

ATHLETES AND COACHES' GENDER INEQUALITY: THE CASE OF THE GYMNASTICS FEDERATION OF PORTUGAL

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Abstract

The aim of this study was to analyze the gender-participation among Portuguese gymnasts and Portuguese coaches, according to gymnastics' disciplines and geographical areas of Portugal. An individual-authorized data base of all national gymnasts involved in the National School of Gymnastics of the Gymnastics Federation of Portugal (Federação de Ginástica de Portugal) during three athletic seasons, namely 2012/2013, 2013/2014 and 2014/2015. Data from coaches was only available for the season of 2012/2013. In the athletic season of 2012/2013, from a sample of 14742 gymnasts, 81.2% were female and only 18.7% were male ($P < 0.01$). Similar results were found in the next two seasons as follows: 83.2% were female and 16.7% were male in 2013/2014 and 84.9% were female and 15.1% were male in 2014/2015. Significantly gymnasts-gender differences ($P < 0.01$) were observed for all disciplines. In RG, WAG and MAG no differences between genders were observed due to the exclusive sport participation of female or male gymnasts, respectively. The same tendency of gymnasts' genderparticipation was observed for coaches; thus, the majority of Portuguese coaches (57.7%) was female and 42.3% were male. The inclusion of gymnastics in sport events can increase female participation due to its characteristics.

Keywords: *Gender-participation, gymnastics, disciplines, athletes, coaches.*

INTRODUCTION

Participation in sport has been linked to several physical and psychological benefits such as increased resistance, strength, agility, coordination and improves mood, self-esteem and self-confidence (Slater & Tiggemann, 2011). However, gender has been considered a significant indicator in athletic performance's differences and gender-participation rates are different and the potential reasons are namely sports

availability and stereotypes (Davis et al., 2006). According to the International Federation of Gymnastics (Fédération Internationale de Gymnastique – FIG, 2015), Gymnastics is divided into seven disciplines as follows: Gymnastics for All (GfA), Men's Artistic Gymnastics (MAG), Women's Artistic Gymnastics (WAG), Rhythmic Gymnastics (RG), Trampoline Gymnastics (TRA), Aerobic Gymnastics (AER) and Acrobatic

Gymnastics (ACRO). Independently of the gymnastics' discipline and gymnast's gender, competitive routines Result from a combination of several different body elements that require high-intensity Effort with, in some cases, a unique dexterous manipulation of apparatus (Silva & Paiva, 2015a). Dynamic and static balance is necessary in balance positions, jumps and rotations; explosive strength is a determinant for dynamic elements with rotation and throw, jumps and pre-acrobatic movements; flexibility is dominant during all body elements; and coordination is a determinant for apparatus mastery (Calavalle et al., 2008; Silva & Paiva, 2015a). Gymnastics is an aesthetic sport that emphasizes creativity, in which athlete's peak of performance is typically obtained earlier than in team sports (Baker, Janning, Wong, Cobley, & Schorer, 2014), since gymnasts train intensively from very young ages and maintain that training regime during adolescence and early adulthood (Silva & Paiva, 2015a, 2015b). Pre-pubertal growth in children (from 2 to 10 years old) is linear and occurs at a relatively constant rate (6 cm per year) (Jeukendrup & Cronin, 2011). However, in adolescence, significant changes in body size occur, influencing physiological and physical performance (Silva & Paiva, 2015a) in both female and male gymnasts (i.e. males tend to have more fat-free mass and a lower body fat than females). In addition, leanness is also a valuable prerequisite for technical performance and is considered more aesthetically pleasing to judges and for selection at an elite level (D'Alessandro et al., 2007; Michopoulou et al., 2011; Silva & Paiva, 2015c). Coaches play an important role regarding the gymnasts' health (Schubring & Thiel, 2014). However, a reduced body mass often leads gymnasts to inadequate energy intake compromising adequate energy availability levels for gymnasts' growth, daily activities and athletic performance (Silva & Paiva, 2015a, 2015b). In spite of gymnastics being

recently considered as an "early specialization" sport, characterized by a higher number of female participants than male ones (Baker et al., 2014), McManus & Armstrong (2011) highlighted that there are much less published studies in female athletes than in males. This may be due to the fact that in the short term, energy availability is required to improve gymnasts' health, to prevent injury and, in the long term, sustained low energy availability may predispose the female athletes to various health hazards such as irregular menstruation, infertility and osteoporosis (Loucks, Kiens, & Wright, 2011; Omiya et al., 2014; Silva & Paiva, 2015a, 2015c). Thus, female athletes may be a more difficult group to study, especially in relation to health issues, including body composition and menstrual function, than male athletes. On the other hand, the cultural environment and regional tradition in a typical sport also influences sport participation (Weir, Smith, Paterson, & Horton, 2010). In addition, gender is a socially category constructed in interaction between the individual and the society and self-actualization (Boykoff & Yasuoka, 2013). Therefore, this study aims to analyze the gender-participation among Portuguese gymnastics gymnasts and Portuguese coaches, according to gymnastics' disciplines and geographical areas of Portugal.

METHODS

During the sport season of 2012/2013, 1323 Portuguese coaches of gymnastics (764 female and 559 male) and 15980 Portuguese gymnasts (13028 female and 2953 male) were included in this study. Also from the next two athletic seasons, 15880 gymnasts (13225 female and 2655 male) in 2013/2014 and 15469 gymnasts (13139 female and 2330 male) in 2014/2015 were included; no coaches' information was available.

Data was analyzed from an individual-authorized data base of all national gymnasts involved in the

National School of Gymnastics of the Gymnastics Federation of Portugal (Federação de Ginástica de Portugal – FGP) during three athletic seasons, namely 2012/2013, 2013/2014 and 2014/2015. Data from coaches was only available for the season of 2012/2013. This data base was constructed by technical staff of the general directorate office of the FGP and formal permission for full access of the mentioned data base was given by the director of the National School of Gymnastics of the FGP. Regarding gymnastics' disciplines, the FGP involves seven international disciplines mentioned before and two others, such as Hip Hop (HH) (organizing Open competitions and the National Championship Competition), and Teamgym (TG), a Union Européenne de Gymnastique (UEG) discipline that promotes group gymnastics competition. Thus, disciplines analyzed were as follows: GfA, MAG, WAG, RG, TRA, AER, ACRO, HH and TG. Eleven associations of gymnastics were involved in the National School of Gymnastics of the FGP and were divided into 3 main geographic areas in accordance with an equitable number of athletes: Area 1 included the North and Centre of Portugal; Area 2 included the metropolitan area of Lisbon (the capital of the country and where is located the FGP); and Area 3 represented the South of the country. Therefore, the following variables were then analyzed: gender, geographical area, involvement in gymnastics, i.e. coach or gymnast, and gymnastics discipline represented. Regarding the statistical analysis, characteristics of the participants are described with proportions for categorical variables. Spearman correlation coefficient was used to determine associations between categorical and continuous variables; due to the number of subjects evaluated the significance level used was 5% ($p < 0.05$). Data was analyzed using SPSS statistical software version 22.0 for Windows (New York, USA).

RESULTS

Independently of the sport season, the gymnastics discipline most practiced in Portugal was GfA ($p < 0.01$), as shown in Figure 1. This may be due to the possibility of participants of both genders being able to participate in this sport, as it is so-called “for all”. In addition, GfA was followed by TRA and ACRO ($p < 0.05$), with exception for the season of 2014/2015 ($p > 0.05$), where more participants were involved in ACRO rather than in TRA. All others disciplines were highly less practiced as follows: RG, WAG, TG, AER, MAG and HH (Figure 1). T-tests indicate that in the athletic season of 2012/2013, from a sample of 14742 gymnasts, 81.2% were female and only 18.7% were male ($p < 0.01$). Similar results were found in the next two seasons as follows: 83.2% were female and 16.7% were male in 2013/2014 and 84.9% were female and 15.1% were male in 2014/2015. However, in RG, WAG and MAG no significant differences were observed due to the exclusive sport participation of female or male gymnasts, respectively. In an intra-athletic season analysis, a significant increase of the number of female gymnasts was shown in ACRO, RG and WAG from 2012/2013 to 2013/2014 ($p < 0.05$) (Figure 2). Although not significant, only GfA and AER presented more participants in the last athletic season. However, a significant decrease of female gymnasts was observed in HH in the last athletic season ($p = 0.003$) (Figure 2).

Regarding the male participation, MAG, AER and HH presented a significant increase of the number of participants ($p < 0.05$) from the athletic season of 2012/2013 (Figure 3). Interestingly, GfA and ACRO have been losing participants during the last three seasons ($p < 0.05$); TG also has, but not significantly ($p > 0.05$).

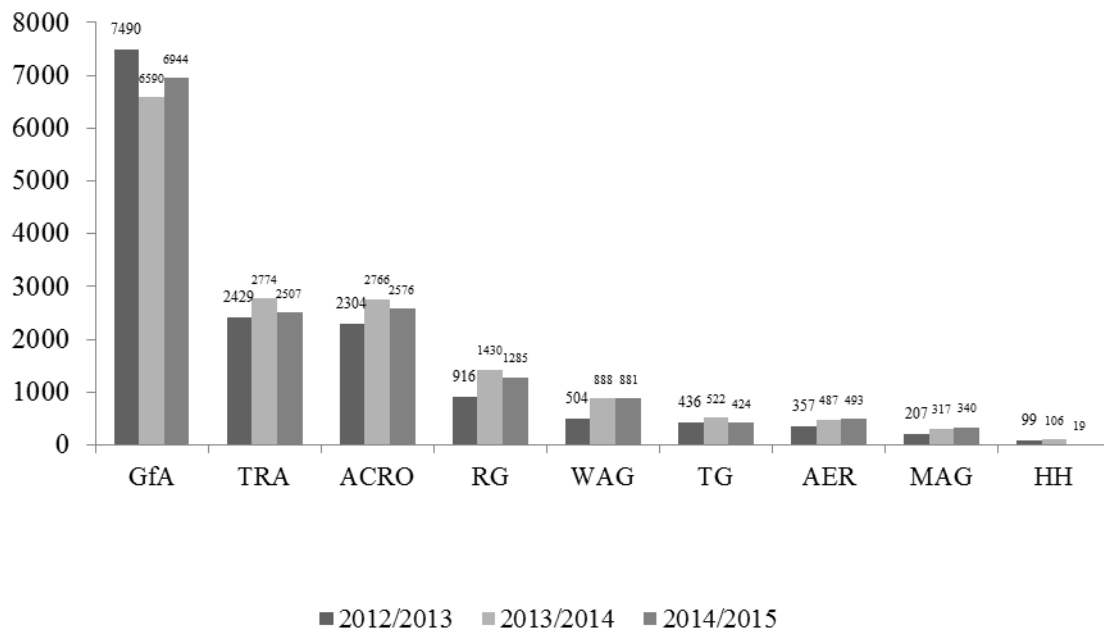


Figure 1. Number of gymnasts participating in the several disciplines of the FGP during the seasons of 2012/2013, 2013/2014 and 2014/2015 (GfA: Gymnastics for All. TRA: Trampoline Gymnastics. ACRO: Acrobatic Gymnastics. RG: Rhythmic Gymnastics. WAG: Women's Artistic Gymnastics. TG: Teamgym. AER: Aerobic Gymnastics. MAG: Men's Artistic Gymnastics. HH: Hip Hop).

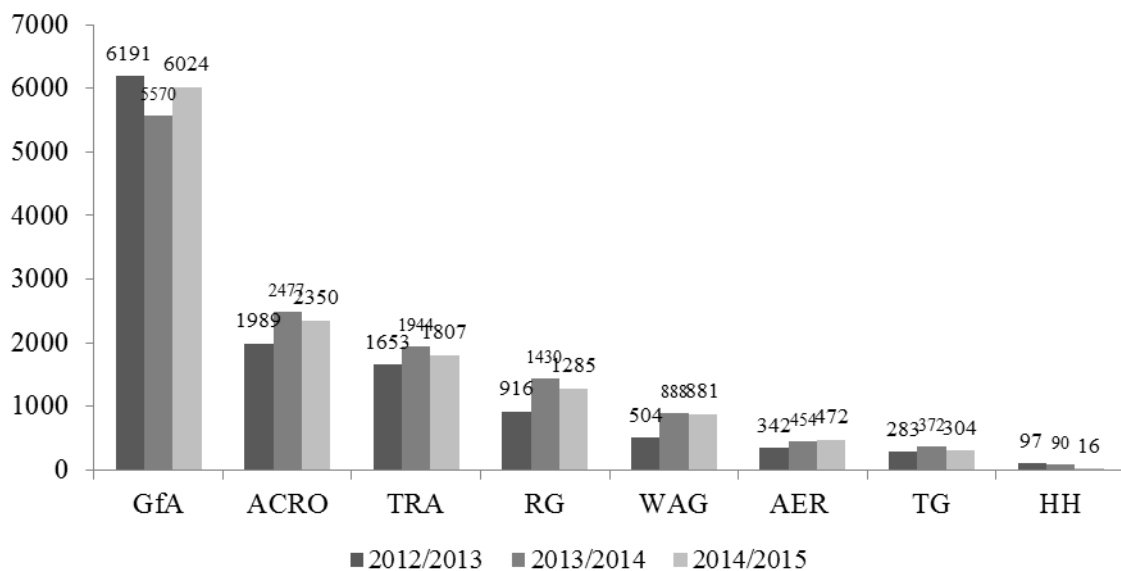


Figure 2. Number of female gymnasts participating in the several disciplines of the FGP during three athletic seasons: 2012/2013, 2013/2014 and 2014/2015 (GfA: Gymnastics for All. ACRO: Acrobatic Gymnastics. TRA: Trampoline Gymnastics. RG: Rhythmic Gymnastics. WAG: Women's Artistic Gymnastics. AER: Aerobic Gymnastics. TG: Teamgym. HH: Hip Hop).

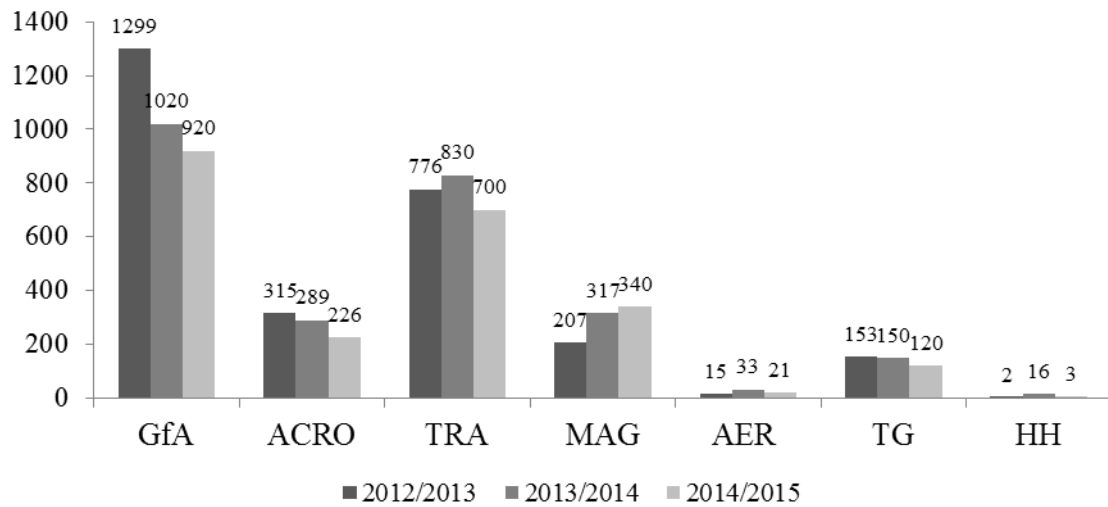


Figure 3. Number of male gymnasts participating in the several disciplines of the FGP during three athletic seasons: 2012/2013, 2013/2014 and 2014/2015 (GfA: Gymnastics for All. ACRO: Acrobatic Gymnastics. TRA: Trampoline Gymnastics. RG: Rhythmic Gymnastics. WAG: Women's Artistic Gymnastics. AER: Aerobic Gymnastics. TG: Teamgym. HH: Hip Hop).

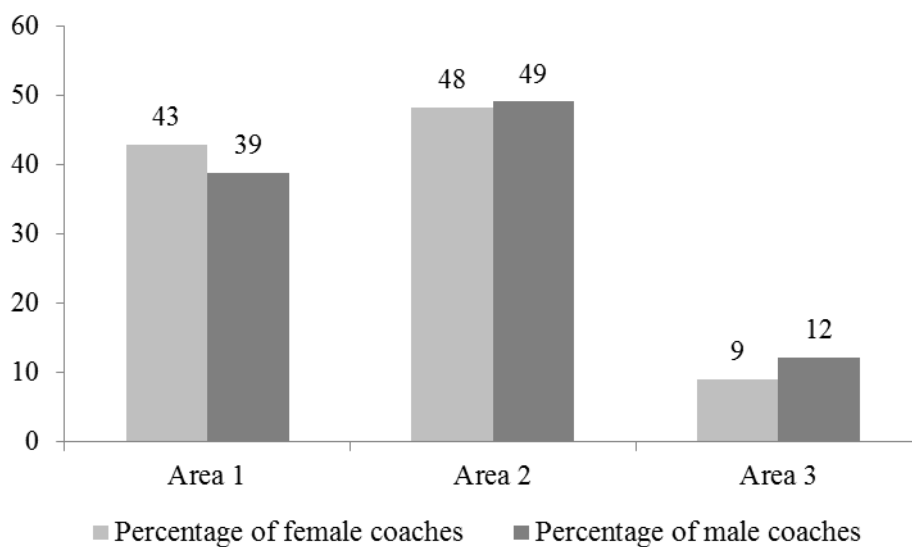


Figure 4. Percentage of female (n=764) and male coaches (n=559) during the season 2012/2013 through the 3 main geographic areas of Portugal: area 1 (North and Centre), area 2 (Lisbon) and area 3 (South of Portugal).

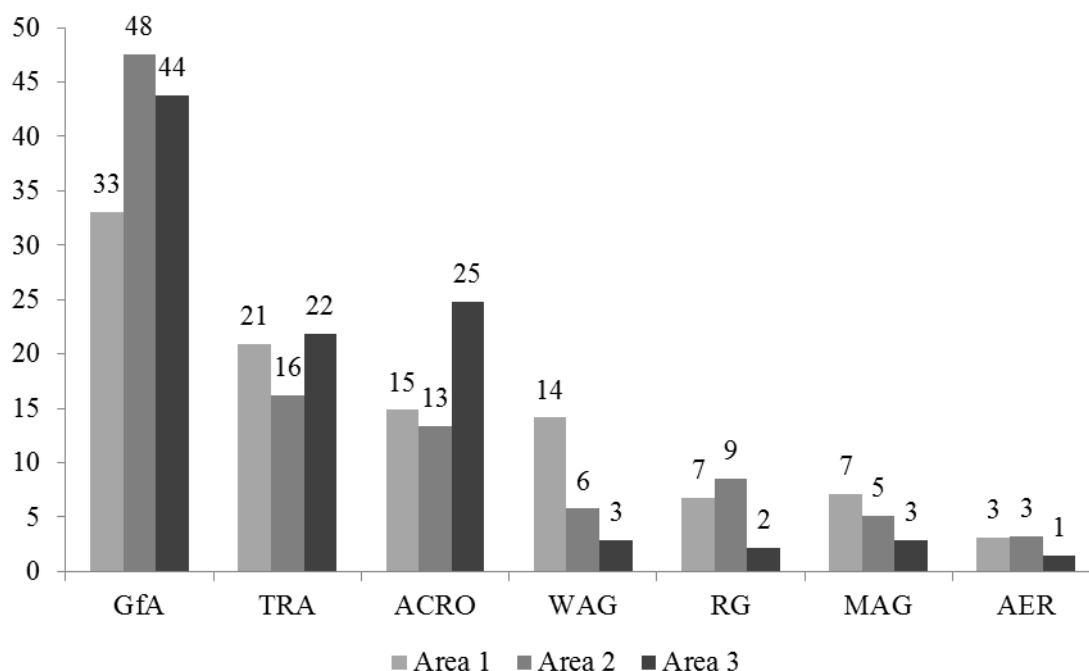


Figure 5. Percentage of Portuguese coaches working in the several disciplines of the FGP during the season 2012/2013 (GfA: Gymnastics for All. TRA: Trampoline Gymnastics. ACRO: Acrobatic Gymnastics. WAG: Women's Artistic Gymnastics. RG: Rhythmic Gymnastics. MAG: Men's Artistic Gymnastics. AER: Aerobic Gymnastics).

As mentioned before, data about Portuguese gymnastics coaches was only available for the athletic season of 2012/2013. The same tendency of gymnasts' gender-participation was observed for coaches; thus, the majority of coaches (57.7%) was female and 42.3% were male. Regarding the 3 main geographic areas, significant differences ($p < 0.01$) were observed between the first two areas and Area 3, since 48.5% of coaches ($n = 642$) were mainly from Area 2 (Lisbon) and 41.4% ($n = 544$) were from Area 1 (the North and the Centre), and only 10.4% of coaches ($n = 137$) worked in Area 3 (the South of Portugal). In spite of no significant differences ($p > 0.05$) were observed for gender differences, Lisbon and South areas (Areas 2 and 3) presented a higher number of male coaches than females, respectively (49.0% and 12.2% versus 48.2% and 9.0% - Figure 4). However, the opposite was observed in Area 1, where there were more female coaches (42.8%) than male ones (38.8%).

Interestingly, gymnastics disciplines with the highest number of coaches were those where participants of both genders are allowed, as follow: GfA (41%; $n = 545$) followed by TRA (19%; $n = 248$), ACRO (15%; $n = 201$), with exception for AER (3%; $n = 40$). On the other hand, disciplines of typically one gender participation presented the lowest number of coaches such as WAG (9%; $n = 118$), RG (7.2%; $n = 95$) and MAG (5.7%; $n = 76$). In a disciplines' intra-analysis with relation to the coaches' presence, there were more coaches of GfA (48%) and RG (9%) working in the metropolitan area of Lisbon (Area 2), WAG (14%) and MAG (7%) coaches were mainly teaching in Area 1, and TRA (22%) and ACRO (25%) coaches were mainly working in the South of the country, Area 3 - Figure 5).

DISCUSSION

Although several studies have been conducted in athletes, most of them are

reported to males. From our knowledge, this is the first study evaluating gender-participation in both gymnasts and coaches. Significantly gender differences ($p < 0.01$) were observed for all disciplines with a female participation's rate much higher than the male one. As expected, no differences between genders were observed for RG, WAG and MAG due to the exclusive sport participation of female or male gymnasts, respectively. The most practiced disciplines in Portugal were mainly those where gender selection is not a prerequisite for sport's participation, such as GfA, TRA and ACRO; this was also observed for Portuguese coaches, with exception for AER. Portuguese coaches were significantly ($p < 0.01$) concentrated in the metropolitan area of Lisbon (48.5%: 49% male and 48.2% female) and in the North of Portugal (41.4%: 42.8% female and 38.8% male, contrarily to Lisbon). The South of Portugal showed the lowest number of Portuguese coaches (10.4%: 12.2% male and 9.0% female). These results may be due to facilities allocated to clubs and respective coaches. Contrarily, competitive disciplines of typically one gender participation (WAG, RG and MAG) presented the lowest number of coaches and gymnasts. In accordance with Barker, Barker-Ruchti, Wals & Tinning (2014) and Silva & Paiva (2015b), most athletes choose to persist with competitive sport voluntarily, so may be more specialized coaches of WAG, RG and MAG should be necessary in the near future. A new challenge stands up for the sport worldwide, which is that there is a clearly inequality of gender-participation in gymnastics, since both Portuguese female gymnasts and coaches presented a high and significant presence in the Portuguese Gymnastics ($p < 0.05$). This should be interpreted as part of a solution for the so called "gender inequality in sport", according to recent literature (Baker et al., 2014; Claringbould, Knoppers & Jacobs, 2015; Di Cagno et al., 2009; Godoy-Pressland & Griggs, 2014; Mackintosh et al., 2014). A plausible

explanation might be related to the dominant gender in the social system around that sport, i.e. female sport produces a different environment governed by distinct social and developmental factors than those important in male sport (Barker et al., 2014). Weir, Smith, Paterson, & Horton (2010) in a study about the age of sport participation concluded that the number of sport participants may vary due to cultural importance of different sports with the most capable athletes, the relative older ones going to sports with the greatest cultural relevance. Jacques Rogge (2012), the former president of the International Olympic Committee (IOC), highlighted at the Games Opening Ceremony that "For the first time in Olympic history, all the participating teams will have had female athletes, and this is a major boost for gender equality". In a gender equality audit about the London 2012 Olympics, Donnelly and Donnelly (2013) reported that 4835 female athletes participated in the 2012 London Olympic Games, no countries excluded female athletes and women competed in every sport. In contrast, in the London 2012 Olympics, there were 39 men-only events, including the pommel horse and rings in gymnastics, and only two women-only events, such as RG and synchronized swimming (Boykoff & Yasuoka, 2013).

One of the 'Fundamental Principles of Olympism' is that "Any form of discrimination with regard to a country or a person on grounds of race, religion, politics, gender or otherwise is incompatible with belonging to the Olympic Movement" (IOC, 2011). In addition to physical and cognitive demands, gymnasts should also integrate a high degree of technical (Barker et al., 2014) and artistic skills into their dynamic and aesthetic exercises (Di Cagno et al., 2009). On the other hand, gymnastics is known to be the oldest sport ever practiced and is often sought to be the better sport to develop physical and mentally the "raw material" in very young ages (Barker et al., 2014; Silva &

Paiva, 2015a). Although not significantly, Portuguese female gymnasts' participation only increased in GfA and AER in the last athletic season, and the same was demonstrated by male participants in WAG. Considering that when gymnasts are relatively older, they transfer to other sports (Barker et al, 2014) and that a combination of factors might be responsible for that (Omiya et al., 2014), a problem stands up for the FGP. Age was not available for this study, but it might have a major influence in sport-participation. Education sessions to increase future gymnasts' and coaches' participation should be implemented as a new perspective of increasing both female and male participation in geographical areas with fewer participants. The limitations of this study should be taken into account when interpreting these results. First, age was not a studied variable, as mentioned before. Although its relative effects have been studied (Schorer, Cobley, Büsch, Bräutigam, & Baker, 2009), we assumed that gymnastics' disciplines would be of greater interest for this publication. Longitudinal studies are going to be implemented in the FGP in order to study the possible relation between the prevalence of a specific gymnastics' discipline according to the geographic area and gymnasts' results in national and international competitions. They would be also interesting and necessary in evaluating gymnastics' evolution in relation to gender, relative age effects and sport participation. These results shed additional light on the cultural and geographical influence for sport participation of both gymnasts and coaches. The present study provides a new insight to reinforce the practice of gymnastics worldwide, in accordance with significant differences shown by our results in relation to female and male's participation. Therefore, gymnastics should be seen as a sport that promotes greater female participation; thus, it should be used as a new strategy to combat

inequality in female participation. For those interested in reducing or eliminating gender inequality in Sport and working in the governance of federations or clubs, the inclusion of gymnastics in sport events can increase female participation due to its characteristics.

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