

HEART RATE BEHAVIOR IN YOUNG ADULTS DURING PHYSICAL EXERCISE AND SEXUAL ACTIVITY



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ABSTRACT

The heart rate behavior during physical activities and sexual intercourse is considered a major concern for patients after a cardiovascular event. Despite the intense physical effort being a precipitating factor for myocardial infarction and sudden death, the metabolic expenditure in daily activities is discreet and can be maintained by most patients. The objective of this study was to evaluate the relationship of heart rate at maximal exercise test in comparison with daily activities. The participant of this case study is a 36 year-old man without evidence of cardiovascular disease. The participant was submitted to an exercise test. The heart rate behavior was monitored during 14 days, with a portable frequency meter. During the 14 days, six activities were chosen: an ordinary 5 Km/h walk, a 6.5 Km/h run, recreational soccer, sexual intercourse, self-stimulation through masturbation and sleep time. As a result, the recreational soccer practice was characterized as intense and very intense effort, the sexual intercourse and the masturbation had slight increase in heart rate and the orgasm reached similar intensity to ordinary walk.

Keywords: heart rate, sexual behavior, exercise.

INTRODUCTION

Fear of sudden death during sexual intercourse is a frequent complaint among convalescent acute myocardial infarction patients (AMI). Increase in heart rate (HR) derived from the climax, added to the increase of the panting level and fatigue sensation after intercourse cause anxiety and make the return to the sexual activity difficult after a cardiac event¹.

The first large study on cardiovascular behavior during sexual activity, published in 1966 with data from couples monitored in laboratory, revealed that the energy expenditure was similar to vigorous physical exercise, with HR increase reaching 140-180bpm and blood pressure reaching average to 80mmHg of systolic and 50mmHg of diastolic².

Although it was difficult to accurately evaluate the heart behavior at that time, the invention of portable devices which could be comfortably used at home brought more reliable information. The hemodynamic parameters of the sexual activity of the most recent studies reveal that the sexual act is similar to light moderate exercise and the HR reaches 60 to 70% of maximum HR^{3,4}.

Thus, the aim of this study was to know the correlation between HR of the daily living activities and the one obtained in the maximum ergometric test. Therefore, the volunteer received instructions concerning participation in the research and signed the Free and Clarified Consent Form, following the guidelines of the resolution 196/96. The study was recorded in the Ethics in Research Committee of the Institute of Cardiology of Santa Catarina under number 127/2010.

CASE REPORT

This is the study of a case of a 36-year old man, stable marital relation and sexual partner, physically active (2x/week) and with no

evidence of cardiovascular disease. He presents body mass index of 26.2kg/m² (84kg and 1.79m), normotensive, denies smoking, diabetes and hypercholesterolemia.

The subject was submitted to a maximum ergometric test (ET) on treadmill on a ramp protocol, with load increment at every minute until exhaustion, reaching 183bpm. The HR behavior was monitored during 14 days, with a Polar portable frequency meter, model RS400 (Polar Inc, Finland). Exertion intensity was standardized and considered light exercise up to 70% of maximum HR, moderate from 71 to 80%, intense from 81 to 90% and very intense above 91%.

In the period, six distinct activities were selected: walk session at 5km/h, trotting/run session at 6.5km/h, recreational soccer match, sexual activity with the partner, self-stimulation session through masturbation and sleep period (figure 1). The exercise sessions were performed outdoors, while the sexual activities comfortably at home.

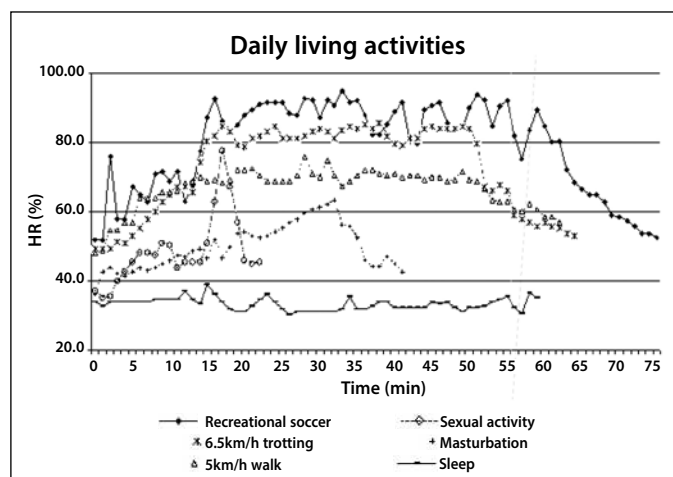


Figure 1. Behavior of the heart rate in different activities.

The outdoors activities were preceded by 10 minutes of warm-up and the HR peak for walk, trotting/run and recreational soccer was of 76%, 86% and 95% of maximum HR, respectively. Sexual activity and masturbation kept HR between 40 and 55% of capacity in the intromission period, with peaks of 78% and 64% in orgasm, respectively. HR returned to levels close to basal in three to four minutes. Further information can be seen in table 1.

Table 1. Behavior of the heart rate in different activities.

	inicial (%)	Mean HR* (%)	peak (%)	Duration**
Recreational soccer	95 (51.9)	158.7 (86.7)	174 (95.1)	50
6.5km/h run	90 (49.2)	148.8 (81.3)	157 (85.8)	40
5km/h walk	88 (48.1)	128.5 (70.2)	139 (76.0)	40
Sexual activity	68 (37.2)	95.1 (52.0)	142 (77.6)	16
Masturbation	66 (36.1)	94.8 (51.8)	116 (63.4)	32
Sleep	62 (33.9)	60.8 (33.2)	71 (38.8)	60

*HR: heart rate in bpm.

** Duration in minutes.

DISCUSSION

Many factors are associated with the triggering of AMI and sudden death; however, physical exercise and sexual activity represent the main concerns in the studies with subjects convalescent from cardiovascular events^{5,6}.

Although it is believed that sexual activity is an intense stimulus to the cardiovascular system, there is evidence that the metabolic cost is discreet and the HR increase is similar to light to moderate exercises^{3,4,7,8}. Following the same flow of thinking, our study compared different physical activities intensities and corroborated that the HR behavior during sexual act is of light intensity and that orgasm reaches the equivalent of a 5km/h walk, with exertion peak reaching 78% of maximum HR (moderate intensity).

Nemec et al.⁴ while studying young adults aged between 24 and 40 years, observed that the HR ranged from 60 to 92bpm (31 to 48%) during the intromission period, reaching 117bpm (61%) in orgasm and returning to 69bpm in 120 seconds after the end of the activity, In this study no difference in HR was found in the different sexual positions.

In middle-aged men (40 to 61 years), Larson et al.⁷ found mean

HR of 98bpm (57%) during the intromission phase and 123bpm (72%) in orgasm. Similar results were found in coronary disease patients, with mean HR of 93bpm (54%) and 115bpm (68%) in intromission and orgasm, respectively. In both groups, HR returned to basal values in three to four minutes.

In a more recent study Palmeri et al.³ related the HR obtained in a maximum ergometric test with that found in sexual activity of 19 men aged between 40 and 75 years (55 years) and concluded that the intercourse with the habitual partner presents moderate cardiovascular demand, similar to that found on the second stage of the Bruce protocol.

The recommendations for safe permission to sexual activity after some cardiac event are based on studies performed between habitual partners and with HR and BP measurements in the comfort of their homes. In extra conjugal situations, besides the lack of ethical criteria for its evaluation, there is difficulty in evaluating the extent to which excitement caused by a non-conventional relation interferes in the metabolic and cardiovascular aspects. However, it is known that the cardiovascular demand in extra marital orgasm is higher⁹, which can be a factor which justifies the higher risk of sudden death than the relation with the habitual partner. Data of two large retrospective studies performed in over 40 thousand autopsies revealed that sexual activity was related with less than 1% of the deaths and that in both, extra marital relations represented more than 60% of the cases^{10,11}.

While sexual activity is responsible for triggering less than 1% of the cases of AMI⁵, high-intensity exercise responds for 7% of the acute cardiac events. The risk relative of an isolate episode of intense exercise triggering AMI and SD is of 3.45 and 4.98, respectively. Paradoxically, regular practice decreases this risk, and each extra exercise day in the week reduces in 45% the chance of AMI and in 30% the chance of sudden death⁶.

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