

## JULY 2015 NEWSLETTER

### ANDROGENS AND CARDIORESPIRATORY FITNESS IMPAIRMENT IN PCOS

This issue newsletter is dedicated to the possible influence of excessive androgen production on cardiorespiratory fitness in normoweight women with PCOS.

Poli Mara Spritzer, M.D., Professor of Endocrinology at the University of Rio Grande do Sul, Brazil, and member of the Editorial Board, has interviewed Paolo Moghetti, M.D., about his study on cardiorespiratory fitness of normoweight women with PCOS. Paolo is Associate Professor of Endocrinology at the University of Verona, Italy and member of AEPCOS Society from its foundation in 2002.

The updated program and some practical information regarding 13th AEPCOS Annual Meeting that will be held in Siracusa, Sicily, Italy, October 4-6, 2015 are presented, too.

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- \* Androgens and cardiorespiratory fitness impairment in normoweight women with PCOS
- \* Program of 13th AEPCOS Annual Meeting,

#### Editorial Board

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### FORTHCOMING AEPCOS MEETINGS

- 13th Annual Meeting of AEPCOS Society, Siracusa, Italy, October 4-6, 2015
- 14th Annual Meeting of AEPCOS Society, Australia, November 2016



## 13th ANNUAL MEETING OF AEPCOS SOCIETY

Next annual meeting of AEPCOS Society will be held October 4-6, 2015 in Siracusa, Sicily, ITALY. The conference venue is the Hotel des Etrangers, Passeggio Adorno 10-12, 96100 Siracusa, Italy.

The preliminary program, registration and hotel reservation form are available at: [www.ae-society.org/annual-meeting](http://www.ae-society.org/annual-meeting).

It is strongly recommended to reserve the hotel as soon as possible because early October is high touristic season in Sicily.

The most convenient airport is Catania airport that is linked by many daily flights to most European cities. Hourly flights from Rome and Milan permit easy connections for flights arriving from USA, South America and Asia. A taxi from the Catania airport to the historical center of Siracusa takes 40-60 minutes and costs 70 euro. There is hourly bus service to Siracusa which costs 6.2 euro while all main rental car companies have their office at Catania airport.



For further information, please check our website or contact: [enrico.carmina@ae-society.org](mailto:enrico.carmina@ae-society.org)

# PATIENT ASSOCIATIONS INTERNATIONAL MEETING

**Siracusa, Italy, October 4, 2015**

PCOS Challenge Group is organizing an international meeting of patient associations in Siracusa, Sicily, Italy, October 4 morning, immediately before the 13th AEPCOS Annual Meeting. .

## PRELIMINARY PROGRAM

8:00 - 8:35 - Registration

8:35 - 8:45 - PCOS Awareness and Advocacy - Sasha Ottey

8:45 - 9:15 - Overview: Understanding PCOS and Its Diagnosis - Dr. Enrico Carmina

9:15 - 9:45 - Lifestyle Management of PCOS: Nutrition, Exercise - Stefania Cattaneo

9:45 - 10:00 - BREAK

10:05 - 10:45 - Emotional Wellness in Women and Girls with PCOS - Dr. Elisabetta Scaruffi?

10:45 - 11:15 - Improving Fertility in Women with PCOS - Dr. Franca Fruzzetti

11:15 - 11:55 - PANEL Discussion and Q&A

11:55 - 12:00 - Closing Remarks; Adjourn

For further information contact: [info@pcoschallenge.com](mailto:info@pcoschallenge.com)



Paolo Moghetti, M.D.

# CARDIORESPIRATORY FITNESS IMPAIRMENT AND ANDROGEN LEVELS IN NORMOWEIGHT PCOS

In this issue, Poli Mara Spritzer has interviewed Paolo Moghetti about the study that he has published online on Clinical Endocrinology. The study shows that testosterone levels may predict the degree of cardiorespiratory fitness impairment in normoweight women with PCOS.

*Bacchi E, Negri C, Di Sarra D, Tosi F, Tarperi C, Moretta C, Schena F, Bonora E, Kaufman JM, Moghetti P. Serum Testosterone Predicts Cardiorespiratory Fitness Impairment In Normal Weight Women With Polycystic Ovary Syndrome. Clin Endocrinol (Oxf) 2015, July 15*

## 1. **Paolo, what was the main question that motivated this study?**

Insulin resistance and obesity are frequent findings in PCOS women, and we know that both these conditions may benefit from regular exercise. As a consequence, regular exercise is generally recommended as a first-line strategy, along with a low-calorie diet, in the management of overweight/obese PCOS women.

Nonetheless, there are several different modalities of exercise training, such as aerobic exercise or strength exercise. Interestingly, they have specific effects, with possible synergistic action on the metabolic aspects. Unfortunately, current recommendations on exercise modalities to be used in PCOS women are mainly based on information obtained in subjects with other conditions characterized by insulin resistance, such as type 2 diabetes.

Limited information in PCOS women showed that cardiorespiratory fitness, i.e. the capacity of the body to utilize oxygen during exercise, may be impaired in these patients. However, results were controversial, and studies were limited to PCOS women with body fat excess. From these data it remains unclear whether fitness impairment is associated with PCOS per se or is due to body fat excess.

Therefore there was a need to understand whether cardiorespiratory fitness is impaired in these women, independent of body fat excess, and to establish the mechanisms underlying this phenomenon. To answer these questions, we have measured cardiorespiratory fitness in a group of normal-weight PCOS women, carefully assessing some factors potentially influencing this feature, such as insulin sensitivity and androgen levels, by using the glucose clamp and the mass spectrometry methodology, respectively.

**ANDROGEN  
EXCESS &  
PCOS SOCIETY**

12520 Magnolia Boulevard,  
North Hollywood,  
CA 91607, USA

Email :  
[info@ae-society.org](mailto:info@ae-society.org)

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[www.ae-society.org](http://www.ae-society.org)

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Selma Witchel, M.D.

**2. *Could you state your most important findings?***

We have found that  $V'O_2\text{max}$ , i.e. the maximal aerobic exercise capacity of an individual, is strikingly impaired in normal-weight PCOS individuals, as compared with sedentary healthy controls. Moreover, oxygen consumption at both the first and second ventilatory thresholds was also significantly lower in PCOS subjects than in healthy women. These alterations in submaximal exercise capacity suggest that these subjects could have an impaired capacity of daily living activities later in life, if they are not counteracted by regular exercise training.

Interestingly, in multiple regression analysis,  $V'O_2\text{max}$  was negatively predicted by serum testosterone levels, but not by body fat mass and glucose disposal rate, suggesting a direct role of androgen excess in these abnormalities.

**3. *What could be the implications of your findings regarding physical exercise recommendations as part of lifestyle changes for PCOS patients?***

Our study is preliminary. However, these data suggest that capacity of aerobic exercise may be lower than expected in young PCOS women, even in normal-weight individuals. This information should be considered when designing the exercise programs, as exercise schedules should be tailored according to the individual characteristics of subjects.

Customary recommendations for aerobic training in sedentary insulin resistant subjects advise to accumulate at least 150 minutes per week of moderate intensity (40-60% of  $V'O_2\text{max}$ ) aerobic exercise, or at least 75 minutes per week of vigorous intensity (61-75% of  $V'O_2\text{max}$ ) exercise, although greater volumes are appropriate in obese subjects. According to our findings the highest sustainable intensity of aerobic exercise in a typical normal-weight, sedentary PCOS individual could be about 8.5 MET. However, this value could be even lower in many of these subjects.

**4. *What additional studies would be needed?***

Our knowledge on this issue is still limited and further research is needed. In particular, we need to understand how to improve these alterations of PCOS women. Future research should also investigate whether exercise training protocols should be specifically designed according to the unique characteristics of this condition. An interesting point would be to understand whether resistance exercise training might be more appropriate in PCOS individuals, as compared with other conditions characterized by insulin resistance. Limited information suggests that androgens may induce a shift from type I oxidative fibers towards type II glycogenolytic fibers. This phenomenon may potentially concur to impair both oxygen uptake during exercise and insulin sensitivity, while influencing skeletal muscle capacity.