
SYMPTOMS OF SEXUAL DIMORPHISM REGARDING THE RESULTS OBTAINED BY PARTICIPANTS OF THE OLYMPIC GAMES -2000 AND 2012 IN TRIATHLO

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Key words:

- triathlon,
- the Olympic games,
- sexual dimorphism,
- result,
- sport.

Abstract:

The thesis contains characteristics and assessment of the result comparison in triathlon obtained by women and men during the Olympic Games in Sydney-2000 and in London -2012. Results were assessed considering each of the three events of triathlon and the final result in triathlon. Current scientific research show that in sports efforts where strength plays a dominant role, women have lesser functional abilities of their body compared to men. Therefore one may theoretically think that the process of endurance sports training in triathlon is less complex, much easier than in pentathlon or in decathlons in which the training is aimed at shaping all fitness skills.

The thesis also presents the symptoms of sexual dimorphism with respect to results achieved in triathlon events during the Olympic Games in Sydney, which suggest the need to differentiate women's and men's sports training programs. Opinions presented in available literature are that until there are differences in sports results, it will be necessary to differentiate trainings for women and men [Armstrong 2000, Socha 2002, Grzywocz, Socha 2004, Socha.S, 2004, 1994]

INTRODUCTION

Triathlon is a complex sports discipline. It contains three components of different sports disciplines: 1.5km swim, 40 km bike ride and 10 km run [Friel 2010, Socha T. 2006, Stępnia 2009].

The difference between triathlon and other complex sports disciplines such as modern pentathlon or women's or men's decathlons is that in all three events coming from various sports disciplines, results achieved are determined by common fitness feature, that is by endurance. Theoretically one may think that the process of endurance sports training in triathlon is less complex, much easier than in pentathlon or in decathlons where the training is aimed at shaping all fitness skills [Raczek, Młynarski, Ljach 2002].

Practical experiences show that one cannot use common methods and training measures in the process of training, which are favourable for high results in all three events of triathlon [Grzywocz, Socha 2005].

Training measures and methods must be individual for particular events, especially in swimming where an effort is being performed in an environment which is unnatural for the proper functioning of the human body [Czabański, Fiłon, Zatoń, Marais, Spevielle 2004, Munatones 2013].

THESIS METHODOLOGICAL ASSUMPTIONS

Purpose and subject of research of this thesis is to perform characteristics and assessment of results comparison in triathlon in women and men during the Olympic Games in Sydney 2000 and in London 2012. Results obtained in each of the three events and also the final result in triathlon were assessed.

The subject of research is results in triathlon achieved by women and men during the Olympic Games in questions. The analysis considered average values of analysed parameters of three medal winners and thirty women and men with the best results in triathlon. The question was put- are functional abilities of women's body favourable for achieving high sports results in all three components of triathlon to the same degree?

Such collected material was prepared using the basis methods of quantitative analysis. The mean arithmetic and differences in average along with supplements. The range of symptoms of sexual dimorphism was presented as a percentage [Graton, Jones 2010], in the form of tables and drawings.

RESEARCH RESULT ANALYSIS

Introduction of triathlon into the Olympic Games program for women and men since 2000 in Sydney have initiated discussion on the need to recognize functional abilities in women to undertake efforts particular for triathlon components.

Efforts that are related with performance of events of triathlon have the form of endurance cyclic efforts. They are performed in slightly different environments. 1.5 km swim takes place in a water environment which is not typical for a human body, bike ride is also different from natural functioning of the human body. Only 10 km run is the most natural form of effort for a human [Rzepka, Socha 2012].

A question arises- are functional abilities of women's body favourable for achieving high sports results in three components of triathlon to the same degree and how and in what scope, women's sports training program should be different from men's program so that women could obtain high sports results without damaging their health, particularly maternity functions.

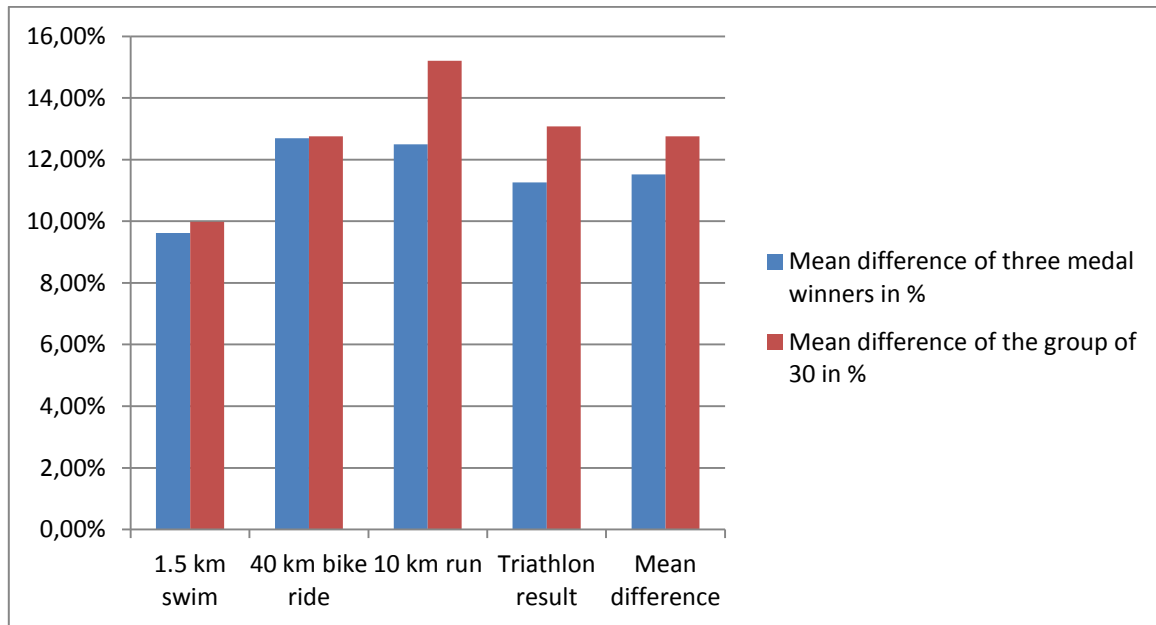
One of the basic opportunity on recognizing special properties of women's body subject to intensive training and starting efforts is an assessment of their sports results in particular disciplines and sports events considered with respect to sexual dimorphism.

Scale of differences concerning the results of women and men is a measure of assessment of functional abilities of women and at the same time an indicator for differentiation of women's and men's sports training programs [Socha S. 21999, Socha T. 2002, Tarnopolski 2000].

During the Olympic Games in Sydney, where for the first time women and men competed in triathlon, the highest functional level women showed in 1.5 km swim. The differences between results achieved by women and men, both three medal winners and the group of 30 persons did not exceed 10 percent. In 10km run women presented considerably lower functional level of their abilities. The differences in results were much higher. Average result of three medal winners were lower than men's by 12.50% and average result of the group of 30 even by 15.20%. Bike ride at 40km among the top three and thirty remained at a level below 13%, which is the reason the tactics of playing the Olympic triathlon at the allowed driving in the peloton. Table 1 and Drawing 1

Table 1. Scale of sexual dimorphism regarding the results obtained by participants of the Olympic Games in Sydney in triathlon.

No.	Event	Mean difference of three medal winners in %	Mean difference of the group of 30 in %
1	1.5 km swim	9,62%	9,98%
2	40 km bike ride	12,69%	12,75%
3	10 km run	12,50%	15,20%
4	Triathlon result	11,26%	13,08%
5	Mean difference	11,52%	12,75%

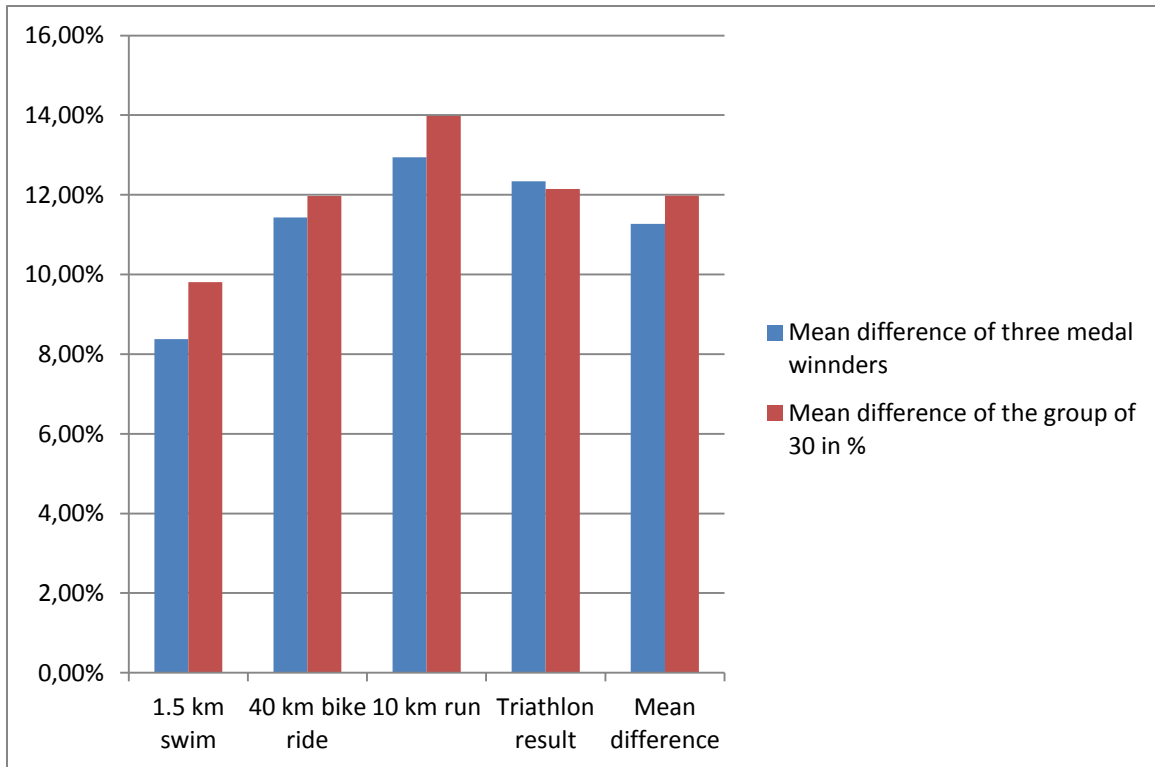


Drawing 1. Scale of sexual dimorphism regarding the results obtained by participants of the Olympic Games in Sydney in triathlon.

Also during the Olympic Games in London, the highest level of their functional abilities women showed in 1.5 km swim, that is 8.37% in three medal winners and 9.87% in the group of 30 qualified contestants. However, in 10km run women did show such high level of functional abilities. Also has improved cycling for 40km, which was well below 12%. The difference in results were much smaller than during the Olympic Games in Sydney. Average result of three medal winners was almost the same as in Sydney, 12.94% compared to men's results and 13.98 % of the group of 30 contestants. Table 2 and Drawing 2.

Table 2. Scale of sexual dimorphism regarding the results obtained by participants of the Olympic Games in London in triathlon.

No.	Event	Mean difference of three medal winners	Mean difference of the group of 30 in %
1	1.5 km swim	8,37%	9,81%
2	40 km bike ride	11,43%	11,97%
3	10 km run	12,94%	13,98%
4	Triathlon result	12,34%	12,15%
5	Mean difference	11,27%	11,97%



Drawing 1. Scale of sexual dimorphism regarding the results obtained by participants of the Olympic Games in London in triathlon.

Obtained results show that the scale of symptoms of sexual dimorphism have dwindled. Considering the average result of three medal winners in all events and the final result in triathlon by 0, 25% and by 0.78% in the group of 30 contestants. This means that the progress in results within the period of 12 years was higher in women than in men. The biggest was recorded in three medal winners in swimming- 1, 25% and in 40 km bike ride- 1,26%.

Table 3. Scale of sexual dimorphism regarding the results obtained by participants of the Olympic Games 2000 and 2012 in triathlon.

Lp	Konkurencja	Mean difference of three medal winners	Mean difference of the group of 30 in %
1	1.5 km swim	1,25%	0,15%
2	40 km bike ride	1,26%	0,78%
3	10 km run	-0,44%	-1,78%
4	Triathlon result	-1,08%	0,93%
5	Mean difference	0,25%	0,78%

What triggers such considerable weaker functional abilities of woman, despite the fact that efforts in both events are focused on endurance. Probably this is a combination of these two factors. During swimming, the human body is not affected by the force of gravity. The majority of effort is aimed at overcoming the resistance of water environment when swimming horizontally. During a run, the majority of effort is used to overcome the force of gravity when moving the centre of gravity of a human body vertically considering take off and landing.

RESULTS AND CONCLUSIONS

Current research and practical observations clearly show that in sports efforts where strength plays a dominant role, women have the smallest functional abilities compared to men. The other, less significant reason is related with the fact that the part of women practiced swimming many years ago before they started their adventure with triathlon. Presented symptoms of sexual dimorphism considering results obtained in triathlon events during the Olympic Games in Sydney suggest the need to differentiate women's and men's sports training programs. Opinions presented in available literature are that until there are differences in sports results, it will be necessary to differentiate trainings for women and men [Armstrong 2000, Socha 2002, Grzywocz, Socha 2004, Socha.S, 2004, 1994].

Sydney and London Olympic Games suggest that the most important differentiation of training programs is necessary in running, and in bike ride. Women's and men's swimming training may have the biggest number of common features.

Presented symptoms of sexual dimorphism regarding results obtained during Sydney Olympic Games 2000, and London Olympic Games 2012 constitute an attempt to find an answer if in the period of 12 years women's and men's triathlon the relations of their functional abilities have changed.

The symptoms of sexual dimorphism however justify the need to differentiate training programs, tailored to special functional abilities of women's body.

BIBLIOGRAPHY

1. Armstrong L.E., 2000. *Performing in extreme environments*. Human Kinetics Books.
2. Czabański B., Fiłon M., Zatoń K., 2007. *Elementy teorii pływania*. AWF Wrocław.
3. Friel J., 2010. *Triathlon biblia treningu*. Warszawa.
4. Graton C., Jones I., 2010. *Research methods for sports studies*. Routledge. London and New York.
5. Grzywocz R., Socha T., 2004. *Analiza intensywności długotrwałych wysiłków startowych kobiet i mężczyzn*. W: Kuder A., Perkowski K., Śledziewski D., red. *Proces doskonalenia treningu i walki sportowej*. AWF Warszawa, s.32-35.
6. Grzywocz R., Socha T., 2005. *Women's recreation – endurance efforts from the perspective of modern science*. Annales UMCS, Vol. LX, Suppl. XVI., 5: 173-176.
7. Marais J., Spevielle L., 2004. *Adventure racing*. Human Kinetics.
8. Munatones, S., 2013. *Pływanie na wodach otwartych*. Wyd. Buk Rover. Warszawa.
9. Raczek, J., Mynarski W., Ljach W., 2002. *Kształtowanie i diagnozowanie koordynacyjnych zdolności motorycznych*. AWF, Katowice.
10. Rzepka S., Socha, T., 2012. *Adventure Race – warianty ekstremalnego wysiłku w rajdach przygodowych*. AWF Katowice: Zeszyty Metodycznie Naukowe, s. 41-48.
11. Socha S., 2001. *Sport kobiet – wyzwanie dla nauki*. Sport Wyczynowy, s. 3-4, 5-10.
12. Socha. S., 1999. *Współczesne problemy sportu kobiet*. W: S. Socha, red. *Problemy dymorfizmu płciowego w sporcie*. Katowice: AWF, s 8-13
13. Socha T., 2002. *Sport kobiet. Historia, teoria, praktyka*. Warszawa: COS.
14. Socha T., 2002. *Problemy dymorfizmu płciowego w sporcie*. AWF, Katowice.
15. Socha T., 2006. *New perspectives and challenges: sport performance of middle age and elderly women*. Medicina Sportiva, Vol. 10 (4), s. 110-113.
16. Stępnia R. (pr. dokt.), 2009. *Historia triathlonu w Polsce w latach 1984-2004*. Gorzów Wlkp: ZWKF
17. Tarnopolsky M.A., 2000. *Gender differences physiology*. Can. J. Appl. Physiol, s. 25, (40): 272-273.