169 - VARIATION IN THE PHYSIOLOGIC INDICATORS IN A PERIODIZATION OF TRAINING FOR GOLF: A STUDY OF CASE

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INTRODUCTION

History the tipics golfers not expenditure many hours of your time to physical training. But like in others sports, a specific physical preparation have evolved and gain more important. Physical fitness seem not be only one advantage, but one necessity to elite competitors (Foran, 2001).

The golf isn't considers one estenuante activity. Heart rates with standards values of 108 hrm have seen observe during journey of 18 holes in health players middle-age players. In some intenses inclines values near of 70%-80% of maxim heart rate have seen find in men and women respect. Consider that individuals of more avanced age presence reduces cardiac debit, conduzing cardiovasculars insuficience and having presence cardiac problems during a game's curse (McHardy et al, 2006).

The competitive practices of golf, as well as in others events, it's complete diference of leasure practice. Professionals athletes presence one swing too fast and efficient that amatteurs (Fletcher and Hartwell, 2004). The swing is an motor action an some complicated, its affect for extrinsec and intrinsec factors interfere on a skill of golfers to reach the ball with power and efficient.

The paravertebrals muscle and obliqúes abdominals, report vital functions on a swing execution. The strengthening and stretching appropriate of that muscles and yours assistants allow a golfers to keep your excelence performance for one greater period of time , like that reduce the fatigue that contribute to an appearance of low back pains, discomforts, and injuries (Reed, 2005).

The overload produces for repetitive moviments, allied muscular tension of competition, take reduces of final performance. That situation similar to many others sports can to be reverses with a training's periodization suitable to athlete.

Recentlly Lephart et AL (2007) observe the impact of a training's program with during of 8 years develop specific to golfers, find improvement on a strength, flexibility, and balance indicators with consequently increase on speed of shot, ball's course and maxim distance reaches on a driving. Levels suitable of neuromuscular conditioning are essentials so that a combination of strength on a trunk's rotation and flexibility of sholders and spine, demand to swing's executation, been efficient.

Fletcher e Hartwell (2004) did observe significative improvement in a drive attribute a periodization go together weight training and pliometrics. The proceeding improvement on a strength and sequence acceleration of body's segments, consider fundamentals in series moviments and that, through fatigue, can to be deprecate, demand often a motor reorganization (Forestier e Nougier, 1998) for golfer.

The objective this study is verify the responses on physiologics indicators of a elite golfer through application of a specific training's periodization.

METODOLOGY

The case study evolved an accompaniment of a elite's golfers, professional level. Organiza inside a specific periodization, each one of evoluations goes carry out in an only day on a order: antropometrics, body composition, flexibility, strength and cardiovascular evaluations.

The physiologic evaluations understood:

- estimate of the corporal fat as proposed him/it by Jackson and Pollock (1985).
- evaluation of the muscular potency through the test of Impulse Vertical-IV.
- evaluation of the muscular force of hip evaluated with the Test of Flexing of Hip in 60 Seconds as proposed by Eston and Reilly (2001).
- evaluation of the appraised muscular force with the test of Manual Dinamometria with an apparel of the mark Jaguar
- evaluation of the appraised mobility with the test to "sit down and to reach" was used to verify the mobility of the muscular group of the isquiotibial (YMCA, 1989 mentioned by Baumgartner & Jackson, 1995).
- evaluation of dear VO2máx for 20-m Shuttle Run Test or Test of Round trip in 20 meters, proposed initially by Leger and Lambert (1982).

The analysis involved descriptive statistics with medium values and deviation-pattern. The data were processed and analyzed with the software SPSS 13.0.

RESULTS

Table 1. Body Composition Indicators in Golfers.

Variables	3ª.Aval	2ª.Aval.	1ª.Aval.
Body Mass (kg)	83,9	80,95	85,1
BMI ($kg.m^2$)	23,6	24,5	24,84
Body Fat (%)	9,1	12	11,1
Waist (cm)	82,7	84,8	85,5
WHR	0,807	0,811	0,822

Among the observed physiologic indicators, the corporal composition was one of the ones that best answered to the training periodization. Significant alterations were clear with variations in the corporal mass and great fall in the percentage of corporal fat and in the waist circumference. The global indicator of the corporal fat presented a value initially predicted in 11,1%, passing to 12% and finishing in 9,1. The located indicator observed by the waist circumference began in 85,5 and it concluded with 82,7. in relation to the cutaneous folds it was also observed significant fall. Those information suggest a typical pattern of answer of the corporal composition common to athletes (Heyward and Stolarczyk, 2000) with decrease of the fat centrípet and relative increase of the thin mass.

Table 2. Indicators Cardiovasculars Variables in Golfers.			
Variables	3ª.Aval	2ª.Aval.	1ª.Aval.
VO_2máx (ml.kg^{-1}.min^{-1})	53,6	53,6	53,6
Maxim Speed (km.h^{-1})	13	13	13
HRM (bpm)	194	195	192
HR-pós 1' (bpm)	164	167	168
HR-recuperation (%)	13	12,5	12,5
LIMIAR (in km.h^{-1})	11,5-12	11,5-12	11,5-12
LIMIAR (HR)	181-185	180-184	180-184

The aerobic indicator that presents as main indicator VO_2max stayed stable during the whole periodization and small variations were just observed in the Heart Rate Maximum, in the percentile of recovery of the heart frequency and in the probable strip of anaerobic threshold, predicted starting from the behavior of the heart frequency registered in the evaluations.

Considered the characteristic of the competitive practice of the golf, we judged that found VO_2max of 53,6 ml.kg.min^{-1} is very satisfactory for the modality as well as also the other indicators. Important to reinforce that the athlete reached she gave maximum acting in all the tests, verified so much by HRM as for the subjective perception of observed effort.

Table 3. Indicators Neuromusculars Variables in Golfers.			
Variables	3ª.Aval	2ª.Aval.	1ª.Aval.
Hip Flexion (in 1')	56/29	57/28	50/27
Endurance Index (%)	100	100	93
Dinamometry Hand - R	68		70
Dinamometry Hand - L	66		68
Test of Seat-and-Reaching (cm)	32,5	31	22

Being considered that indicative tests of force are highly specific for segment, it was also accomplished the manual dinamometry to observe the behavior of the force in the superior members with focus more addressed for the before-arm and fist, areas these base in the execution of the specific technique of the golf.

In the motive functional evaluation of the force in the hip area an increase was verified above 10% of the muscular force going initially from 50 to 56 repetitions by minute and having reached 57 movements in the 2nd. evaluation, while the muscular resistance presented improvement a little inferior, but no less important passing from 93% to 100% in the last two evaluations. These values can be considered very good for athletes and that you/they can still be seen more positively for a modality as the golf. The employed test we seem also well recommended for golfers, because the functionality of the hip flexors is indispensable in the course faced in the golf game when a lot of times the apprentice comes across passages in acclivity and slope us which the demand of the appraised musculature is very intense.

Among all the accompanied indicators, the mobility is what presented larger progress. The initial value in the Test of Seat-and-Reaching located in 22 cm and in the end of the periodization it finished in 32,5 cm. That result was product of a larger attention, because in the beginning of the programming the acting in this conditional capacity was not satisfactory. After the application of exercises addressed to promote the functionality of the lumbar area was verified not only the mentioned evolution, but mainly a larger tolerance to lumbar pains, before frequent during the competition and in the athlete's day by day. The golfer in analysis told a better quality and comfort in his/her game after mainly the beginning of the month of June when you/he/she competed in unfavorable climatic conditions, presenting physical discomfort and muscular minimum.

CONCLUSION

At the end of that study we concluded verifying that the best answers to a periodization for the golf are associated to the indicators neuromusculars. That seems us very significant because those indicators can be more strongly associates the an improvement of the golfer's final acting. The resistance aerobic, although important, is not priority and it occupies secondary position in the golfers' specific preparation. Concerns with the corporal composition present relevance, mainly with respect to avoiding the excess of the fatty component.

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ABSTRACT

The competitive practice of the golf, as well as in other modalities, it is completely different from the recreational practice. However, a lot of times the typical golfers don't spend a lot of hours of his/her time for the physical training. The objective of this study was to verify the answers in a golfer's of high income physiologic indicators by the application of a specific training periodization. It was verified that there was gets better significant in the indicators neuromusculars observed through increases in the acting of the hip flexing in 60 seconds and, mainly, in the hip mobility and trunk observed in the test of seat-and-reaching. Very favorable values were observed in the corporal composition and VO2máx, and in this last one it was also verified stability during the whole periodization. It is concluded verifying that the results suggest the adoption of a similar specific periodization of optimizing the golfers' of high income acting, based mainly on indicators neuromusculars and of corporal composition.

KEY-WORDS: golf, training, performance

RESUMÉ

L'entraînement compétitif du golf, aussi bien que dans les autres modalités, c'est complètement différent de l'entraînement destiné aux loisirs. Cependant, beaucoup de temps les joueurs de golf typiques ne dépensent pas beaucoup d'heures de son temps pour l'éducation physique. L'objectif de cette étude était vérifier les réponses dans un joueur de golf de hauts indicateurs du physiologic du revenu par l'application d'un periodization de la formation spécifique. Il a été vérifié qu'il y avait arrive mieux considérable au neuromusculars des indicateurs observé à travers augmentations dans l'intérimaire du fléchir branché en 60 secondes et, principalement, dans la mobilité branchée et le tronc a observé dans l'épreuve de siège et atteindre. Les valeurs très favorables ont été observées dans la composition corporelle et VO2máx, et dans ce dernier il a aussi été vérifié la stabilité pendant le periodization entier. Il est conclu vérifier que les résultats suggèrent l'adoption d'un periodization spécifique semblable d'optimiser les joueurs de golf de haut revenu agir, a basé principalement sur neuromusculars des indicateurs et de composition corporelle.

MOTS CLES: golf, entraînement, performance

RESUMEN

La práctica competitiva del golf, así como en otras modalidades, es completamente diferente de la práctica recreativa. Sin embargo, muchos tiempos los jugadores de golf típicos no se pasan muchas horas de tiempo del la educación física. El objetivo de este estudio era verificar las respuestas en un jugador de golf de ingreso alto los indicadores fisiológicos por la aplicación de un periodizacion de entrenamiento específicos. Fue verificado que había mejora significante en el neuromusculares de los indicadores observado a través de los aumentos en la acción de la cadera que encorva en 60 segundos y, principalmente, en la movilidad de la cadera y el tronco observó en la prueba de asiento-y-alcanzar. Se observaron los valores muy favorables en la composición corpórea y VO2máx, y en este último uno se verificó también la estabilidad durante el periodizacion entero. Que verifica se concluye que los resultados hacen pensar en la adopción de un periodizacion específicos similares de perfeccionar los jugadores de golf de ingreso actuar alto, basó principalmente en el neuromusculares de los indicadores y de composición corpórea.

PALABRAS-CLAVE: golf, entrenamiento, performance

VARIAÇÃO NOS INDICADORES FISIOLÓGICOS NUMA PERIODIZAÇÃO DE TREINAMENTO PARA GOLFE: UM ESTUDO DE CASO

RESUMO

A prática competitiva do golfe, assim como em outras modalidades, é completamente diferente da prática recreativa. Entretanto, muitas vezes os golfistas típicos não dispendem muitas horas do seu tempo para o treinamento físico. O objetivo deste estudo foi verificar as respostas nos indicadores fisiológicos de um golfista de alto rendimento mediante a aplicação de uma periodização de treinamento específica. Verificou-se que houve melhora significativa nos indicadores neuromusculares observados através de aumentos no desempenho da flexão de quadril em 60 segundos e, principalmente, na mobilidade de quadril e tronco observada no teste de sentar-e-alcançar. Valores bem favoráveis foram observadas na composição corporal e VO_2máx, sendo que neste último verificou-se também estabilidade durante toda a periodização. Conclui-se verificando que os resultados sugerem a adoção de uma periodização específica afim de se otimizar o desempenho de golfistas de alto rendimento, baseada principalmente em indicadores neuromusculares e de composição corporal.

PALAVRAS-CHAVE: golfe, periodização do treinamento, performance.