06 - STATEMENT OF MAXIMA HR AND COMPARISON WITH PREDICTED HR WITH AGE OF RIO DE JANEIRO SURF FEMALE ATHLETES

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INTRODUCTION:

The surfing is a sport that has shown a great professional development in recent decades. Brazil is among the three world powers alongside the U.S. and Australia, but the practice still has a shortage of scientific studies. The scenario of competitive surfing in Brazil, has organs such as CBS (Brazilian Surfing Confederation), recognized by the Ministry of Sports and the National Entity and ABRASP (Brazilian Association of Surfing Professional) contributing to raising the professional level of mode. In the entrepreneurial sector, as Zucco et al. (2002), the surf industry to move values around $ 2 billion annually and employs directly and indirectly, about 140 thousand people. Mendez-Villanueva; Bishop (2005) describe as intermittent activity characterized by periods of high and low intensity recovery periods. In need of strength in the swim, so the board reaches a speed appropriate to get in the mood. The dispute in Surfing has a battery system. It last 20 to 40 minutes according to the format of the competition, and can be participated by 2 or 4 players. In the 4 batteries with the two best athletes scored below the competition, and athletes with 2 batteries, called the dispute ";man to man"; faced with two surfers in search of the sum of highest grades, and pursue only the best scores.

Observing the characteristics of the sport we can assume that the predominant energy source, during a session of 1-2h, is derived from aerobic metabolism. The energy used during the most intense strokes to glide over the waves is provided phosphagen system. It is suggested that the highest form of aerobic activity is a result of long periods using the motion of paddling. (LOWDON, 2004) The heart rate alteration is a function of a series of events: various stresses, thermal variation, rates of metabolism, hormonal changes, and the degree of training (intensity) (COSTILL, DL; WILMORE, JH, 2003 ; HEYMSFIELD et, all, 2005).

The heart rate (HR) is the most used parameter to control the intensity of an effort in exercise, both on land and in water. The total of the exercise is a physiological stress to the body due to the large increase in energy demand over the rest values, which causes a large release of heat and intense changes of the chemical environment and systemic muscle. Therefore, regular exposure to the exercise over time (physical training) promotes a set of morphological and functional adaptations that increase the capacity to respond to the stress of exercise. Thus, after these adjustments, an exercise of the same absolute intensity would cause less acute stress after a period of training. It is noteworthy that the chronic effects of exercise depend fundamentally on a peripheral adaptation, which involves both a better control and distribution of blood flow, such as specific adaptations of skeletal muscle. Histochemical changes occur in the muscles trained depending on the type of training, activating the enzyme activity is predominantly oxidative (aerobic) or glycolytic (anaerobic lactic acid) (EYWARD et al, 2000).

Therefore the present study aimed to describe the Maximal HR and compare the results with the predicted HR max provided by age.

METHODS:

This descriptive study has a cross section analysis which is characterized by research method in which the study will be conducted with groups of different ages, same sport, but without support for a longer period (THOMAS, NELSON, 2002). The study subjects were 6 players in the Brazilian ranking of professional surfing with mean age of 32 ± 6.10 years ranked among the top 20 in Brazil. All residents in the State of Rio de Janeiro. Were used: treadmill Imbramed ® brand; Polar® monitor S610 model; Sphygmomanometer Tycos ®; Stethoscope, Lythman ®. The test to verify the HR max was the Bruce protocol, and to calculate the predicted HR max was used the Karvonen equation (220-age). It was used the techniques of descriptive statistics, to enable the characterization of the sample according to selected variables: mean, standard deviation, minimum and maximum for the quantitative variables.

RESULTS:

	Age (years)	Height(m)	Body Mass	HR (bpm)	SBP (mmHg)	DBP (mmHg)
Mean	32,00	160,67	55,14	63,00	119,17	72,00
Stand Dev	6,10	6,53	10,63	8,72	25,82	14,25

Table 1: Characteristics of the group.

	S1	S2	S3	S4	S5	S6
HR max	162	167	205	182	166	189
HR Predicted	187	182	194	196	181	188

Table 2: Maximal and predicted HR of the 6 subjects of the study.

The results show that only two athletes have reached their maximum heart rate provided by the equation, even surpassing it. The other 4 reached values lower than expected.

CONCLUSIONS AND RECOMMENDATIONS:

It can be seen in the results of two athletes who have reached and exceeded the values predicted by the age Equation. This difference may be due to specific movements of the surf, they all do fitness beyond their specific training, but the type of training these two athletes who peaked can count on running exercises. The specificity of movement of running (which is not specific to the surf) probably had facilitated the two athletes reach their maximum output. It is recommended to adapt the

maximum test for surfing people. Using a freestyle test. for swimming, for example. Create a test where the athlete must stay on top of the board. Rocha Netto and col (2008) tell that the moments when the athlete's reached his HR peak at the time of stroke to match their speed with the wave. Also, greater number of individuals and to conduct tests which assesses the athlete's HR Surf in the sea water.

REFERENCES:

COSTILL,D.L.; WILMORE,J.H. **Fisiologia do Esporte e exercício.** 2ªed. São Paulo: Manole, 2003.

GONÇALVES, A; VILARTA, R. (Org.). **Qualidade de Vida e Atividade Física:** Explorando teoria e pratica. 1ª ed. São Paulo: Manole, 2004.

HESPANHA, R. **Medida e Avaliação Para o Esporte e a Saúde.** 1ª ed. Rio de Janeiro: Rubio, 2004.

HEYMSFIELD, B. S.; LOHMAN, G. T.; WANG, Z.; SCOTT B. **Human Body Composition.** 2 ed Human Kinetics, 2005.HEYWARD, V; STOLARCZYK; L, M. **Avaliação da Composição Corporal Aplicada.** 1ª ed. São Paulo: Manole, 2000.

MCARDLE,W.D.;KATCH,F.I.;KATCH,V.L.; **Fisiologia do Exercício: Energia, Nutrição e Desempenho Humano**. 5 ª ed. Rio de Janeiro: Guanabara Koogan, 2003.

MENDEZ-VILLANUEVA, A.; BISHOP, D. Physiological aspects of surfboard riding performance. **Sports Med, Crawley,** v.35, p. 56-70, 2005.

ROCHA, M.L. (Org.). Aspectos Diversos da Medicina do Exercício. 1ª ed. Rio de Janeiro: **Revinter,** 2004

ROCHA NETO, Jaime e Col., **Variação da freqüência cardíaca antes, durante e depois do surfe recreacional.** Trabalho de Conclusão de Curso, UNESA,2008

THOMAS, J. R.; NELSON, J. K. Métodos de Pesquisa em Atividade Física. 3. ed. Porto Alegre: **Artmed,** 2002.

ZUCCO, F. D.; MESQUITA, A.; PILLA, A. Surf – Um Mercado em Revolução. **XXV Congresso Brasileiro de Ciências da Comunicação.** Salvador, 2002.

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ABSTRACT

The surfing is a sport that has shown a great professional development in recent decades. Brazil is among the three world powers alongside the U.S. and Australia, but the practice still has a shortage of scientific studies. Therefore, regular exposure to the exercise over time (physical training) promotes a set of morphological and functional adaptations that increase the capacity to respond to the stress of exercise. Thus, after these adjustments, an exercise of the same absolute intensity would cause less acute stress after a period of training. It is noteworthy that the chronic effects of exercise depend fundamentally on a peripheral adaptation, which involves both a better control and distribution of blood flow, such as specific adaptations of skeletal muscle.The heart rate alteration is a function of a series of events: various stresses, thermal variation, rates of metabolism, hormonal changes, and the degree of training (intensity) .Therefore the present study aimed to describe the Maximal HR and compare the results with the predicted HR max provided by age. This descriptive study has a cross section analysis which is characterized by research method in which the study will be conducted with groups of different ages, same sport, but without support for a longer period. The study subjects were 6 players in the Brazilian ranking of professional surfing with mean age of 32 ± 6.10 years ranked among the top 20 in Brazil. All residents in the State of Rio de Janeiro. Were used: treadmill Imbramed ® brand; Polar® monitor S610 model; Sphygmomanometer Tycos ®; Stethoscope, Lythman ®. The test to verify the HR max was the Bruce protocol, and to calculate the predicted HR max was used the Karvonen equation (220-age). It was used the techniques of descriptive statistics, to enable the characterization of the sample according to selected variables: mean, standard deviation, minimum and maximum for the quantitative variables. It can be seen in the results of two athletes who have reached and exceeded the values predicted by the age Equation. This difference may be due to specific movements of the surf, they all do fitness beyond their specific training, but the type of training these two athletes who peaked can count on running exercises. The specificity of movement of running (which is not specific to the surf) probably had facilitated the two athletes reach their maximum output. It is recommended to adapt the maximum test for surfing people.

KEYWORDS: surf; maximal heart rate; predicted heart rate

ÉTAT DES FC MAXIMA ET COMPARAISON AVEC LES FC DE MOINS CHEZ LES ATHLÈTES FÉMININES DU SURF DANS RIO DE JANEIRO

RESUME

Le surf est un sport qui a connu un développement très grands professionnels ces dernières décennies. Le Brésil est parmi les trois puissances du monde aux côtés des Etats-Unis et l'Australie, mais la pratique a toujours un manque détudes scientifiques. Par conséquent, lexposition régulière à lexercice dans le temps (préparation physique) favorise un ensemble d”adaptations morphologiques et fonctionnels qui augmentent la capacité de réagir au stress de l”exercice. Ainsi, après ces ajustements, un exercice de la même intensité absolue causerait moins de stress aigu après une période de formation. Il est à noter que les effets chroniques de l”;exercice dépendent fondamentalement de l”adaptation périphérique, ce qui implique à la fois un meilleur contrôle et la distribution du flux sanguin, tels que des adaptations spécifiques du squelette muscle.The altération de la fréquence cardiaque est une fonction d”une série d”événements: divers souligne la variation thermique, le taux de métabolisme, les changements hormonaux, et le degré d'entraînement (intensité). Par conséquent, la présente étude visait à décrire le HR Maximal et de comparer les résultats avec le maximum prévu RH fournis par l”âge. Cette étude descriptive a une analyse en coupe, qui se caractérise par la méthode de recherche dans lequel l”étude sera réalisée avec les groupes d”âges différents, une même discipline, mais sans aide pour une période plus longue. L'étude portait sur 6 joueurs dans le classement brésilien de surf professionnel avec un âge moyen de 32 ± 6h10 années classé parmi les 20 premiers au Brésil. Tous les résidents dans l"etat de Rio de Janeiro. Ont été utilisés: tapis de course, Imbramed®; Polar ® modèle S610; Tycos ® Tensiomètre, stéthoscope, Lythman ®. Le test pour vérifier le max des FC a été le protocole de Bruce, et de calculer le max prédit des FC a été utilisé l'équation Karvonen (220-âge). On a utilisé les techniques de la statistique descriptive, afin de permettre la caractérisation de l”échantillon selon les variables choisies: moyenne, écart type, minimum et maximum pour les variables quantitatives. Il peut être observé dans les résultats de deux athlètes qui ont atteint et dépassé les valeurs prédites par l'équation de l”âge. Cette différence mai-être dû à des mouvements spécifiques du surf, ils ont tous de remise en forme au-delà de leur formation spécifique, mais le type de formation que ces deux athlètes qui ont atteint un sommet peut compter sur l”exécution des exercices. La spécificité du mouvement de course (ce qui n”est pas spécifique au surf) avait probablement facilité les deux athlètes à atteindre leur rendement maximum. Il est recommandé d”adapter le critère pour les personnes maximum surf.

MOTS CLE: surf; fréquence cardiaque maximale, la fréquence cardiaque prédite.

DECLARACIÓN DE FC MAXIMA Y COMPARACIÓN CON MENORES FC EM ATLETAS FEMENINAS DEL SURF EN RIO DE JANEIRO

El surf es un deporte que ha mostrado un gran desarrollo profesional en las últimas décadas. Brasil está entre los tres poderes del mundo junto a los EE.UU. y Australia, pero la práctica sigue teniendo una escasez de estudios científicos. Por lo tanto, la exposición regular al ejercicio en el tiempo (entrenamiento físico) promueve una serie de adaptaciones morfológicas y funcionales que aumentan la capacidad de responder a la presión de ejercicio. Así, después de estos ajustes, un ejercicio de la misma intensidad absoluta causaría menos estrés agudo después de un período de formación. Cabe señalar que los efectos crónicos del ejercicio dependen fundamentalmente de una adaptación periférica, que implica tanto un mejor control y distribución del flujo sanguíneo, como las adaptaciones específicas de esqueleto muscle.The alteración del ritmo cardíaco es una función de una serie de eventos: varios destaca, la variación térmica, la tasa de metabolismo, cambios hormonales, y el grado de formación (intensidad). Por lo tanto, el presente estudio tuvo como objetivo describir la FC máxima y comparar los resultados con el máximo de recursos humanos previsto proporcionada por la edad. Este estudio tiene un análisis descriptivo de corte transversal que se caracteriza por el método de investigación en los que el estudio se llevará a cabo con grupos de diferentes edades, el deporte mismo, pero sin soporte para un período más largo. Los sujetos del estudio fueron 6 jugadores en el ranking brasileño de surf profesional con una edad media de 32 ± 6,10 años figura entre los 20 mejores en el Brasil. Todos los residentes en el Estado de Río de Janeiro. Se utilizaron cinta marca ® Imbramed; Polar S610 ® Monitor modelo; Esfigmomanómetro Tycos ®; Fonendoscopio Lythman ®. La prueba para verificar el máximo de recursos humanos era el protocolo de Bruce, y para calcular el máximo de recursos humanos previsto se utilizó la ecuación de Karvonen (220-edad). Se utilizaron las técnicas de la estadística descriptiva, para permitir la caracterización de la muestra de acuerdo a las variables seleccionadas: media, desviación estándar, mínimo y máximo para las variables cuantitativas. Se puede ver en los resultados de dos atletas que han alcanzado y superado los valores predichos por la ecuación de edad. Esta diferencia puede deberse a los movimientos particulares de las olas, todos lo hacen de fitness más allá de su formación específica, pero el tipo de formación de estos dos atletas que alcanzó su punto máximo puede contar en el funcionamiento de los ejercicios. La especificidad de la circulación de corrientes (que no es específica para el surf), probablemente había facilitado los dos atletas a alcanzar su máximo rendimiento. Se recomienda adaptar la prueba máxima para navegar por la gente.

PALABRAS CLAVE: surf, la frecuencia cardíaca máxima, frecuencia cardíaca

DESCRIÇÃO DA FC MAXIMA E COMPARAÇÃO COM A FC PREVISTA PELA IDADE EM ATLETAS DE SURFE FEMININO RANKEADAS NO RIO DE JANEIRO

RESUMO:

O surf é um esporte que tem demonstrado um grande desenvolvimento profissional nas últimas décadas. O Brasil está entre os três melhores mundos juntamente com os Estados Unidos e Austrália, mas a prática ainda tem uma carência de estudos científicos. Portanto, a exposição regular ao exercício ao longo do tempo (treinamento físico) promove uma série de adaptações morfológicas e funcionais que aumentam a capacidade de responder ao estresse do exercício. Assim, após essas adaptações, um exercício de mesma intensidade absoluta iria causar menos estresse agudo, após um período de treinamento. Vale ressaltar que os efeitos crônicos do exercício dependem fundamentalmente de uma adaptação periférica, que envolve tanto um melhor controle e distribuição do fluxo sangüíneo, como adaptações específicas de alteração de taxa metabolica. A adaptação do coração, como musculo esquelético é uma função de uma série de eventos: diversos fatores: variação térmica, as taxas de metabolismo, alterações hormonais, como o grau de treinamento (intensidade). Portanto o presente estudo teve como objetivo descrever a FC máxima e comparar os resultados com o FC max prevista pela idade. Este estudo descritivo tem uma análise transversal que se caracteriza pelo método de pesquisa em que o estudo será realizado com grupos de diferentes idades, mesmo esporte, mas sem período mais longo de acompanhamento. Os sujeitos do estudo foram 6 mulheres surfistas do ranking brasileiro de surfe profissional, com idade média de 32 ± 6,10 anos classificadas entre os top 20 no Brasil. Todas residentes no Estado do Rio de Janeiro. Foram usados: esteira, Imbramed®; monitor Polar® modelo S610; esfigmomanômetro Tycos ®; Estetoscópio, Lythman ®. O teste para verificar a FC máx foi o protocolo de Bruce, e para calcular a FC max predita foi utilizada a equação de Karvonen (220-idade). Foi utilizado as técnicas de estatística descritiva, para permitir a caracterização da amostra segundo variáveis selecionadas: a média, desvio padrão, mínimo e máximo para as variáveis quantitativas. Pode ser visto nos resultados de dois atletas que tinham atingido e ultrapassado os valores previstos pela Equação de idade. Esta diferença pode ser devido a movimentos específicos do surf, todos eles faziam treinamento além da sua formação específica, mas o tipo de formação destes dois atletas, que atingiram o pico poderia ser devido a execução de exercícios alem da pratica do surf. A especificidade do movimento da corrida (que não é específico para o surf), provavelmente, tinha facilitado os dois atletas atingir o seu máximo rendimento. Recomenda-se a adaptar o teste máximo para movimentos do surf.

PALAVRAS-CHAVE: surf; freqüência cardíaca máxima; freqüência cardíaca prevista

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