123 - ANAEROBIC PERFORMANCE ON WINGATE TEST OF REGULAR USERS OF MONOPHASIC ORAL CONTRACEPTIVE IS NOT INLFUENCED BY MENTRUAL CYCLE PHASE

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INTRODUCTION

The 20th century has brought ever-increasing numbers of athletic women into the competitive arena. With this has come a concomitant awareness of health issues specific to active women. A topic of relatively recent interest has been the potential effects of menstrual cycle phase associated with variations in the female steroid hormones on athletic performance. Recent studies have dealt with the effect of menstrual cycle phases on cardiovascular, ventilatory, thermoregulatory and metabolic responses at rest and during normal exerciser recovery (LEBRUN, 1993). However, few studies have described performance during short time anaerobic tests (LEBRUN et al., 1995; PARISH and JAKEMAN, 1987; DE BRUYN-PREVOST, BALE and NELSON, 1985; MASSET and STURBOIS, 1984; DOOLITTLE and ENGEBRESTSEN, 1972) and existing data are conflicting.

De Bruyn-Prevost, Bale and Nelson (1985) and Doolittle and Engebrestsen (1972) have demonstrated no significant menstrual phase effects in anaerobic performance during an anaerobic endurance test on cycle ergometer and a 600-yd run test, respectively. Also Lebrun et al., (1995) did not observed any significant change in anaerobic performance during an anaerobic speed test between follicular and luteal phases. However Parish and Jakeman (1987) demonstrated that mean power output during a modified Wingate test were greater in the midfollicular phase (days 7-9) than in the midluteal phase (days 13-17) or menstrual phase (days 1-2). Similar Bale and Nelson (1985) observed poored performance on a 50m swim exercise in the menstrual phase. During very short exercise (strand broad jump) Wearing et al., (1972) also found that poorest performance occurred during the menstrual periods.

Fluctuations in sex hormones levels related to ovarian changes are frequently used to explain any variations in physiological responses to aerobic exercise and anaerobic performances. Estrogens (E2) and progesterones (P4) are know to influence several physiological processes such as regulation of energy metabolism (KENDRICK and ELLIS, 1991) body water (GAEBELEIN and SENAY, 1982; WAMBACH and HIGGINS, 1978), respiration (LYONS and ANTONIO, 1959) and temperature (STEPHENSON, KOLKA and WILKERSON, 1982) throughout the course of a menstrual cycle.

Oral contraceptives (OC) suppress normal menstrual cycle levels of E2 and P4 by inhibiting the pituitary secretion of gonadotropins (FSH and LH) (SPEROFF, GLASS and KASE, 1989) and provide consistent pharmacological control of the reproductive cycle by systematically controlling concentrations of endogenous sex hormones. Given that endogenous production of E2 and P4 is suppressed during OC usage, the serum concentration of active sex steroids are directly related to the OC dosage administrated (FOTHERBY, 1996).

Despite the extensive use of oral contraceptives (OCs) by both sedentary and athletic women, few investigators have evaluated the effects of these exogenous ovarian steroids on the metabolic responses to physical exercise. In this context this study have evaluated the anaerobic performance on OC users during three different periods of the menstrual cycle: at the end of 1st (days 5-7) and 3rd (days 19-21) weeks of OC usage and at the end of the interval week (days 26-28). We test the hypothesis that throughout a constant hormonal milieu no variations on anaerobic performance are expected.

METHODS AND MATERIALS

Female subjects, between the ages of 20 and 30 were recruited by means of advertisement and word of mouth. Ethical approval was obtained form the Committee on Human Experimentation of the Centro Universitario de Belo Horizonte, and all subjects signed a written informed consent. Six health women, according to Par-Q and coronary heart disease risk factor questionnaire (ACMS, 1998; RODRIGUES et al., 1999), age ranging from 22 to 27 years, were selected. All volunteers were users of monophasic oral contraceptive (diary pill) for at least six continuous months, non-smokers, and were not pregnant or have not been in the last year. Women with history of menstrual cycle disturbance were not considered for this study, which was evaluated trough a menstrual cycle history questionnaire.

To evaluate whether menstrual cycle phase have any effect on anaerobic performance the volunteers have been submitted to the Wingate test (maximum subject effort) at three different occasions: at the end of first and third weeks (days 5-7 and 19-21, respectively) and at the end of the interval week of OC use (days 26-28). Tests were performed in a balanced way, in a maximum interval of two different cycles for each volunteer.

To allow the volunteers to familiarize with the cycloergometer, before Wingate test a pre-exercise was performed, for 5 minutes, at 18Km/h, with a resistance of 500g. Following the Wingate test was performed with a resistance of 75 $g.Kg^{-1}$, for 30 seconds (INBAR et al*.,* 1996; BAR-OR, 1987). Before each test the volunteers were instructed to cycle as fast as possible since the beginning of the test. Volunteers were verbally stimulated at the first and 15th second of the test. It was not allowed to the volunteers to stand during the test. For each volunteer test was performed at the same time. After the 30 seconds test volunteers maintained the exercise for more two minutes, with a resistance of 500g, free velocity.

Mean and maximum anaerobic power and fatigue index were collected during Wingate test by MCE software (Multi Cycle Ergometer, version 2.3, Varsovia Sports Institute).

Blood samples (about 20mL) were collected for serum lactate and glucose measurements, before and after Wingate test. Samples were applied to specific reagent strips (BM Lactate Test Strips, for lactate measurements; Accu-Chek Aviva Test Strips, for glucose measurements) and serum lactate and glucose concentrations were determined by spectrophotometric portable devices (Accutrend Lactate Roche / Accu-Chek Aviva System Roche).

During the study was recommended to the volunteers not to perform moderately or intense physical activity 24 hours before the testes, inform the use of any kind of medication, sleep for eight hours the night before the test, do not ingest alcohol and cafein at the 24 hours before the tests and keeping the same pattern of food ingestion before each test.

Data obtained was analyzed through Anova One-way and Tukey Post Rock test with $p<0.05$.

RESULTS

To evaluate whether continuous oral contraceptive (OC) use affects anaerobic performance six health women (mean age 24.17 ± 1.94, mean high 1.65 ± 0.01m, mean body mass 63.17 ± 7.18 Kg, and mean BMI 23.22 ± 2.46) users of monophasic

oral contraceptive for at least 6 continuous months, were submitted to Wingate test (maximum subjective effort), at three different periods of menstrual cycle: at the end of first and third week of OC consumption and at the end of interval week.

During the Wingate test the relative maximum power (W/Kg), the mean power (W) and fatigue index (%) were measured to evaluate the anaerobic performance at the three menstrual cycle phases (Table 1).

Table 1 - Anaerobic performance at the Wingate test at three menstrual cycle phases.

Menstrual cycle phase	Relative maximum power (W/ kg)	Mean power (W)	Fatigue index (%)
1st week	8.39 ± 1.21	393.67 ± 30.23	27.80 ± 6.95
3rd week	8.68 ± 1.04	390.50 ± 35.73	32.22 ± 5.87
Interval week	8.09 ± 1.09	392.67 ± 33.13	26.73 ± 7.74

relative maximum power - revolutions number X distancy by revolution divided by the body mass; mean power - the power (watts) generated during the test 30 seconds; fatigue index - the difference between the highest and the lowest power reached during the test.

Data analysis demonstrate no significant difference at relative maximum power (p= 0.1977), mean power (p= 0.3638) and fatigue index (p= 0.1389) comparing the three menstrual cycle phase.

To evaluate the metabolic response to maximum subject effort at different menstrual cycle phases serum glucose and lactate were measured before and after Wingate test (table 2).

Table 2 - Serum glucose and lactate before and after Wingate test at different menstrual cycle phases.

al cycle	Pre-test blood lactate (mmol/L)	Post-test blood lactate (mmol/L)	Pre-test blood glucose (mmol/L)	Post-test blood glucose (mmol/L)
k	2.05 ± 0.51	7.68 ± 2.64	94.17 ± 736	95.17 ± 2.93
k	2.07 ± 0.55	9.38 ± 1.37	106.67 ±. 15.72	100.83 ± 11.82
week	2.23 ± 0.69	8.23 ± 1.66	101.67 ± 17.34	95.83 ± 5.56

No difference was observed comparing pre- and post-exercise lactate levels at the three different menstrual phases, as well pre- and post-exercise glucose levels (p= 0.4655 and p= 0.3936, respectively).

DISCUSSION

The natural ovarian cycle is characterized by wide fluctuations in sex hormone concentrations that might affect athletic performance. However the use of OC consistently suppress circulating endogenous sex steroid hormone concentrations (GIACOMONI et al., 200), what might minimize or abrogate the menstrual cycle phase effect on exercise performance.

This study have demonstrated no menstrual cycle phase effect on anaerobic performance of monophasic OC users submitted to the Wingate test at pill days 5-7, 19-21 and 26-28. No differences have been observed at relative maximum power, mean power and fatigue index, when comparing the menstrual cycle phases tested (table 1). Consistently, no effects on metabolic responses have also been detected, since post-exercise lactate and glucose levels were not different during the menstrual cycle (table 2). Anaerobic capacity is defined by ATP re-synthesis trough anaerobic metabolism, during supramaximum exercise of short duration (GREEN and DAWSON, 1993). Energy transformation by anaerobic pathways include ATP-CP storage hydrolysis and/or anaerobic glycolysis engaging glycogen oxidation to lactate. So, the data presented here also suggest no effect of menstrual cycle phase on anaerobic capacity of monophasic OC users.

Similar results have been obtained by others that have not observed differences in either anaerobic endurance (DE BRUYN-PREVOST, BALE and NELSON, 1985) or anaerobic power (GIACOMANI et al., 2000) throughout the OC cycle. Giacomani et al., (2000) have reported no menstrual cycle phase effect on maximal cycling and jumping anaerobic performances in females using monophasic oral contraceptives. Also De Bruyn-Prevost, Bale and Nelson (1985) have demonstrated no significant changes in maximum serum lactic acid after anaerobic endurance test.

No menstrual cycle phase effect on anaerobic performance demonstrated by this study could be result of a constant hormonal milieu in response to OC usage. Sort duration, high intensity exercise, is dependent on intramuscular stores of ATP, CP and glycogen and the simultaneous production of lactate. Estradiol has been shown to increase the relative contribution of fat metabolism during the luteal phase of the menstrual cycle (CAMPBELL, ANGUS and FEBBRAIO, 2001; ZDERIC, COGGAN and RUBY, 2001; BONEN et al., 1993; HACKNEY, CURLEY and NICKLAS, 1991; LEBRUN, 1993) and it was also demonstrated that that high concentrations of E2 and P4, elicit a sparing of glycogen both at rest and during exercise with the concurrent inhibition of gluconeogenesis and glycogenolysis (ROONEY et al., 1993; KENDRICK and ELLIS, 1991; HATTA et al., 1988; GORSKI et al., 1976; MATUTE and KALKHOFF, 1973). It is suggested that this could therefore, by limiting carbohydrate metabolism, cause a restriction of anaerobic metabolism. However, it has been demonstrated that OC usage avoids characteristic cycle phase variations of sex steroids hormones. In women using monophasic oral contraceptives estrogen and progestin levels are maintained constant during 21 days and menses occur in the 7 day period following the interruption in hormone supplementation, what might explain data presented here. It is interesting to note that anaerobic performance was not different between the three cycle phases studied, including the pill days 26-28.

In agreement with this hypothesis the results described here is consistently different from data obtained with triphasic OC users. The triphasic OC creates a hormonal environment much more similar to a natural menstrual cycle, although inter- and intra-individual variations in basal hormone levels and menstrual cycle lengths are minimized in this kind of synthetic menstrual cycle. Redman and Weatherby (2004) have observed improved anaerobic performance on triphasic OC users during pill days 26-28 (low estrogen and low progesterone applicable) compared to pill days 16-18 (high estrogen and high progesterone applicable). They have also demonstrated a higher post-exercise glucose and a tendency toward lower lactate concentrations after exercise at the pill days 26-28 compared to pill days 16-18.

Although there is no consensus in the literature whether anaerobic performance is affected by changes in sex steroids concentrations typical throughout the normal menstrual cycle and the synthetic menstrual cycle of the OC users, results of the current investigation found that both anaerobic power and anaerobic capacity were not different between three different periods of the synthetic menstrual cycle of monophasic OC users, what might be consistent with a constant hormonal milieu.

REFERENCES

ACSM position stand. The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness, and flexibility in health adults. *Med. Sci. Sports Exerc.* 29:5, 1998.

BALE, P. and NELSON, G. The effects of menstruation on performance of swimmers. *Aust. J. Sci. Med. Sports* 19-22,

1985.
BAROR, O: The Wingate anaerobic test: An update on methodology, reliability and validity. *Sports Med*. 4:381-394, 1987.
BONEN, A., HAYNES, F. J., WATSON-WRIGHT, W., SOPPER, M. M., PIERCE, G. N., LOW, M. P., GRAHAM, T. E. Effects of menstrual cycle on metabolic responses to exercise. *J. Appl. Physiol.* 55: 1506-1513, 1983.
CAMPBELL, S. E., ANGUS D. J., FEBBAIO, M. A. Glucose kinetics and exercise performance during phases of the menstrual cycle:effect of glucose ingestion. *J. Physiol. Endocrinol. Metab.* 281-817-825, 2001.
DEBRUYN-PREVOST, P., MASSET, C., STURBOIS, X. Physiological response from 18-25 years old women to aerobic and anaerobic physical fitness tests at different periods during the menstrual cycle. *J. Sports Med.* 24:144-148, 1984.
DOOLITTLE, T. L., ENGEBRETSEN, J. Performance variations during the menstrual cycle. *J. Sports Med.* 12:54-58, 1972.
FOTHERBY, K. Bioavailability of orally administered sex steroids used in oral contraception and hormone replacement therapy. *Contraception* 54:59-69, 1996.
GAEBELEIN C. J., SENAY, L. C. Vascular volume dynamics during ergometer exercise as different menstrual cycle phases. *Eur. J. Appl. Physiol*. 5:1-11, 1982
GIACOMONI, M., BERNARD, T., GAVARRY, O., ALTARE, S., FALGAIRETTE, G. Influence of the menstrual cycle phase and menstrual symptoms on maximal anaerobic performance. *Med. Sci. Sports Exerc.* 32:486-492, 2000.
GORSKI, J., STANKIEWICZ, B., BRYCKA, R., KICZKA, K. The effect of estradiol on carbohydrate utilization during prolonged exercise in rats. *Acta Physiol. Pol.* 27:361-367, 1976.
GREEN, S. & DAWSON, B. Measurement of anaerobic capacities in humans: definitions, limitations and unsolved problems. *Sports Medicine,* 15:312-327, 1993.
HACKNEY, A.C., CURLEY C.S., NICKLAS B.J. Physiological responses to submaximal exercise at the mid-folicular, ovulatory and mid-luteal phases of the menstrual cycle. *Scand. J. Med. Sci. Sports* 1:94-98, 1991
HATTA, H., ATOMI, Y., SHINOHARA, S., YAMAMOTO, Y., YAMADA, S. The effects of ovarian hormones on glucose and fatty acid oxidation during exercise in female ovariectomized rats. *Horm Metab Res* 20: 609-611, 1988.
INBAR, O., BAR-OR, O., SKINNER, J.S. The wingate naerobic test. *Champaign, human kinectics*, 1996.
KENDRICK, Z.V. and ELLIS, G.S. Effect of estradiol on tissue glycogen metabolism and lipid availability in exercised male rats. *J. Appl. Physiol.* 71:1694-1699, 1991.
LEBRUN, C.M. Effect of the different phases of the menstrual cycle and oral contraceptives on athletic performance. *Sports Med.* 16:400-430, 1993.
LEBRUN, C.M., McKENZIE, D.C., PRIOR, J.C., TAUTON, J.E. Effects of menstrual cycle phase on athletic performance. *Med. Sci. Sports Exerc.* 27:437-444, 1995.
LYONS, H.A. and ANTONIO, R. The sensitivity of the respiratory centre in pregnancy and after administration of progesterone. *Trans. Assoc. Am. Physicins* 72:173-180, 1959.
MATUTE, M.L., KALKHOFF, R. Sex steroids influence on hepatic gluconeogenesis and glycogen formation. *Endocrinology* 92:762-768, 1973.
PARISH, H.C. and JAKEMAN, P.M. The effects of menstruation upon repeated maximal sprint performance. *J. Sports Sci.* 1:78-83 1987.
REDMAN, L.M., WEATHERBY, R.P. Measuring performance during the menstrual cycle: a model using oral contraceptives. *Med. Sci. Sports* 36:130-136, 2004.
RODRIGUES, L. O. C.; SILAMI GARCIA, E.; SOARES, D. D.; LAZZAROTTO, L. B.; RIBEIRO, G. A. As atividades físicas e o coração - orientações básicas para o clínico. *Rev. Bras. Med.* 56:635-646, 1999.
ROONEY, T.P., KENDRICK, Z., CARLSON, J., ELIS, G., MATAKEVICH, B., LORUSSO, S.M., McCALL, J. Effect of stradiol on the temporal pattern of exercise-induced tissue glycogen depletion in male rats. *J. Appl. Physiol.* 75:1502-1505, 1993.
SPEROF, L., GLASS, R.H. and KASE, N.G. *Clinical gynecologic endocrinology and infertility*, 4th ed., C.L. Brown (ed.). Baltimore: Williams &Wilkins, 1989, pp. 91-119.
STEPHENSON, L.A., KOLKA, M.A. and WILKERSON, J.E. Metabolic and thermoregulatory response to exercise during the human menstrual cycle. *Med. Sci. Sports Exerc.* 14:270-275, 1982.
WANBACH, G. and HIGGINS, J.R. Antimineralocorticoid action of progesterone in the rat: correlation of the effect on electrolyte excretion and interaction with renal mineralocorticoid receptors. *Endocrinology* 102:1686-1693, 1978.
WEARING, M.P., YUHOSZ, M.D., CAMPBELL, R., LOVE, E.J. The effect of the menstrual cycle on tests of physical fitness. *J. Sports Med.* 12:38-41, 1972.
ZDERICK, T.W., COGGAN, A.R., RUBY, B.C. Glucose kinetics and substrate oxidation during exercise in the follicular and luteal phases. *J. Appl. Physiol.* 90:447-453, 2001.

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ANAEROBIC PERFORMANCE ON WINGATE TEST OF REGULAR USERS OF MONOPHASIC ORAL CONTRACEPTIVE IS NOT INLFUENCED BY MENTRUAL CYCLE PHASE.

It has been suggested that energy transformation during exercise is influenced by hormonal variations of menstrual cycle phases what could affect exercise performance. Oral contraceptive (OC) abrogates hormonal variations and may reduce menstrual cycle phase effects on exercise performance. So the present study evaluated the anaerobic performance of regular users of OC on the Wingate test. Six health women (mean age 24.17 ± 1.94 years, mean high 1.65 ± 0.01m, mean body mass 63.17 ± 7.18kg), monophasic OC users for at least 6 continuous months were submitted to the Wingate test at three phases of menstrual cycle: at the end of 1st week (days 5-7) and 3rd week (days 19-21) and at the end of interval week (days 26-28) of OC usage. During the Wingate test the following parameters were analyzed: relative maximum anaerobic power output (W/kg), maximum anaerobic power output (W) and fatigue index (%). Pre- and post-exercise serum lactate and glucose levels were also measured.Data obtained have demonstrated no variations on anaerobic performance of regular OC users, comparing relative maximum anaerobic power output, mean anaerobic power out put and fatigue index in the three different phases of the menstrual cycle phase evaluated ($p<0.05$). Neither variations on serum lactate nor glucose levels were observed according to the menstrual cycle phases. So data indicate no menstrual cycle phase effect on anaerobic performance of regular user of

monophasic OC, what can be consequence of constant concentration of the estradiol and progesterone levels in response to OC use.

KEY WORDS: menstrual cycle, oral contraceptive, anaerobic performance

DANS LE TEST DE WINGATE, LA PERFORMANCE DES FEMMES QUI FONT L'USAGE REGULIER DE CONTRACEPTIF ORAL NE SUBIT PAS L'INFLUENCE DU CYCLE MENSTRUEL.

Il a été proposé que les variations hormonales pendant le cycle menstruel interfèrent dans l'utilisation du substrat, ce qui pourrait potentiellement avoir des conséquences dans la perfomance de l'athlète pendant l'exercice. L'usage de contraceptif oral, en empêchant les fluctuations hormonales durant le cycle, pourrait minimizer les effets des variations hormonales dans la performance sportive. Dans ce contexte ce travail a évalué la performance des femmes, faisant l'utilisation de contraceptif oral, dans le test de Wingate (effort subjectif maximum). Des femmes en bonne santé (âge moyen 24,17 ± 1,94 ans, stature moyenne 1,65 ± 0,01m, masse corporale moyenne 63,17 ±7,18Kg), utilisant des contraceptifs oraux monophasiques depuis au moins 6 mois sans interuption, ont realisé le test de Wingate dans trois phases du cycle menstruel : à la fin de la semaine d'intervale, à la fin de la 1ère et de la 3ème semaine d'utilisation du contraceptif. Pendant le test de Wingate les variables suivantes ont été évaluées : puissance anaerobique maximum relative (W/Kg), puissance anaerobique moyenne (W) et indice de fatigue (%). Les niveaux sanguins de lactate et de glucose ont été mesurés avant et après le test. En comparant les valeurs de puissance maximum relative, puissance moyenne et indice de fatigue, dans les trois phases du cycle (ANOVA avec des mesures repetées $p<0,05$), il n'y a pas eu de variations dans la performance anaerobique de ces femmes. Nous n'avons pas observé non plus de variations dans la concentration sanguine de lactate et de glucose durant le repos et après le test, selon la phase du cycle mesntruel. Les donnés indiquent donc, que la performance anaerobique de femmes qui utilisent regulièrement des contraceptifs oraux ne varie pas selon la phase du cycle menstruel. Cela peut être dû à la stabilisation des hormones estrogène et progestérone qui découle de l'usage du contraceptif.

MOTS CLES: Cycle menstruel, contraceptif oral, performance anaerobique

EL DESEMPEÑO DE LAS MUJERES QUE HACEN USO REGULAR DE ANTICONCEPTIVO ORAL MONOFÁSICO EN LA PRUEBA DE WINGATE NO SUFRE INFLUENCIA DE LA FASE DEL CICLO MENSTRUAL.

Se han propuesto que las variaciones hormonales durante el ciclo menstrual intervienen en el uso del sustrato, que potencialmente podría reflejar en el desempeño del atleta durante el ejercicio. El uso anticonceptivo oral, al obstaculizar las fluctuaciones hormonales durante el ciclo menstrual, podría reducir al mínimo el efecto de las variaciones hormonales en el desempeño deportivo. En este contexto el trabajo actual evaluó el desempeño de las mujeres, que hacen uso anticonceptivo oral regular, en la prueba de Wingate (esfuerzo subjetivo máximo). Las mujeres saludables (edad media del ± 24.17 1.94 años, medios de la estatura 1.65 ± 0,01m, masa corporal media 63.17 ± 7,18kg), usuarias de anticonceptivo oral monofásico por lo menos 6 meses ininterrumpidos, reliazaron la prueba de Wingate en tres fases del ciclo menstrual: al final de la semana del intervalo y al final de las 1ª y 3ª semanas del uso del contraceptivo. Durante la prueba de Wingate las siguientes variables fueron evaluadas: potencia anaerobia máxima relativa (W/kg), potencia anaerobia media (W) y el índice de la fatiga (%). los niveles sanguineous del lactato y de la glucosa fueron medidos antes y después la prueba. Los resultados conseguidos no demuestran variaciones en el desempeño anaerobio de las mujeres que hacen el uso regular de anticonceptivo oral, comparando los valores de potencia máxima relativa, potencia media y el índice de la fatiga, en las tres fases del ciclo (ANOVA con medidas repetidas, $p<0,05$). Tampoco fueron observadas variaciones en la concentración sanguineous de la glucosa y del lactato en el reposo y después de la prueba, de acuerdo con la fase del ciclo menstrual. Los datos indican, por lo tanto, que el desempeño anaerobio de las mujeres que hacen uso regular anticonceptivo oral no varía con la fase del ciclo menstrual. Esto se puede atribuir a la estabilización del estradiol y de la progesterona obedecidos al uso del anticonceptivo.

PALABRAS LLAVES: ciclo menstrual, ciclo anticonceptivo oral, desempeño anaerobio

O DESEMPENHO ANAERÓBICO NO TESTE DE WINGATE POR MULHERES QUE FAZEM USO REGULAR DE CONTRACEPTIVO ORAL MONOFÁSICO NÃO É INFLUENCIADO PELA FASE DO CICLO MENSTRUAL.

Tem-se proposto que as variações hormonais experimentadas durante o ciclo menstrual interferem na utilização do substrato, o que potencialmente pode poderia refletir no desempenho da atleta durante o exercício. O uso de contraceptivo oral, ao impedir as flutuações hormonais durante o ciclo menstrual, poderia minimizar os efeitos das variações hormonais no desempenho esportivo. Neste contexto o presente trabalho avaliou o desempenho de mulheres, que fazem uso regular de contraceptivo oral, no teste de Wingate (esforço subjetivo máximo). Mulheres saudáveis (idade média de 24,17 ± 1,94 anos, estatura média 1,65 ± 0,01m, massa corporal média 63,17 ± 7,18kg), usuárias de contraceptivo oral monofásico por pelo menos 6 meses ininterruptos, realizaram o teste de Wingate em três fases do ciclo menstrual: ao final da semana de intervalo (dias 26-28 do ciclo) e ao final da 1ª (dias 5-7) e 3ª (dias 19-21) semanas de uso do contraceptivo.

Durante o teste de Wingate as seguintes variáveis foram avaliadas: potência anaeróbia máxima relativa (W/kg), potência anaeróbia média (W) e índice de fadiga (%). Os níveis séricos de lactato e glicose foram mensurados antes e após o teste de Wingate. Os resultados obtidos não demonstram variações no desempenho anaeróbico de mulheres que fazem uso regular de contraceptivo oral, comparando os valores de potencia máxima relativa, potência média e índice de fadiga, nas três fases do ciclo (ANOVA com medidas repetidas, $p<0,05$). Também não foram observadas variações nos níveis séricos de lactato e de glicose no repouso e após o teste, de acordo com a fase do ciclo menstrual. Os dados indicam, portanto, que o desempenho anaeróbico de mulheres que fazem uso regular de contraceptivo oral não varia de acordo com a fase do ciclo menstrual. Isto pode ser atribuído à estabilização dos hormônios estrogênio e progesterona decorrente do uso do contraceptivo.

PALAVRAS-CHAVE: ciclo menstrual, contraceptivo oral, desempenho anaeróbico.