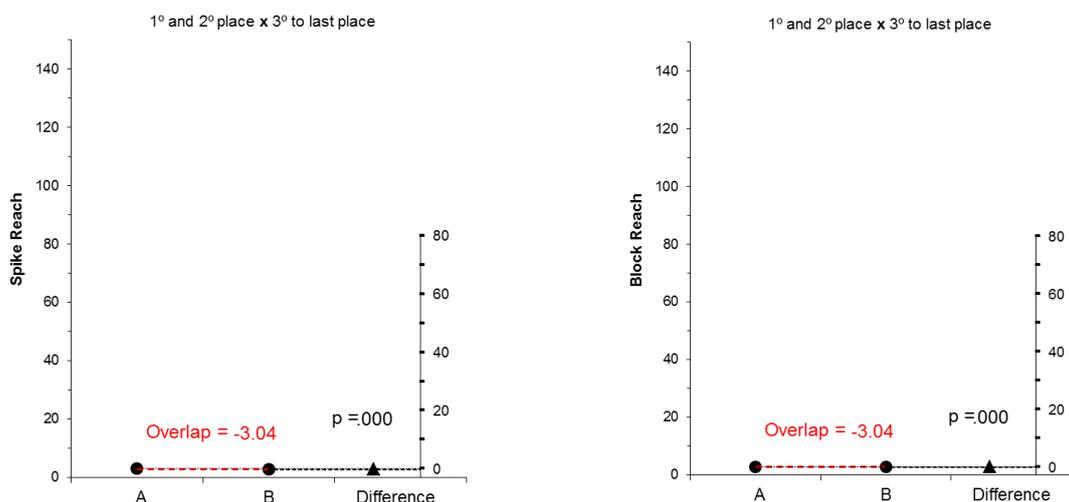


Figure 4 - Result of the new statistic during the match.

Table 2 - Results in meters (m) of the spike reach of each set.

Volleyball Team	1 <sup>st</sup> set	2 <sup>nd</sup> set
3 <sup>rd</sup> to last place (m)	2.81 ± 0.19 2.45 and 3.45 (min and max) 2.79 to 2.83 (IC 95%)	2.78 ± 0.19 2.44 and 3.43 2.75 to 2.80
1 <sup>st</sup> and 2 <sup>nd</sup> place (m)	2.88 ± 0.22 2.45 and 3.57 2.83 to 2.94	2.96 ± 0.24 2.44 and 3.49 2.91 to 3.01

Legend: Abbreviation: min and max – minimum and maximum, IC 95% – confidence interval of 95%.

Table 3 - Results in meters (m) of the block reach of each set.

Volleyball Team	1 <sup>st</sup> set	2 <sup>nd</sup> set
3 <sup>rd</sup> to last place (m)	2.75 ± 0.20 2.44 and 3.41 (min and max) 2.73 to 2.76 (IC 95%)	2.71 ± 0.17 2.44 and 3.19 2.69 to 2.72
1 <sup>st</sup> and 2 <sup>nd</sup> place (m)	2.85 ± 0.21 2.45 and 3.51 2.81 to 2.89	2.81 ± 0.24 2.44 and 3.44 2.78 to 2.84

Legend: Abbreviation: min and max – minimum and maximum, IC 95% – confidence interval of 95%.

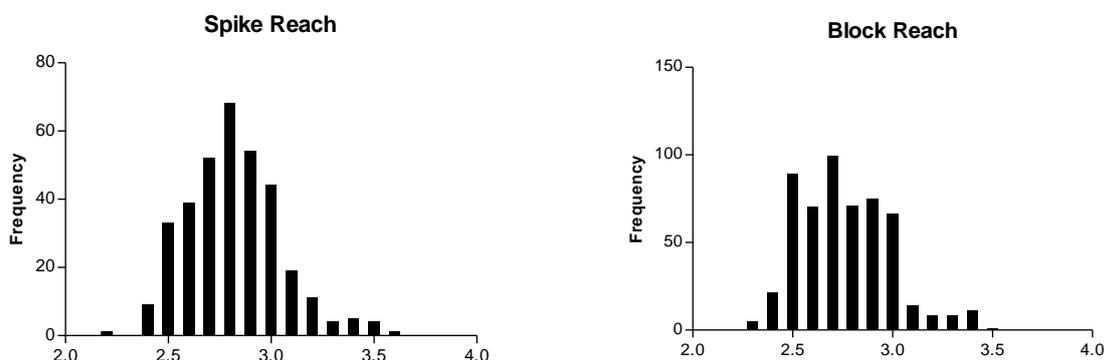


Figure 5 - Histogram.

Table 4 - Results of the comparisons of the spike reach of each set.

Comparison	Wilcoxon test	Mann Whitney U test	ES and Classification
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place	Z = 5782, p = 0,03*	-	0,03 (very small)
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	Z = -881, p = 0,004*	-	0,08 (very small)
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 8231, p = 0,01*	0,07 (very small)
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 8803, p = 0,0001*	0,15 (very small)
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 6907, p = 0,0005*	0,10 (very small)
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 7282, p = 0,0001*	0,18 (very small)

Legend: Abbreviation: p≤0.05\* (statistical difference), ES – effect size.

Table 5 - Results of the comparisons of the block reach of each set.

Comparison	Wilcoxon test	Mann Whitney U test	ES and Classification
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place	Z = 10360, p = 0,04*	-	0,04 (very small)
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	Z = 437, p = 0,50	-	0,04 (very small)
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 19650, p = 0,0001*	0,10 (very small)
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 50310, p = 0,006*	0,06 (very small)
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 14330, p = 0,0001*	0,14 (very small)
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	U = 38330, p = 0,0001*	0,10 (very small)

Legend: Abbreviation: p≤0.05\* (statistical difference), ES – effect size.

The Kolmogorov Smirnov test detected data not normal of the spike reach and of the block reach of each set. The histogram illustrates the data not normal.

The table 4 shows the results of the comparison spike reach in meters of the

volleyball team 1st and 2nd place versus 3rd to last place during each set.

The table 5 shows the results of the comparison block reach in meters of the volleyball team 1st and 2nd place versus 3rd to last place during each set.

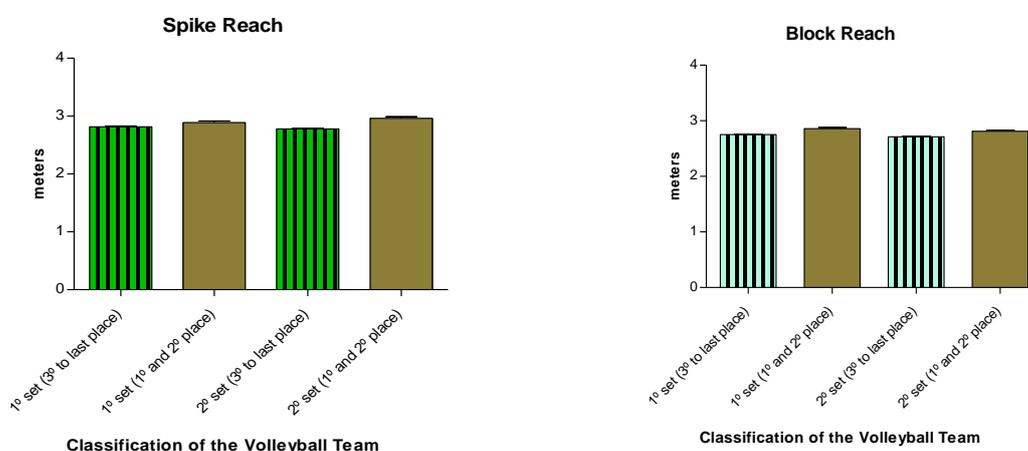


Figure 6 - Result of the spike reach and of the block reach of each set.

**Table 6 - Results of the comparisons of the spike reach of each set.**

Comparison	Paired Data	Independent Data
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place	M <sub>diff</sub> = -0,03, CI <sub>diff</sub> = -0,26 to 0,20*	-
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	M <sub>diff</sub> = -0,08, CI <sub>diff</sub> = -0,44 to 0,60*	-
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -0,25*, p = 0,001*
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -0,44*, p = 0,001*
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -0,25*, p = 0,002*
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -2,89, p = 0,001*

**Legend:** Abbreviation: M<sub>diff</sub> – mean of the difference, CI<sub>diff</sub> – confidence interval of 95% on the mean difference. Paired Data: CI<sub>diff</sub> with value different of zero\*, CI<sub>diff</sub> with lower limit near of the upper limit\* and axis of the error bars of the CI of a value in the direction of the mean of other value\* (see graphic) (statistical difference). n = 10 or more (independent data): Overlap of 0,50 or less\* and p ≤ 0,05\* (statistical difference)

**Table 7 - Results of the comparisons of the block reach of each set.**

Comparison	Paired Data	Independent Data
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place	M <sub>diff</sub> = -0,04, CI <sub>diff</sub> = -0,24 to 0,16*	-
1 <sup>st</sup> set versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	M <sub>diff</sub> = -0,04, CI <sub>diff</sub> = -0,44 to 0,36*	-
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = 0,52, p = 0,001*
1 <sup>st</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = 0,32*, p = 0,02*
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 1 <sup>st</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -3,04*, p = 0,001*
2 <sup>nd</sup> set of the 3 <sup>rd</sup> to last place versus 2 <sup>nd</sup> set of the 1 <sup>st</sup> and 2 <sup>nd</sup> place	-	Overlap = -0,52, p = 0,01*

**Legend:** Abbreviation: M<sub>diff</sub> – mean of the difference, CI<sub>diff</sub> – confidence interval of 95% on the mean difference. Paired Data: CI<sub>diff</sub> with value different of zero\*, CI<sub>diff</sub> with lower limit near of the upper limit\* and axis of the error bars of the CI of a value in the direction of the mean of other value\* (see graphic) (statistical difference). n = 10 or more (independent data): Overlap of 0,50 or less\* and p ≤ 0,05\* (statistical difference).

The figure 6 illustrates the results of the table 4 and 5.

The table 6 shows the results of the new statistic of Cumming (2014) of the spike reach of each set. The paired data the new statistic detect statistical difference between the comparisons because confidence interval of 95% on the mean difference had results with different value of zero (Cumming and Finch, 2005). Only a comparison of the independent data did not detect statistical difference because the overlap was greater than 0,50 (Cumming, Fidler and Vaux, 2007).

Therefore, the statistical difference occurs when there is statistical difference in the two statistical models, significance p and the new statistic. The study detected statistical difference of the spike reach of each set in five comparisons - 1) 1st set versus 2nd set of the 3rd to last place, 2) 1st set versus 2nd set of the 1st and 2nd place, 3) 1st set of the 3rd to last place versus 1st set of the 1st and 2nd place, 4) 1st set of the 3rd to last place versus 2nd set of the 1st and 2nd place and 5) 2nd set of the 3rd to last place versus 1st set of the 1st and 2nd place.

The table 7 shows the results of the new statistic of Cumming (2014) of the block reach of each set.

Therefore, the statistical difference occurs when there is statistical difference in

the two statistical models, significance p and the new statistic. The study detected statistical difference of the block reach of each set in two comparisons – 1) 1st set versus 2nd set of the 3rd to last place and 2) 1st set of the 3rd to last place versus 2nd set of the 1st and 2nd place.

## DISCUSSION

The spike reach and block reach during the match of the volleyball team 1st and 2nd place (spike reach of 2.93 ± 0.24 m and block reach of 2.83 ± 0.24 m) had a higher reach than the volleyball team 3rd to last place (spike reach of 2.79 ± 0.19 m and block reach of 2.73 ± 0.18 m). The difference of the spike reach is of 14 centimeters (cm) (2.93 – 2.79 = 14 cm) and of the block reach of 10 cm (2.83 – 2.73 = 10 cm). Therefore, this result may cause better performance of the attack and of the block of the volleyball team 1st and 2nd place. But the study did not identify statistical difference of the physical performance (spike reach and block jump) during the match between the volleyball team 1st and 2nd place versus the volleyball team 3rd to last place.

However, the mean of the professional volleyball is with a spike reach of 3.43 ± 0.13 m (Palao, Manzanares and Valadés, 2014) and with a block reach of 3.27 ± 0.10 m (Przybycien, Sterkowicz and Zak, 2014). The

result of the spike reach and of the block reach of the master volleyball during the match had similar result of the volleyball players of the years 70 and 80 (Gladden and Colacino, 1978; Marques Junior, 2016b). Then, the spike reach and the block reach of the male master volleyball of the category 35 years or more had result worse than the professional volleyball of the years 90 to 2000 (Smith, Roberts and Watson, 1992; Sheppard and collaborators, 2007).

What procedure the volleyball team 3rd to last place should do to increase the spike reach and the block reach?

There are two ways. The volleyball team 3rd to last place needs of volleyball players with greater stature (Wnorowski and Cieminski, 2016) and the team needs to practice strength training to increase the jump (Gjinovci and collaborators, 2017).

The spike reach of each set of the volleyball team 1st and 2nd place had an increase of 8 cm of the 1st set ( $2.88 \pm 0.22$  m) for the 2nd set ( $2.96 \pm 0.24$  m). The greater spike reach of each set and the increase of the spike reach during the 2nd set is an important result for the volleyball team 1st and 2nd place had a best attack than the volleyball team 3rd to last place (1st set with spike reach of  $2.81 \pm 0.19$  m and 2nd set with  $2.78 \pm 0.19$  m). The study detected statistical difference between the spike reach of the volleyball team 1st and 2nd place versus the volleyball team 3rd to last place.

However, the spike reach of the volleyball team 1st and 2nd place was lower than the professional volleyball (spike reach of 3.21 to 3.64 m) (Marques Junior, 2015b). But the minimum spike reach of 2.95 m of the United States of America volleyball team was similar to the 2nd set of the master volleyball team 1st and 2nd place ( $2.96 \pm 0.24$  m) (Puhl and collaborators, 1982).

The difference of the block reach of the 1st set and of the 2nd set was of 10 cm between the volleyball team 1st and 2nd place (1st of  $2.85 \pm 0.21$  m and 2nd set of  $2.81 \pm 0.24$  m) versus the volleyball team 3rd to last place (1st of  $2.75 \pm 0.20$  m and 2nd set of  $2.71 \pm 0.17$  m). The value of the block reach of the master volleyball was lower than the professional volleyball (block reach of 3.18 to 3.41 m) (Marques Junior, 2015c). But the result of the block reach of the volleyball team 3rd to last place was similar to the male master

volleyball study of Marques Junior (2017), with block reach of  $2.68 \pm 1.10$  m to  $2.73 \pm 1.04$  m.

I study had limitations, the researcher needs of more cameras to collect the data in several places of the volleyball court with the objective of the physical performance (spike reach and block reach) analysis to be more precise with the Kinovea® software.

### CONCLUSION

The study determined the spike reach and the block reach of the male master volleyball of the category 35 years or more during the match and of each set according to the classification.

The volleyball team 1st and 2nd place had a greater spike reach and block reach than the volleyball team 3rd to last place. In conclusion, the best reach of the spike and of the block is a motive of the better performance of the volleyball team 1st and 2nd place.

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