EVOLUTION OF RECEPTION EFFICACY AND EXECUTION IN WOMEN’S VOLLEYBALL ACCORDING TO LEVEL OF COMPETITION — A DESCRIPTIVE STUDY AGED FROM 14-YEAR-OLD TO ADULT PROFESSIONAL PLAYERS

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Abstract The aim of this study was to determine the technical performance profile of service reception with regard to execution and efficacy level according to level of competition in women's volleyball. The sample of the study was composed of a total of 6,311 game phases from 187 sets in 48 matches played during season 2005–2006 by the following divisions: under-14, under-16, under-18, 2nd national senior division, 1st national senior division, and international senior division. The design of the study was a descriptive and inter- and intra-group correlational one. The variables studied included level of competition, technique used to serve, technique used to receive, zone where the reception was executed, and efficacy of reception. The results indicated that at higher levels of competition: a) there is higher efficacy in reception; b) number of errors decreases; and c) proportion of receptions that allow one or more attacking options for the receiving team increases. As level of competition increases, the effect of service on reception decreases, and receiving zones are more diverse. This study establishes the technical and tactical service-reception profiles in women’s volleyball, compares them, and establishes the dependence between variables to understand how the action changes throughout the levels of competition.

Key words team sport, sport performance, match analysis, developmental stage

Introduction

Athletes improve their performance all over their learning process (Stamm et al., 2003). This improvement comes from gaining skills, experience (Elferink-Gemser, Visscher, Lemmink, Mulder, 2007; Grgantov, Katic, Jankovic, 2006; Rikberg, Raudsepp, 2011; Viviani, 2004) and changes in physical maturation (e.g. gains of weight...
and height) (Malina, Eisenmann, Cumming, Ribeiro, Aros, 2004). In team sports, performance in-game actions is the result of the interaction between players of both teams. In volleyball, these interactions are affected by the height of the net that separates both teams on the court, and the number of ball contacts allowed in a rally. The team with the ball tries to send it over the net in such a way that it touches the opponent’s court floor or in a way that the opponents cannot control (Selinger, Ackermann-Blount, 1985). On the other hand, the opponent team tries, with its arrangement and actions, to neutralize the ball and build an offensive movement (Federation Internationale de Volleyball [FIVB], 2016). These interactions should change, as well as the characteristics of players along their training process (technical proficiency, physical abilities, aging expertise, etc.).

In volleyball, the game begins with the serve-reception sequence. Receivers try to neutralize the serve and pass the ball as best as possible to the setter (João, Carvalho, Sattler, Mota, 2007; Palao, Ahrabi-Fard, 2014; Silva, Lacerda, João, 2014b; Zetou, Moustakidis, Tsigilis, Komninakidou, 2007). If the passing action achieves its goal, chances of success in the rally increase significantly (Bergeles, Barzouka, Nikolaidou, 2009; Costa et al., 2011; Laós, Kountouris, 2005; Palao, Santos, Ureña, 2006). Reception performance is linked to serving performance (Afonso, Moraes, Mesquita, Marcelino, Duarte, 2009; Stamm et al., 2003; Ureña, León, González, 2013), and throughout the whole developmental process of players arise imbalances between both performances (García-Alcaraz, Palao, Ortega, 2014). In youth women's volleyball, serving is more relevant than passing in rally success (Grgantov et al., 2006), though passing improves its performance over the years of player development (Inkinen, Häyrinen, Linnamo, 2013; Zadraznik, Marelic, Resetar, 2009). In the developmental stages, there are a few issues that affect passing performance, such as height of the net (FIVB, 2016), type of serving techniques (Gil, Moreno, Moreno, García, Del Villar, 2011), physical condition (Stamm et al., 2003), own technical performance of the receivers (Zadraznik et al., 2009), or team's tactics (Dávila-Romero, García-Hermoso, 2012).

As age increases, there is an increase in serving performance, regardless of serving technique, in women's volleyball (García-Alcaraz et al., 2014). The changes in physical condition (Costa, Afonso, Brant, Mesquita, 2012), serving techniques (Gil et al., 2011), and height of the net (FIVB, 2016) may alter the serve-receive sequence. Understanding techniques of reception, zones where it is made, tactics in reception or the reference values of efficiency on every competition level could enhance the knowledge about the developmental process of female volleyball players. The aim of the study was to know the technical profile of performance in reception according to the competition level in women's volleyball.

**Methodology**

The sample included 6,311 receptions played in 187 sets, corresponding to 48 volleyball matches, eight matches of each level of competition (U-14, U-16, U-18, 2nd national division, 1st national division, and international level), during season 2005–2006. It was an incidental sample (Pereda, 1987). The distribution of the sample is described in Table 1. The study project was pre-approved by the ethics commission of the principal researcher, in compliance with the principles of Helsinki’s Declaration.

The design of the study was descriptive punctual, nomothetic, multidimensional, inter- and intra-group correlational (Anguera, 2003). The variables discussed in the study were: level of competition (Spanish national U-14 championship, Spanish national U-16 championship, Spanish national U-18 championship, Spanish senior 2nd national division, Spanish senior 1st national division, and senior international level (World Championship)), serve technique (standing serve, float-jump serve, and power-jump serve), reception technique (forearm, overhead, and
Reception efficacy was evaluated in relation to the success of the action and the options it gave to the offense of the team. The following four levels of efficacy were differentiated: error, no attack options, limited attack options, and maximum attack options (Palao et al., 2015). For the categories of reception performance, an efficacy coefficient (sum of attempts per category multiplied by value of the level and divided by total attempts (0–3)), a point-to-error ratio, and an efficiency value (points or perfect actions minus errors) were calculated.

All recordings were made in public sporting events without any influence in the game. All of them were official matches recorded with a video camera in live performance by the researchers or coaches. The observation was made by a single observer. He had a Sport Science university degree, had the highest coaching certification in Spain, and had more than five years of experience as a coach and volleyball analyst. The observer was previously trained in the TEVOL observation instrument (Palao, Manzanares, 2009). After the training period, inter- and intra-observer reliability were calculated (Cronbach's Alpha). To calculate the intra-observer reliability, another researcher’s conclusions were used as a reference. This researcher also held a Sport Science degree, had the highest coaching certification in Spain, and had more than ten years of experience. The results showed 0.82 in inter-observer reliability and 0.96 in intra-observer reliability.

A TEVOL observation sheet was generated for each match of the sample. In those sheets were the descriptive variables of the match: level, teams, player line-up, position, and starting rotation. After that, all observation sheets were joined in a single Excel spreadsheet and then it was transferred to the statistical software SPSS 21.

A descriptive analysis (occurrence, occurrence percentage, arithmetic mean, standard deviation of the mean and coefficient of performance values) and an inferential analysis was made. The Kolmogorov-Smirnov test was used to analyze the normality of the sample. The chi-square test was used to study the differences in each category. The U of Mann-Whitney was used to analyze the differences between categories. The analysis was made with the SPSS 21 software. The level of significance was established by p < 0.05.

Results

There were no significant differences between levels of competition in the frequency of the use of the forearm technique (Table 2). In the use of the overhand technique there was a significant lower use from the U-16 category to U-18 and senior levels. The ‘errors’ had significantly higher occurrence in U-14 level and significantly lower in international level. Comparing efficiency between levels in both techniques, there was noted a significantly higher
coefficient of efficacy, percentage of efficacy and efficiency, which increased with every next level (from younger to senior levels). The percentage of errors was significantly higher in U-14 and U-16 than U-18 and the senior levels.

Table 2. Efficacy of service reception technique according to levels of competition (women volleyball)

| Service reception technique | U-14 | U-16 | U-18 | 2nd national | 1st national | International |
|-----------------------------|------|------|------|--------------|--------------|--------------|
| Forearm contact             |      |      |      |              |              |              |
| Coefficient                 | 1.53 | 1.75 | 1.94 | 2.17         | 2.26         | 2.29         |
| Efficacy (%)                | 7.57 | 5.34 | 15.3 | 34.56        | 40.04        | 38.86        |
| Error (%)                   | 17.38| 13.8 | 12.61| 9.5          | 25.6         | 28.2         |
| Efficiency                  | -9.8 | 3.2  | 3.19 | 2.38         | 28.64        | 37.1         |
| Ratio                       | 1 : -1.11 | 2.29 | 1 : 8.4 | 2.22 | 1 : 11 | 7.71 | 38.55 |
| Occurrence                  | 958  | 973  | 884  | 1089         | 1072         | 914          |
| Frequency (%)               | 88.1 | 91.1 | 93.9 | 94.0         | 93.8         | 94.3         |
| Underhand contact           |      |      |      |              |              |              |
| Coefficient                 | 1.46 | 0.06 | 1.66 | 1.97         | 2.15         | 2.27         |
| Efficacy (%)                | 2.6  | 3.09 | 12.9 | 14.6         | 20.6         | 28.28        |
| Error (%)                   | 16.82| 6.54 | 15.9 | 12.61        | 3.62         | 4.27         |
| Efficiency                  | -14.22| 6.73 | -3   | 19.10        | 10.98        | 18.94        |
| Ratio                       | 1 : -5.81 | 4.09 | 1 : 4.95 | 13.85 | 1 : 12.79 | 9.34 | 13.11 |
| Occurrence                  | 89   | 58   | 36   | 38           | 45           | 40           |
| Frequency (%)               | 8.2  | 5.4  | 3.8  | 3.3          | 3.9          | 4.1          |
| Other technique             |      |      |      |              |              |              |
| Coefficient                 | -    | -    | 1.41 | 0.96         | 0.69         | 0.94         |
| Efficacy (%)                | -    | -    | -    | -            | 31.25        | 52.04        |
| Error (%)                   | -    | -    | -    | 25           | 12.5         | 28.87        |
| Efficiency                  | -    | -    | -    | -            | 25           | 18.75        |
| Ratio                       | -    | -    | -    | 1 : -12.5    | 25           | 54           |
| Occurrence                  | -    | 5    | 2    | 9            | 1            | 3            |
| Frequency (%)               | -    | 0.5  | 0.2  | 0.8          | 0.1          | 0.3          |
| No contact                  |      |      |      |              |              |              |
| Occurrence                  | -    | 40   | 19   | 23           | 25           | 12           |
| Frequency (%)               | -    | 3.7  | 3.0  | 2.0          | 2.2          | 1.2          |

Note. * p < .05 in U-14; † p < .05 in U-16; ‡ p < .05 in U-18; † p < .05 in 2nd national division; ‡ p < .05 in 1st national division; † p < .05 in international; – o + statistical significance of .05 (chi square test); – o + relationship found (positive or negative).

In reception performance (Table 3), forearm and overhand techniques was noted with a statistically significant decrease in percentage of errors and receptions that limit attack options, from the lower level of competition to the highest. Receptions that allow all options in attacking had a significantly higher increase from the lower levels to the U-18 and the senior levels. With respect to areas of service reception (Table 4), both forearm and overhand techniques had a higher number of zones used at professional levels than at the lower levels of competition.
## Table 3. Performance of service reception technique according to levels of competition (women volleyball)

| Service reception technique | U-14 | U-16 | U-18 | 2nd national | 1st national | International |
|-----------------------------|------|------|------|--------------|--------------|---------------|
|                             | n    | %    | n    | %    | n    | %    | n    | %    | n    | %    |
| Forearm contact             |      |      |      |      |      |      |      |      |      |      |
| Error                       | 168+ | 17.5 | 133+ | 13.7 | 62  | 7.0  | 55+  | 5.1  | 29+  | 2.7  | 34+  | 3.7  |
| No attack                   | 193+ | 20.1 | 161+ | 16.5 | 100 | 11.3 | 98+  | 9.0  | 87+  | 8.1  | 40+  | 4.4  |
| Limit attack                | 524  | 54.7 | 530  | 54.5 | 544+| 61.5 | 586  | 53.8 | 542+| 50.6 | 509  | 55.7 |
| All attacks allowed         | 73+  | 7.6  | 149+ | 15.3 | 178+| 20.1 | 350+ | 32.1 | 414+| 38.6 | 331+ | 36.2 |

| Underhand contact           |      |      |      |      |      |      |      |      |      |      |      |
| Error                       | 14+  | 15.7 | 10+  | 17.2 | 2   | 5.6  | 1    | 2.7  | –    | –    | 1    | 2.5  |
| No attack                   | 22+  | 24.7 | 8    | 13.8 | 4   | 11.1 | 1    | 2.7  | 1    | 2.2  | –    | –    |
| Limit attack                | 50   | 56.2 | 32   | 55.2 | 23  | 63.9 | 26   | 70.3 | 28   | 62.2 | 31   | 77.5 |
| All attacks allowed         | 3+   | 3.4  | 8    | 13.8 | 7   | 19.4 | 9    | 24.3 | 16+  | 35.6 | 8    | 20.0 |

| Other technique             |      |      |      |      |      |      |      |      |      |      |      |
| Error                       | –    | –    | 2    | 100.0 | 3+  | 33.3 | –    | –    | –    | –    | –    | –    |
| No attack                   | 1    | 20.0 | –    | –    | 2   | 22.2 | –    | 1    | 33.3 | 1    | 20.0 |
| Limit attack                | 4    | 80.0 | –    | –    | 3   | 33.3 | 1    | 100.0| 2    | 66.7 | 4    | 80.0 |
| All attacks allowed         | –    | –    | –    | –    | 1   | 11.1 | –    | –    | –    | –    | –    | –    |

Note. – o + statistical significance of p < 0.05 (chi square test); – o + relationship found (positive or negative).

## Table 4. Efficacy of service reception technique according to performing area and levels of competition (women volleyball)

| Performing area | U-14 | U-16 | U-18 | 2nd national | 1st national | International |
|-----------------|------|------|------|--------------|--------------|---------------|
|                 | n    | coefficient | n    | coefficient | n    | coefficient | n    | coefficient | n    | coefficient | n    | coefficient |
| Zone 1          | 140+ | 1.64bcdef   | 147+ | 1.65bcdef   | 168  | 1.88bcdef   | 250+ | 2.05bcdef   | 230  | 2.21bcdef   | 225+ | 2.24bcdef   |
| Zone 2          | 3    | 1.67bcdef   | 3    | 1.33a       | 4    | 2.00a       | 5    | 2.20a       | 10+  | 2.00a       | 5    | 1.80a       |
| Zone 3          | 3+   | 1.00bcdef   | 12   | 1.25        | 10   | 1.80a       | 16   | 1.94a       | 18   | 2.61        | 6    | 2.00a       |
| Zone 4          | 3    | 2.33bcdef   | 8    | 1.88a       | 6    | 1.17        | 1    | 2.00a       | 14+  | 2.57bcdef   | 6    | 2.17bcdef   |
| Zone 5          | 221+ | 1.56a       | 246  | 1.74        | 280+ | 1.89        | 310  | 2.11        | 356+ | 2.21        | 247  | 2.26bcdef   |
| Zone 6          | 588+ | 1.48        | 557+ | 1.73        | 416  | 2.03        | 507  | 2.19        | 444+ | 2.28        | 425  | 2.25        |
| Total in frontrow | 9    | 1.67bcdef   | 23   | 1.49def     | 20   | 1.66bcdef   | 22   | 2.02bcdef   | 42   | 2.39bcdef   | 17   | 1.99bcdef   |
| Total in backrow | 949  | 1.56bcdef   | 950  | 1.71def     | 864  | 1.93def     | 1,067| 2.12def     | 1,030| 2.23bcdef   | 897  | 2.25bcdef   |

| Underhand contact |      |      |      |      |      |      |      |      |      |      |      |      |
| Zone 1            | 8    | 1.88bcdef   | 10   | 1.60bcdef   | 5    | 1.80        | 11   | 2.27bcdef   | 15   | 2.53bcdef   | 16+  | 2.06bcdef   |
| Zone 2            | –    | –          | –    | –          | –    | –          | 1    | 2.00        | 1    | 2.00        | –    | –          |
| Zone 3            | –    | –          | –    | –          | 2    | 1.80        | 1    | 3.00        | 2    | 2.50        | –    | –          |
| Zone 4            | 1    | 1.00        | –    | –          | –    | –          | –    | –          | –    | –          | –    | –          |
| Zone 5            | 22   | 1.23        | 17   | 1.76        | 12   | 1.75        | 12   | 1.92        | 16   | 2.25        | 15   | 2.27        |
| Zone 6            | 58+  | 1.52        | 31   | 1.61        | 17   | 2.29        | 12   | 2.25        | 11+  | 2.18        | 9+   | 2.11        |
| Total in frontrow | 1    | 1.00        | 0    | –          | 2    | 1.80        | 2    | 2.50        | 3    | 2.25        | 0    | –          |
| Total in backrow  | 88   | 1.54bcdef   | 58   | 1.66bcdef   | 34   | 1.95        | 35   | 2.15bcdef   | 42   | 2.42bcdef   | 40   | 2.15bcdef   |

Note. – o + statistical significance of p < 0.05 (chi square test); – o + relationship found (positive or negative).
In the reception performance according to serve technique (Table 5), there was a significant decrease of errors and receptions that did not allow option for the standing serves and the jump-float serves from the younger levels of competition to the U-18 and the senior levels. Passes that allowed all offense options from the standing serves, and the jump-float serves had a significantly higher increase from U-14 and U-16 levels to international level. Efficacy in reception that allowed all attack options in a game-sequence rose significantly from the U-14 and U-16 levels to the 1st national division level.

Table 5. Performance of service reception according to serving technique and levels of competition (women volleyball)

| Performance                  | U-14 | U-16 | U-18 | 2nd national | 1st national | International |
|------------------------------|------|------|------|--------------|--------------|--------------|
|                              | n %  | n %  | n %  | n %          | n %          | n %          |
| Reception of standing serve  |      |      |      |              |              |              |
| Error                        | 203+ | 20.04 | 124+ | 13.84        | 58 | 8.61 | 48 | 6.10 | 21+ | 3.08 | 22 | 4.19 |
| No attack                    | 195+ | 19.25 | 143+ | 15.96        | 72 | 10.68 | 69 | 8.77 | 57+ | 8.37 | 17 | 3.24 |
| Limit attack                 | 539 | 53.21 | 486 | 54.24 | 396 | 58.75 | 422 | 53.62 | 321 | 47.14 | 280 | 53.33 |
| All attacks allowed          | 76+ | 7.50 | 143+ | 15.96 | 148 | 21.96 | 248+ | 31.51 | 282+ | 41.41 | 206+ | 39.24 |
| Reception of power-jump serve|      |      |      |              |              |              |
| Error                        | 14+ | 19.72 | 26+ | 37.14 | 3 | 15.79 | 18 | 10.78 | 14+ | 6.70 | 14+ | 6.36 |
| No attack                    | 20+ | 28.17 | 13 | 18.57 | 2 | 10.53 | 18 | 10.78 | 16 | 7.66 | 17 | 7.73 |
| Limit attack                 | 35 | 49.30 | 25+ | 35.71 | 10 | 52.63 | 80 | 47.90 | 105 | 50.24 | 134+ | 60.91 |
| All attacks allowed          | 2+ | 2.82 | 6+ | 8.57 | 4 | 21.05 | 51 | 30.54 | 74+ | 35.41 | 55 | 25.00 |
| Reception of jump-float serve|      |      |      |              |              |              |
| Error                        | –    | –     | 19+ | 20.00 | 24 | 9.84 | 11 | 5.56 | 17 | 6.85 | 10 | 4.63 |
| No attack                    | –    | –     | 18+ | 18.95 | 29+ | 11.89 | 12 | 6.06 | 15 | 6.05 | 6+ | 2.78 |
| Limit attack                 | –    | –     | 52 | 54.74 | 158 | 64.75 | 108 | 54.55 | 141 | 56.85 | 124 | 57.41 |
| All attacks allowed          | –    | –     | 6+ | 6.32 | 33+ | 13.52 | 67+ | 33.84 | 75 | 30.24 | 76+ | 35.19 |

Note. – o = statistical significance of \( p < 0.05 \) (chi square test); – o + relationship found (positive or negative).

Table 6. Efficacy of service reception according to serving technique and levels of competition (women service)

| Reception's technique | U-14 | U-16 | U-18 | 2nd national | 1st national | International |
|-----------------------|------|------|------|--------------|--------------|--------------|
|                       | n coefficient | n coefficient | n coefficient | n coefficient | n coefficient | n coefficient |
| 1                    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10  | 11  | 12  | 13 |
| Reception of standing serve |      |      |      |      |      |      |      |      |      |      |      |      |
| Forearm               | 894  | 1.53** | 825 | 1.76** | 635 | 1.97** | 743 | 2.17** | 638 | 2.26** | 498 | 2.34** |
| Underhand            | 84  | 1.49** | 48 | 1.87** | 26 | 1.99 | 29 | 2.12** | 33 | 2.28** | 25 | 2.09** |
| Reception of power-jump serve |      |      |      |      |      |      |      |      |      |      |      |      |
| Forearm               | 64  | 1.45** | 59 | 1.27** | 16 | 2.22 | 156 | 2.08** | 198 | 2.28** | 211 | 2.14** |
| Underhand            | 7   | 1.33   | –   | –    | 2   | 2.00   | –   | –    | 3   | 2.25   | –   | –   |
In the reception efficacy according to reception technique (Table 6), the forearm technique had a significantly higher coefficient of efficacy from lower levels to senior levels. The overhand technique significantly increased its efficiency of standing services from lower levels to senior levels.

Discussion

The results show the evolution of reception execution and its performance throughout the different levels of competition in women’s volleyball. The results showed that forearm technique was the most employed in all levels. The significantly higher occurrence of error in the lowest level studied, U-14, showed the importance of experience and practice during the early stages of training. The tactical reception system needs time to develop, in addition to the development of technical abilities (Dávila-Romero, García-Hermoso, 2012), knowledge of its organization and the right decision of what is needed (Grgantov et al., 2006; Rikberg, Raudsepp, 2011). The occurrence of these errors in early stages could be related to a problem of the player’s ability to estimate the ball’s trajectory, a wrong choice of the place where it could be played or a mistake in the decision making (miscommunication among players). All of these issues are related to the lack of experience and maturity in early stages of training (Elferink-Gemser et al., 2007; Malina et al., 2004).

The results of reception performance showed that a higher level of competition, there is higher performance in reception. These results coincide with other studies about the evolution of service reception in different levels (Elferink-Gemser et al., 2007; García-Alcaraz et al., 2014; Grgantov et al., 2006; Inkinen et al., 2013). It is confirmed that the experience and maturity does influence the execution of this action and the decision making involved (Araujo, Afonso, Mesquita, 2011; Berry, Abernethy, 2009; Malina et al., 2004). The improvement in reception is so significant that it becomes a predictor of success in the final score of competitions at high levels (Afonso et al., 2009; Silva et al., 2014a; Zetou et al., 2007). All of this is related to the prior action in a game, the service. The authors of this study analyzed the performance of reception according to serving technique. All serving techniques produced a significantly lower reception performance at U-14 and U-16, and higher at U-18 and senior levels. This could be possible due to the improvement in a technique’s capacity and the decreased imbalance between serving and reception as observed in U-14 and U-16 (Ureña et al., 2013).

Regarding zones of reception, U-14 showed a low level of performance in four out of six zones compared to higher levels of competition. These findings support the observations done previously about the lower efficacy in reception in early stages of training and the imbalance between service and reception (Selinger, Ackermann-Blount, 1985; Ureña et al., 2013). The results showed that reception done in different zones had the same efficiency. In early stages, zone 6 was the one that had the highest occurrence of receptions. This data may be related to the fact that in early stages of training the servers do not have the intention or the skill to serve to certain zones, trying to hinder the opponent’s reception (McGown, Fronske, Moser, 2001; Selinger, Ackermann-Blount, 1985). That could be explained by the conscious decision of trying to prevent any mistakes hitting the ball out, rather than trying a more successful but risky option (Ureña, Santos, Martínez, Calvo, Oña, 2000). There is a connection between
the evolution of serve and reception. The reception is influenced by the power or the hit height in which the serve is made (MacKenzie, Kortegaard, LeVangie, Barro, 2012). Mastery in service technique is required if the players want to broaden the options in opposing zones, as seen in high level of competition.

The information about the zones of reception is helpful comparing the performance in both front row and back row zones in the field. Reception in front-row zones had a significantly lower performance in U-14 and U-16 than the rest of the levels. The reason why it is this way could be connected with the speed and mobility of the player. To do this as well as possible, the players need to have a good physical condition, reaction capacity and technical ability (Elferink-Gemser et al., 2007; Grgantov et al., 2006; Stamm et al., 2003; Ureña et al., 2000). Because of that, coaches in early stages often make use of tactics with more players involved in reception (Selinger, Ackermann-Blount, 1985), and those tactics become more complex and involve less players every time they improve their technique and increase both their ability to move and their decision making.

Conclusions

The results of this study show the performance profile of service reception in women’s volleyball, from the lowest to the highest level of competition. The most used reception technique in all analyzed levels was the forearm, regardless of the serving technique. As competition level increases, higher performance of reception is presented. The receptions in front row zones are less efficient in the early stages than at higher levels. Nevertheless, the serving technique has less influence on reception as the level of competition increases. With the level of competition, reception deals with more destination zones of the services.

This information provides insight into the long-term development of this technical skill for female players. This information could help coaches to analyze and evaluate this game action of their players in order to design a working plan adapted to the level of competition. More information is needed about the relationship of this action with other parts of the performance through different developmental stages, such as: tactical variables (efficiency of receiving techniques according to reception systems and the number of players involved), physical condition (of specialist players in reception or of players who need to be added to the attack options), or psychological indicators (performance of reception in the final points of a set or match).

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**Cite this article as:** Echeverria, C.J., Ortega, E., Palao, J.M. (2019). Evolution of Reception Efficacy and Execution in Women’s Volleyball According to Level of Competition – A Descriptive Study Aged from 14-year-old to Adult Professional Players. *Central European Journal of Sport Sciences and Medicine, 3* (27), 55–64. DOI: 10.18276/cej.2019.3-05.