Relative Age and Sex Effect in Equestrian Sports across the Olympic disciplines and FEI Endurance at all age group competition

Wilkinson, K [a]., Davies, E.[b], Brackenbury, G., Ferguson, A. and Bornemann, D[c].

[a]HE Sport, Hartpury University, Hartpury, Gloucestershire, GL193BE, U.K.
[b]HE Equine, Hartpury University, Hartpury, Gloucestershire, GL193BE, U.K.
[c] Hartpury University, Hartpury, Gloucestershire, GL193BE, U.K.

Corresponding Author: Dr Kate Wilkinson Kate.Wilkinson@hartpury.ac.uk
https://orcid.org/0000-0001-9666-2647
LinkedIn www.linkedin.com/in/katewilkinsonHoTL
Twitter @KateWilkinson19

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Abstract

Relative age effect (RAE) has been established in many sports, but there is no evidence known in equestrian sports. Equestrian sports do not have a consistent or traditional model of youth development. The aim of the study was to establish whether RAE is evident in equestrian sport and to identify whether rider sex has an effect on ranking. Data were collected from FEI results pages for Endurance, Dressage, Eventing and Showjumping. Birth date and quartile was compared at U18, U21, U25 and Senior in each sport. Chi-squared and Kruskal Wallis were used to identify any RAE and whether there was a ranking difference between quartiles. A Mann Whitney U test identified any ranking difference between sexes. No RAE was found in any sport or age category, however there were differences identified in sex for both ranking and participation. Males were shown to rank higher in jumping sports (senior) whereas females were ranked higher in Dressage and Endurance (all age categories). Further studies are required to evaluate the psychosocial factors and development structures in equestrian sport development can affect success. Results question whether a sex difference exists that requires further research into the sex-integration of all equestrian sport.

Keywords: athlete development, horse riding, performance, sex

Introduction

Chronological age is often used within youth sport to determine grouping and developmental pathways (Arrieta et al., 2016). In some sports, such as youth soccer, age groups often span two years (e.g., U11s, U9s) and therefore players could vary as much as up to 24 months in chronological age (Castillo *et al.* 2019). In sports and educational settings there is a cognitive and physical advantage seen in those athletes born closer to the cut-off date (1st January compared to those born at the end of the same year) (De la Rubia, Lorenzo-Calvo and Lorenzo, 2020). This relative age effect (RAE) suggests that a potential performance advantage could be present in junior and youth age groups due to a difference in maturation levels and other related phenomena (Parma and Penna, 2018). RAE is multifactorial in nature, bringing together a combination of cognitive, physical, motivational, emotional and social factors into the much-researched selection-maturation hypothesis (Lovell *et al.* 2015). RAE is different between girls and boys due to the onset of puberty occurring earlier in girls, resulting in less RAE in older age groups (Smith *et al.* 2018). RAE has been found in team sports including rugby, hockey, soccer and individual sports including swimming, table tennis and gymnastics, but there is a lack of information regarding equestrian athletes (Cobley *et al.* 2018; Faber *et al.* 2020).

Equestrian sports are not comparable to many other Olympic sports in their organisation and structure within youth development and competition, highlighted recently in the 2022 youth Development and Performance pathway handbook (British Equestrian, 2022; Dumbell, Rowe and Douglas, 2018). The Olympic sports of Dressage, Eventing and Showjumping (SJ) are the most popular, with the sport of Endurance having high participation in certain areas around the world. Although equestrian sport is the only Olympic sport to be sex integrated, accessibility and diversity are narrow compared to other sports due to the costs involved (Dashper and Fletcher, 2013) and success is, in part suggested to be driven by socio-cultural factors as well as talent, with the horse viewed as being paramount within the combination (Coulter, 2014; Gilbert and Gillett, 2012). Equestrian sports would be classed as technical or skill-based sports where early specialisation is the norm, however elite career length is longer than in any other sport further minimising a potential RAE in senior athletes (Dumbell, Rowe and Douglas, 2018).

Equestrian sport age group categorisation varies by sport and looks to acknowledge the role of the horse/pony in the partnership with pony height and rider age being used in the jumping sports (SJ and Eventing) compared to rider age alone in non-jumping sports (dressage and endurance). In some sports there are often multiple competition structures or pathways in existence, further increasing the multifaceted approach needed when looking at the effect of age and sex. Classification of age categories and development stages varies depending on the nation and can be different to the FEI classification, for example U18 in the UK comprises 12-18 years compared to the FEI, who use 14-18 years. The large age range within each category could suggest that the effect of chronological age may be greater in equestrian sport and have a different modality to typical RAE observed in other sports. Further variation is evident between the sports and nations, for example there is no differentiation between U18 and seniors in UK endurance and dressage but in other nations and the Federation Equestrian International (FEI) this is not the case. At elite levels in the Olympic sports, chronological age groups are classified as Junior (U18;14-18), Young Rider (U21;16-21) and Senior, with an additional Under 25 (U25) category in dressage and eventing (16-25). This further suggests that athlete development will be much more varied than other sports which have a more defined age competition structure and highlights a need to be examined differently (Kearney, Hayes and Nevill, 2018). At the 2012 Olympic games equestrian athletes ranged from 16-72 years old suggesting a greater emphasis on non-physical related performance factors and potentially the horse as the limiting factor (De Haan, Sotiriadou and Henry, 2016).

Considering the lack of studies into this area within equestrian sport this paper aims to evaluate RAE in Dressage, Endurance, Eventing and SJ in FEI elite competition. The primary objective was to identify whether there was a RAE in any of the selected equestrian sports at different age groups. The secondary objective was to identify whether there was a performance difference between males and females in each of the sports and age groups.

Methods

Ethical approval was gained from Hartpury University ethics committee (2020-04) prior to data collection. The study adopted a positivist approach using a deductive cross sectional, descriptive design based on retrospective quantitative data (Romann and Cobley, 2015). Athletes birthdate, ranking and sex were collected from the senior and U25 rankings and standings pages on the FEI data base website (www.fei.org) for each sport, as used by other studies (Arrieta *et al.* 2016; Faber *et al.* 2020). For U18 and U21 athletes this information was taken from the age category international championship results due to a lack of ranking data for youth Eventing categories; the selected championships were in 2019. Data were taken from the top 100 riders at Senior level, and top 50 at U18 and U21 level due to the number of competitors in each event being less than 100, with variation in how many riders completed the competition. Data was obtained from 42 event riders at U21 level due to high numbers of eliminations and withdrawals in the selected competition during data collection. All data were anonymised on entry using numerical coding rather than name, however all data are publicly available from the FEI website. To identify RAE, athletes birth dates were categorised into four subcategories within the year. The cut-off date for youth participation in equestrian sport is January 1st therefore Quartile 1 (Q1) included athletes born between January and March, Quartile 2 (Q2) from April to June, Quartile 3 (Q3) from July to September and Quartile 4 (Q4) from October to December, as used in most RAE analysis of Olympic sports (Cobley *et al.* 2018).

The data were analysed using descriptive statistics to reveal any basic pattern trends (Fumarco *et al.* 2017). The quartile data were assumed to be non-parametric and therefore, chi-squared analysis identified whether there was a significant difference in the observed quartile frequencies compared to the expected, to identify whether RAE exists (Arrieta *et al.*, 2016; Parma and Penna, 2018). A Kruskal Wallis test was run to analyse any differences between ranking and quartile, and a Mann-Whitney U test was used to identify any differences in sex and ranking across all sports due to only two grouping variables. To account for the heterogeneous sample sizes for sex, the top 15 male and female riders were compared in each sport. A one-way chi-squared test was used to identify any differences in sex distribution across sports and quartiles. Significance was set at 95% confidence interval using $p<0.05$ (Smith and Weir, 2013).

Results

The data set combined, resulted in the whole data set for RAE analysis (n=1069) consisting of Senior athletes (n=300) split equally between the three Olympic sport (n=100). U25 athletes (n=450) were split equally between Dressage, SJ and endurance (n=100). U21 athletes (n=141) comprised Dressage (n=50), SJ (n=50) and Eventing (n=41) and U18 athletes (178) comprised Dressage (n=50), SJ (n=78) and Eventing (n=50). In the whole data set for sex analysis (n=1072) , 38.2% (n=409) were male and 61.8% (n=663) female where the mean age was

25.9±9.9 years. Three birthdates could not be confirmed and therefore excluded from RAE analysis.

For analysis, each sport was looked at separately and then within each age bracket to identify any RAE, performance ranking by quartile and by sex. To account for the heterogeneity in sample sizes comparison by sex was completed with all athletes within the rankings used and the top 15 (where available) of each sex. Table 1 presents the Chi-square analysis to identify the RAE in all sports and all age groups where there were no significant differences from the expected found (p>0.05).

Table 1: Descriptive statistics for RAE using Q1-Q4 and Chi-square analysis for all equestrian sports

Category	Q1 (%)	Q2 (%)	Q3 (%)	Q4 (%)	Sample size	Chi-squared (χ^2)	Significance (*p*)
All Disciplines	288	258	283	240	1069	5.638	0.131
(Δ)	(20.8%)	(-9.2%)	(+15.8%)	(+27.2%)			
All Seniors	76	77	75	72	300	0.187	0.980
(Δ)	(1.0 %)	(2.0%)	(0.0%)	-3.0%)			
U25 and U21	161	140	162	128	591	5.609	0.132
(Δ)	(13.3%)	(-7.7%)	(14.3%)	(-19.7%)			
U18	51	41	46	40	178	1.730	0.630
(Δ)	(6.5%)	(-3.5%)	(1.5%)	(-4.5%)			
U21	47	36	31	27	141	6.376	0.095
(Δ)	(11.8%)	(0.8%)	(-4.2%)	(-8.2%)			
U25	114	104	131	101	450	4.880	0.181
(Δ)	(1.5%)	(-8.5%)	(18.5%)	(-11.5%)			
Dressage (All)	98	86	90	76	350	2.869	0.412
(Δ)	(10.5%)	(-1.5%)	(2.5%)	(-11.5%)			
SJ (All)	107	81	107	83	378	6.635	0.084
(Δ)	(12.5%)	(-13.5%)	(12.5%)	(-11.5%)			
Eventing (All)	46	52	44	49	191	0.770	0.857
(Δ)	(-1.7%)	(4.3%)	(-3.7%)	(1.3%)			
Eventing (All age groups)	24	23	18	26	91	1.527	0.676
(Δ)	(1.3%)	(0.3%)	(-4.7%)	(3.3%)			

SJ (All age groups)	77	60	82	59	278	5.942	0.114
(Δ)	(7.5%)	(-9.5%)	(12.5%)	(-10.5%)			
Dressage (All age groups)	74	59	66	51	250	4.624	0.201
(Δ)	(11.5%)	(-3.5%)	(3.5%)	(-11.5%)			
Endurance (U25)	40	30	46	34	150	3.920	0.270
(Δ)	(2.5%)	(-7.5%)	(8.5%)	(-3.5%)			

A Kruskal Wallis test of difference was used to identify if there was any significant difference in ranking between each RAE quartile in all sport and the whole data set. No differences were found (p>0.05).

Table 2 outlines the descriptive statistics for the median ranking in males and females within each group. The significance is shown for the Mann Whitney U test of difference between ranking between the sexes and the chi-square value shows whether there is a significant variation from the expected 50% split in sex within each sample where non-significant results are shown as NS.

Table 2: The difference in distribution (Chi-square) and ranking between the sexes (Mann-Whitney U) for each of the sports and age groups
(p<0.05 *; p< 0.01 **; p<0.001, NS = non-significant)***

Category	**Male median ranking (n) %**	**Female median ranking (n) %**	**Total**	**Mann Whitney U Significance of ranking between sex**	**Sex distribution Chi square ((χ^2); p)**
All Disciplines	41 (409) 38.2%	38 (663) 61.8%	1072	NS	60.183; <0.001***
All Seniors	50 (173) 57.7%	52 (127) 42.3%	300	NS	7.053; 0.008**
All Seniors (top 15)	27 (29) 29.2%	8 (45) 60.8%	74	p<0.001*** U = 109.500 Z=-6.016	NS
U25 and U21	46.5 (180) 30.3%	41.5 (414) 69.7%	594	NS	92.182; <0.001***
U18	23.0 (56) 31.4%	22.5 (122) 68.6%	178	NS	NS
U21	27.0(39) 27.7%	23.5 (102) 72.3%	141	NS	28.149; <0.001 ***
U25	54.0 (141) 31.1%	52.0 (312) 68.9%	453	NS	64.550; <0.001***

Dressage (All)	58.5 (98) 28%	52.0 (252) 72%	350	NS	67.760; <0.001***
Dressage (All age groups)	64 (65) 26%	52 (185) 74%	250	p=0.021 * U=4851.000 Z= -2.316	57.600; <0.001***
Dressage (Seniors) top 15	25 (15) 50%	8 (15) 50%	30	p<0.001*** U = 19.000 Z = -3.878	NS
Dressage (All age groups top 15)	47 (29) 39.2%	13 (45) 60.8%	74	p<0.001 ** U=343.000 Z= -3.439	NS
SJ (All)	30.0 (191) 50.5%	26.0 (187) 49.5%	378	p=0.034* U=15608.0 Z=-2.119	NS
SJ (seniors) Top 15)	7.5(14) 48.3%	41 (15) 51.7%	29	p<0.001*** U=205.000 Z=4.364	NS
SJ (All age groups)	22(106) 38.1%	25 (172) 61.9%	278	NS	15.669; <0.001***
SJ (All age groups) (top 15)	7.0 (45) 50%	7.0 (45) 50%	90	NS	NS
Eventing (All)	35.0 (76) 39.7%	30.0 (115) 60.3%	191	NS	7.963; 0.005**
Eventing (All age groups)	26.0 (21) 23.1%	22.0 (70) 76.9%	91	NS	26.385; <0.001***
Eventing (seniors) top 15	11(15) 50%	25 (15) 50%	30	p<0.001*** U=193.00 Z= 3.339	NS
Eventing (All age groups) Top 15	26.0 (21) 41.1%	10 (30) 68.9%	51	p<0.001*** U=106.000 Z=-4.002	NS
Endurance (U25)	89.5 (44) 28.8%	64.0 (109) 71.2%	153	p=0.045 * U=1902.0 Z= -2.002	27.614; <0.001***
Endurance (U25) top 15	35 (15) 50%	9 (15) 50%	30	p<0.001*** U = 9.000 Z =-4.306	NS

Discussion

The findings indicate that no RAE is present in the equestrian sports selected in this study. The results show that athletes born at the start of the selection period (Q1) have no potential advantages over athletes born later, unlike other sports including basketball and alpine skiing (Arrieta *et al.* 2016). The maturation-selection hypotheses advantage is not seen in equestrian sport, suggesting that performance may be more complex than those sports exhibiting a RAE where physicality and cognitive maturity are key performance indicators (Lovell *et al.* 2015).

Like in many sports, the athlete's individual psychological approach to competitive sport may play a key role in their ability to reach elite performance, as motivation and drive to perform can play a major role in performance potential (Lamperd *et al.* 2016). Structured interviews on elite rider perception of factors influencing their pathway to elite sport suggest willingness to learn, coaches at youth level that facilitate confidence and skill development, access to suitable horses and supportive environments are the main influences on performance development of young riders (Lamperd *et al.* 2016). This study suggests that social and psychological factors play a key part in rider performance, which is largely influenced by parents and therefore also social background and financial situation (Strandbu, Bakken and Sletten, 2019) minimizing the potential impact of physical maturation as found in other non-traditional sports models (Buning, Coble and Kerwin, 2015). Equestrian performance and participation is commonly associated with higher socioeconomic groups, birthplace and the ability of the horse within the partnership (Dashper and Fletcher, 2013; Davies and Collins, 2015). Whilst there may be elements of maturation that benefit performance, if not trained in the correct environment with enough support, these may be outweighed by psychosocial factors making them less obvious. This is seen in some skill-based later specialization sports such as golf, where it is suggested that perhaps social factors such as birthplace have a greater influence on performance potential by allowing the athlete better or worse accessibility to train key skills (Côte, Strachen and Fraser-Thomas, 2008).

Athletes who are not as physically mature in sports where RAE is prevalent, have a greater likelihood of drop out (Gil *et al.* 2021). In equestrian sport the most influential factors for the reason to drop out are financial factors, loss of access to a horse and lack of time from the rider (British Equestrian Trade Association (BETA), 2019) but this survey was completed by non-elite adults and so may not apply to U18 or U21 age groups or the elite. Transition within performance pathways can also be associated with drop out due to academic goals, effects on social life and reduced confidence, however this was found in event riders within an existing development programme and therefore other factors could exist in those outside of this infrastructure (Pummell, Harwood and Lavallee, 2008). Studies in soccer have found that children born in Q3 or 4 were 25% more likely to drop out of the sport. In riders, drop out could be increased in those riders competing when they are younger within the U18 age classification range due to lower motivation if not gaining results against the older children in the category and is worthy of future investigation. This may result in the phenomena of "evolution of the fittest" cited within RAE research as a result of resilience, motivation, mental toughness and skill of those who continue with the sport no matter of age status (Jones, Lawrence and Hardy, 2018). Although physical maturation aspects could be suggested to have minimal effects on performance in line with sex integration of equestrian sport, there is a wide cognitive disparity between a child of 12 competing against one of 18 which is commonplace in some sports. In a skill-based sport where decision making is integral, such as equestrianism this cognitive gap may magnify drop out at younger ages (Temürçi, Bayraktar and Nalbant, 2020). Drop out in equestrian sport is often seen at age 16 and in the 12-14 age-group which aligns with puberty and therefore transition from ponies to horses for many (Alge, 2008). Potentially maturation indicators such as peak height velocity could be used to identify onset of puberty to prepare a rider for the transition to horses more holistically and reduce the potential negative impact on self-esteem and the effect of exiting the pony competition structure as seen in Davies and Collins (2015).

Factors affecting participation and success in equestrian sport include family, culture, parental influence, access to facilities, the horse(s) and the financial costs associated with it (Dashper and Fletcher, 2013). Hancock, Adler and Côté (2013) suggested several theories to explain RAE's in sport. They proposed that parents influence RAE's through Matthew effects (Merton, 1968), where certain individuals begin with advantages that their peers do not possess and those advantages persist over time. This is especially prevalent in the equine industry where parents who are affluent or better placed within the industry are more likely to be able to access better quality horses, equipment and coaching for their children (Lamperd *et al.* 2016). The dominance of certain families in equestrianism and recognition of their role in the Performance pathway handbook further illustrates the potential parental influence as a success factor.

Competition structure is the most powerful tool for eliminating RAE and ultimately determines how athletes should train (Hollings, Hume and Hopkins, 2014) suggesting a lack of age grouping or using pony size may minimize any potential RAE. Where U18 and U21 classifications can incorporate up to six chronological age years in the UK, the selection-maturation hypothesis could potentially need to be adapted to identify RAE across the whole age range rather than within a calendar year. Where there is no age-group classification in junior equestrian sport there could be a greater drop-out rate of talented individuals at a young age reducing participation and potential performance success and exacerbating the need for timely support, coaching and development opportunities outside of structured competition.

In equestrian sport, where the height of the horse/pony is used alongside age categorisation there is an additional developmental aspect to consider. Rider size may therefore be more limiting in performance in age group competition for those competing on ponies and so maturation timing and tempo could indeed be a factor but not seen due to a lack of ability to compete. A rider aged 16, particularly post-pubescent males, may be too big to compete on ponies and therefore not get the opportunity or self-esteem to gain experiences at this developmental stage, the result of which is not known currently (Davies and Collins, 2015). This further exacerbates how equestrian sport will differ from more traditionally categorised sports and has been highlighted in weight category sports such as Judo, boxing and Taekwondo where no RAE was seen (Delorme, 2014). Carling *et al.* (2009) found significant differences in body mass (≈ 7 kg) between Q1 and Q4 soccer players in one year group which could be much greater in equestrianism due to wider age categories resulting in size, onset of puberty and morphology being influential in competition structure, route and opportunities. Where pony height is used to categorise in specific age groups there could be a potential advantage to being smaller or at least the norm in terms of maturation, however any fair solution would negatively impact on pony welfare and therefore not viable. If riders are not able to compete due to physical size or maturation timing then they may not have access to development pathways or competition and may have to compete against adults resulting in lower motivation or drop out. The role of child on horse competition at all age ranges could help to address some of the challenges highlighted and not discriminate against early onset of puberty, sex or other physical attributes that can prevent participation in pony competition.

The results of the current study highlight an effect of sex on performance in terms of prevalence and ranking and how these change through the age groups. Although equestrian sport is sex integrated, at elite levels it is clear that men are performing disproportionately better than women in SJ and Eventing which is reversed in dressage and endurance (Dumbell, Rowe and

Douglas, 2018). Although Whitaker, Hargreaves and Wolframm (2012) identified no physiological, psychological and morphological factors that affected performance between men and women, the difference in ranking at elite level still exists. The advantages due to sex are not obvious, but they could be more multifactorial and complex combining physiological, psychological and sociocultural factors. Equestrian sports have a much greater career longevity for riders demonstrated by the average athlete age being much greater than most other Olympic sports (37-44 years) (Dumbell, Rowe and Douglas, 2018) resulting in potentially even more complexity to the differences observed between the sexes.

In some equestrian sports it is suggested, as seen in more traditional sports that males gain more media coverage, are more likely to be scouted and are more likely to receive sponsors. Lamperd *et al.* (2016) identified key factors that make an elite rider which included psychological skills (motivation and self-confidence), entrepreneurial skills, competitiveness, the ability to overcome problems and financial security. Males at elite level are more likely to be business oriented and focused on how to make money compared to women which could be a factor as to why they survive being at the top level (Coulter, 2014). Many studies have found men to be more competitive and more likely to show risk taking behaviour compared to women which may be why there are more males at elite level in jumping based sports as females are more likely to drop out (Datta Gupta, Poulsen and Villeval, 2013).

Self-confidence is a key attribute to become an elite equestrian rider and males are found to have more self-confidence than females which could also help to explain the overrepresentation of males at elite level (Lamperd *et al.* 2016). Females are generally shown to be more risk averse under stress and during exercise which exacerbated when they become a parent in high-risk sports such as climbing (Jones McVey, 2021). Females are shown to be more likely to retire from elite sport to start a family, if evident in equestrianism this could further increase the dominance of males at senior levels, like other sports and events, equestrianism are taking steps to be more inclusive for maternity leave, but this requires evaluation (McGannon *et al.* 2015).

In endurance, females significantly ranked higher than males, and overall, there was a higher proportion of women competing in endurance. This is contrasting compared to other studies who have looked at elite endurance riders with Bennet and Parkin (2018) results showing 30% of riders were female and 70% were male. This may be because the selection for this study was U21 and as previously discussed at younger ages more females participate (BETA, 2019). Kruger, Viljoen and Cronjé (2020) looked into endurance riding participants where 63% of respondents were female and 37% male suggesting that sex distribution is very much dependent on geographical location and level, further adding to the socio-cultural effect on participation.

Socio-cultural factors associated with equestrian sports have been highlighted as potentially being more influential than physiological but these require further investigation. Key areas to study are sport selection, drop out, parental involvement and youth development programmes. Where age groups comprise multiple ages to compete in the same classification, future studies should focus on the potential effect this has on development opportunities, drop out, age they enter the athlete development structure and whether there is a relative age effect evident between the ages included within the classification. Pony height rather than chronological age being used in junior SJ and Eventing classification is an area identified for further investigation to explore whether and when rider size (and maturation) effects the progression within the competition structure and what effect this has on future development.

Limitations of the current study include the selection of age group classifications and use of both world and UK based rankings. Another limitation is the use of a single ranking year, commonly seen in this type of study, however the pandemic widely affected equestrian sports and therefore subsequent years were not deemed representative (Smith *et al.* 2018). The different classification systems could enable participants to appear in more than one analysis set, but, again, this is representative of equestrian sport and therefore was not deemed to be exclusion criteria.

Conclusion

The primary objective was to identify whether there was a RAE in any of the selected equestrian sports at different age groups. No RAE was observed in any of the equestrian sports in this study, disagreeing with the more commonly observed Q1 dominance in other youth sports. The lack of RAE highlights the complexity of equestrianism as a sport where physical maturation may not be as important in athlete development as other sports that exhibit RAE similar to other technical or skill-based sports. The structure of the different equestrian sports reduces consistency in talent development structures and their potential efficacy. This also could encourage earlier specialisation into certain sports and may exacerbate the sex differentiation observed in elite riders. A more consistent approach to youth competition could enable talent identification and athlete development pathways to be more effective but could also be exclusionary and raise welfare concerns where ponies are used. The secondary objective was to identify whether there was a performance difference between males and females in each of the sports and age groups. A clear male dominance was observed in jumping sports at senior level, but this was not seen in the age group classifications and did not mirror the sex distribution of competitors. A female dominance was observed in dressage and endurance where both these sports had much greater female participation throughout the age group progression. A clear sex difference in the ranking and participation raises questions over the integration of sex in equestrian sport which requires further validation and research.

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Dear Kenneth,

Thank you for your feedback on our submission, please find the response to reviewers below:

Reviewer #1: I enjoyed reviewing this paper and as both an academic and coach I thought the topic was relevant and interesting. In the main I found the paper easy to read and follow. My only confusion came when looking at Table 2. Rather than suggesting P=0.000, I would prefer to see P<0.001. In the row associated with line 12/page 7 there is a single bracket remaining. There are several places where P<0.001 but only has two **. Have I miss understood the explanation or should these be three ***. The row for U18 has no chi-squared or P value, it just states NS but other non-significant results are included. This column does not seem to use the asterisk system at all. Is this intentional?
I have changed all occurrences of p=0.000 to p<0.001 as suggested and corrected the asterisk anomalies. All p<0.001 are now ***, p<0.01 ** and p<0.05 * as per the Table heading and all NS values have been changed for consistency to NS as per the Table heading.

I have uploaded the revised manuscript. It is only Table 2 that has been changed as per the reviewer comments.

Thank you, once again,
Best Wishes

Kate
Dr Kate Wilkinson
Head of Teaching and Learning
Hartpury University