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Effect of menstruation on sprint performance in female rugby players

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Introduction

- Menstruation affects females between the ages of 8-16 years and 45-55 yrs
- 28 day cycle of ovulation and termination
- Two phases; Proliferative and Luteal
- Complications can arise like dysmenorrhoea, as well as primary and secondary amenorrhea

What we know so far...

- During menstruation:
- Haemoglobin levels ↓ resulting in fatigue (Brooks-Gunn, 1986)
- Body temperature ↑ (Johnson, 1972; Birch, 2000) which affects negatively both aerobic and anaerobic performance (Gonzalez-Alonso, 1999)
- Miskec (1972) assessed anaerobic performance during and post-menstruation using the Wingate test and found no difference in peak power
- No known evidence on anaerobic performance during weight bearing activities

Menstruation and women's rugby

- Fifteen thousand women play rugby weekly (rfu.com, 2010)
- Multiple sprint sport
- Weight bearing



Purpose of study

- To investigate whether anaerobic performance is affected during menstruation with a group of female rugby players
- To investigate the relationship between body temperature and performance in a 60 m sprint

Method: participants

- 12 female rugby players; age range: 18 -34 years
- Anthropometry (mean \pm SD: 26 \pm 8 yrs, body mass: 73.92 \pm 14.41 kg, stature: 157 \pm 8.94 cm)
- Training experience : 5 \pm 4 years

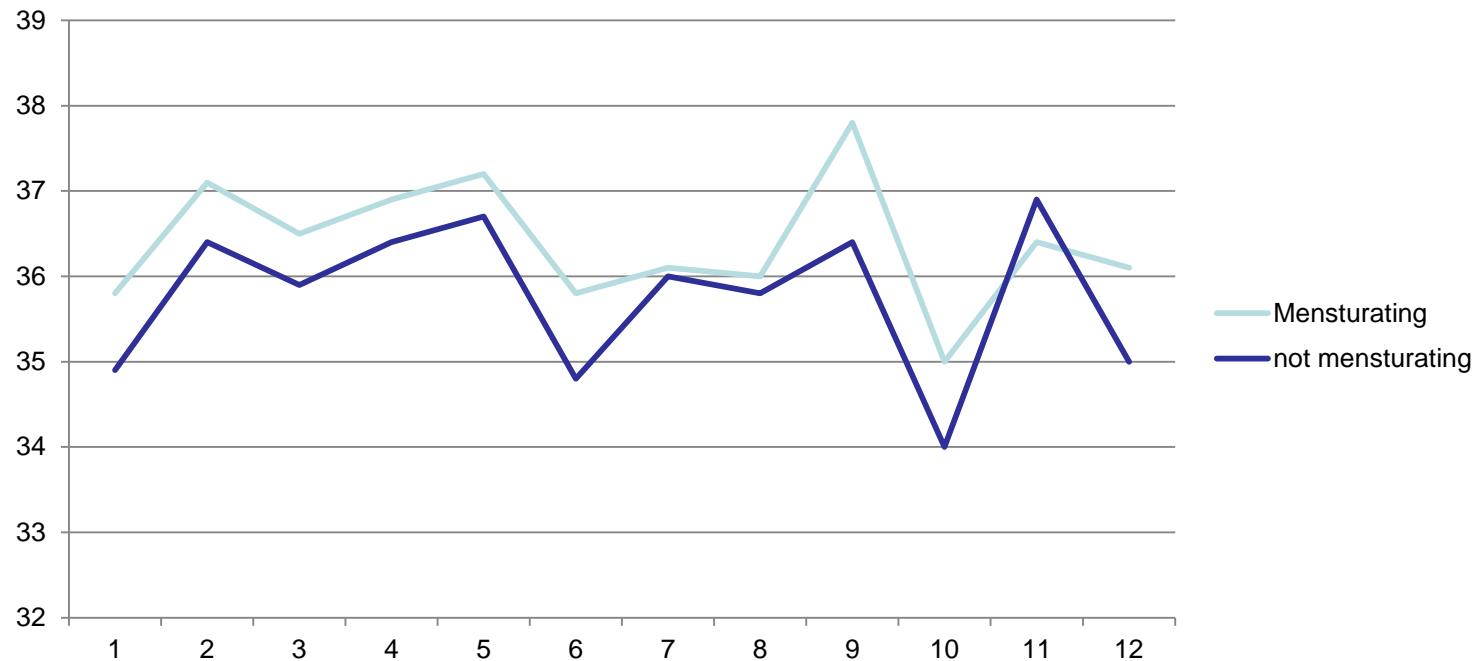
Method: test & measurements

- Two testing sessions; non-menstruation and during luteal phase
- Body temperature recorded using a tympanic thermometer ($^{\circ}$ C)
- Results were recorded and best times used for results

- 60 m sprint test using timing gates
 - 3 trials
 - Times recorded ; mean and best time calculated for each session

Results

non-menstrual: 35.77° C menstrual: 36.39° C,
P=0.0007



*

Fig. 1. Body temperature during and post-menstruation in female rugby players (n=12). * Sig at P<0.05

Results

Graph of mean best times here (Mean menstruation: 10.86 ± 1.31 s, mean non-menstruation: 10.51 ± 1.39 s, $P= 0.00004$)



Fig.2. Best sprint times during and post-menstruation in a 60m sprint in female rugby players (n=12). * Sig at $P<0.05$

- The results show that body temperature increases during menstruation – result agrees with findings of Johnson (1972) and Birch (2000)
- Sprint times increase by 0.3 seconds on average during menstruation – results contradict Miskec (1972)

- It appears that menstruation has a negative effect on sprint performance
- This effect might be explained by the influence of body temperature on maximal speed (Gonzalez-Alonso, 1999)
- An important consideration for athletes and coaches in multiple sprint sports

Further research opportunities

- Look in to the effects menstruation has upon performance within different settings
- The effect of contraceptives upon performance
- The effects of amenorrhea upon performance

References

- Birch, M. (2000) *Sport and Exercise Physiology Testing Guidelines*. London: The British Association of Sports and Exercise Sciences Guides. p239.
- Brooks-Gunns, J. (1986). Men's and Women's Attitudes and Beliefs about the Menstrual Cycle. 14 (1), p287-299.
- Gonzalez-Alonso, J. (1999). Influence of Body Temperature on the Development of Fatigue During Prolonged Exercise in the Heat. *Journal of Applied Physiology*. 86 (3), p1032-1039.
- Johnson, H. (1972) Thermal Injury due to Normal Body Temperature. *American Journal of Pathology*. 66 (3), p557-564.
- Miskec, C. (1997). Do Varying Environmental and Menstrual Cycle Conditions Affect Anaerobic Power Output in Female Athletes?. *Journal of Strength and Conditioning Sciences*. 11 (4), p219-223.
- WRFU. (2010). *Women in Rugby*. Available: <http://www.rfu.com/TakingPart/Play/WomenGirls.aspx>. Last accessed 17th December 2010.