

Abstract sample

PEAK HEART RATE OF 6-18 YEARS OLD YOUNG PEOPLE IS SIMILAR

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Modern recommendations of physical activity (PA) for young people outline 60 or more minutes of moderate- to vigorous-intensity PA each day that is developmentally appropriate and involves a variety of activities. Moderate-intensity PA requires a moderate amount of effort and noticeably accelerates the heart rate. It means intensity of 40 to 60% of aerobic capacity in which 4-7 kcal/min or 3-6 METs of energy is used. Vigorous-intensity PA requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate. Such intensity requires more than 6 METs. Recommendations quote examples of moderate- and vigorous-intensity exercises. Such description of PA is broad and hard to (self)-monitor at daily activities of young people. The purpose of our study was to find the appropriate heart rate of 6-18 years old young people for moderate- and vigorous-intensity since heart rate is easy to monitor.

The 20m shuttle-run test (20-mSRT) and the 600m run test (600-mRT) were performed on sample of 4.773 young people in Slovenia, aged between 6 and 18 years. Heart rate was monitored with Polar heart rate monitor model S610i. Regression was used to analyse how peak heart rate (PHR) is dependent from age of young people.

PHR in both tests is significantly ($p=.000$) depended from age yet only 1.2 (20-mSRT) to 4.9% (600-mRT) of variance is explained and differences are very small from the point of heart rate monitoring during exercising. PHR of 20-mSRT was 197.20 ± 11.35 (min 192.68 in 7-years old and max 199.88 in 12-years old young people). PHR of 600-mRT was 197.82 ± 10.25 (min 194.64 in 18-years old and max 202.25 in 6-years old young people).

The formula "220 minus age" is not appropriate for defining the PHR of 6-18 years old young people. From the results of 20-mSRT we conclude that this test is not sufficiently sensitive for PHR measure of younger age groups. Taking this into account we can find that PHR of young people is linearly decreasing from 202 in 6-years old to 196 in 18-years old young people. Since 20-mSRT is a reliable and valid test to estimate peak oxygen consumption (Leger et al., 1988) and it has been widely used to assess the aerobic fitness of young people (Olds et al., 2005) PHR in this test is appropriate intensity measure for PA of young people. Therefore optimal aerobic training for 6-18 years old young people should be at 165-178 heart rates (85-90% peak heart rate; Mountjoy et al., 2008) and moderate-intensity PA should be at 130-151 heart rates (40-59% heart rate reserve).

Leger, L.A., Mercier, D., Gadoury, C., Lambert, J. (1988). *J Sport Sci*, 8(6): 93-101.

Mountjoy, M., et al. (2008). *Clin J Sport Med*, 18: 122-123.

Olds, T., Tomkinson, G., Leger, L., Cazarola, G. (2005). *J Sport Sci*, 24(10): 1025-1038.

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