eISSN: 09748369

The correlation between the health indicators and physical development of men aged 25-30 who regularly play minifootball

Biology and Medicine

Research Article

Volume 6, Issue 3, Article ID: BM-034-14, 2014
Indexed by Scopus (Elsevier)

www.biolmedonline.com

The correlation between the health indicators and physical development of men aged 25-30 who regularly play minifootball

Victor Stepanovich Yakimovich[1], Vladimir Danzanovich Burlykov[2,*], Sergey Nikolaevich Proshkin[2]
[1]Volzhsky Institute of Civil Engineering and Technologies (Branch) of the Volgograd State University of Architecture and Civil Engineering, 72 Lenin Avenue, Volzhski, The Volgograd Region 404111, Russia.
[2]Kalmyk State University, the Republic of Kalmykia, 11, Pushkin Street, Elista, 358000, Russia.

***Corresponding author**

Citation: Yakimovich VS, Burlykov VD, Proshkin SN (2014) The correlation between the health indicators and physical development of men aged 25-30 who regularly play minifootball. Biol Med 6(3), Article ID: BM-034-14, 3 pages.

Received: 11th Oct 2014; Accepted: 9th Dec 2014; Published: 19th Dec 2014

Abstract
The correlation between the indicators of physical fitness and health of men aged 25-30 who regularly play minifootball unsupervised has been revealed on the basis of experimental studies, the semantic, and correlation analysis. It has been revealed that the method of training based on competition leads to an increase in inhibitory processes of the autonomic nervous system and a decrease in the efficiency of blood circulation in the group under study. The young men's overweight may account for the fixed negative processes.

Keywords: Physical development; health indicators; men aged 25-30; regular exercise; minifootball.

Introduction

The study of the muscle activity effect on the human respiratory system and blood circulation is the subject of many studies [1-3]. A positive effect of regular physical exercise, including minifootball, on the health of a man at any age is well-known to specialists [4-6]. However, if the trainings are spontaneous, not supervised by experienced teachers, not complied with the basic pedagogical principles (dynamics of exercise performance, consideration of exerciser's individual fitness, and others), they may do no good [7]. Obviously, such situations require a detailed study, analysis, and a development of specific recommendations for eliminating negative effects of mass participation in minifootball playing.

Methods

The study involved 42 men aged 25-30 who regularly play minifootball twice a week for 90 min in the sports center of the Kalmyk State University. The health indicators of all people under study were fixed. The indicators described their physical development and state, as well as their standard of health. The following measurements have been taken: height (with a height meter); body weight (with the analyzer of the body composition and weight TANITA BC-540); volume of maximal expiration at rest (VMER) (with pulmometer); back strength (with torso dynamometer DC-500); the strength of left and right wrists (with the electronic hand dynamometer BS-D706; heart rate (HR) at rest and blood pressure (BP) (with the automatic tonometer M2Eco (OMRON); timed expiratory capacity (Stange's test) and the results of Martinet's test.

Based on the obtained data, the following indicators were calculated: the pulse pressure (PP); average dynamic arterial pressure (ADAP); coefficient of blood circulation efficiency (CBCE); absolute adipose tissue content (by J. Matejko's formulas), the body mass index (by Quetelet's formula); the life and power indices (by GL Apanasenko) [8]; Kérdö's index; Robinson's index [9]; Skibinski's index [10]; the endurance index. All data have been exposed to semantic and correlation analysis.

Results and Discussion

Table 1 shows the number of the most significant correlations ($p < 0.05$) formed by the indicators of the men aged 25-30 under study who regularly play minifootball.

Table 1: The number of the most significant correlations formed by the indicators of physical development, fitness, and health of the men aged 25-30 under study who regularly play minifootball.

Indicator No.	Significance level	No. of indicators forming correlations	Total
20	$p < 0.05$	5, 6, 7, 14, 17, 18, 19	7
3	$p < 0.05$	2, 4, 9, 10, 12, 21, 22	7
5	$p < 0.05$	6, 13, 14, 17, 20	5
7	$p < 0.05$	16, 17, 18, 19, 20	5
17	$p < 0.05$	5, 7, 16, 18, 20	5

Note: No. 2 – height; No. 3 – body weight; No. 4 – back strength; No. 5 – systolic blood pressure; No. 6 – diastolic blood pressure; No. 7 – HR; No. 8 – VMER; No. 9 – left wrist dynamometry; No. 10 – right wrist dynamometry; No. 11 – Stange's test; No. 12 – absolute adipose tissue content; No. 13 – pulse pressure; No. 14 – ADAP; No. 16 – endurance coefficient; No. 17 – CBCE; No. 18 – Robinson's index; No. 19 – Skibinski's index; No. 20 – Kérdö's index; No. 21 – body mass index; No. 22 – life index.

Thus, the semantic analysis demonstrates that indicator No. 20 (Kérdö's index) has 7 correlations, 3 of which are direct with indicators No. 7 (HR, $r = 0.722$), No. 17 (CBCE, $r = 0.514$), No. 18 (Robinson's index, $r = 0.459$), and 4 are reverse with indicators No. 5 (systolic blood pressure, $r = -0.312$), No. 6 (diastolic blood pressure, $r = -0.392$), No. 14 (ADAP, $r = 0.361$), and No. 19 (Skibinski's index, $r = -0.460$).

As it is well known, Kérdö's index is determined on the basis of diastolic blood pressure and HR and characterizes the impact of the autonomic nervous system on the human cardiovascular activity [11]. Naturally, it has indicated correlations with cardiovascular rates. It should be noted that only one of the correlations is close ($r = 0.7$) and one is moderate ($r < 0.7$, but > 0.5), while the remaining five are weak ($r < 0.5$, but > 0.3). However, so many correlations make it possible to consider Kérdö's index for young men who regularly play minifootball as a semantic center of the studied variables.

Indicator No. 3 (body weight) also has seven correlations. With this number of correlations, this indicator is also called a semantic center of the studied variables.

Thus, six of the body weight correlations are direct and one is reverse. The body weight depends on the height (indicator No. 2, $r = 0.602$) and on absolute mass of adipose tissue (index No. 12, $r = 0.739$). The more the young man's weight is, the higher his body mass index (indicator No. 21, $r = 0.921$), his back strength (indicator No. 4, $r = 0.451$), and his wrist dynamometry (indicator No. 9, $r = 0.443$, indicator No. 10, $r = 0.495$). However, the life index (indicator No. 22, $r = -0.680$) of men who play minifootball decrease with an increase in their body weight. That is, the increase in the body weight due to the increase in adipose tissue has a negative impact on their health. It should be noted that this fact has already been recorded in the students' studies [12,13].

Based on the data obtained, we can say that two of the seven correlations are close ($r = 0.7$), two are moderate ($r < 0.7$, but > 0.5), and the remaining three are weak ($r < 0.5$, but > 0.3).

Three indicators: No. 5 – systolic blood pressure; No. 7 – HR; and No. 17 – CBCE have five correlations each. These indicators can be considered as semantic nodes of the variables under study.

Thus, the systolic blood pressure of the young men who regularly play minifootball unsupervised correlates moderately and directly to the diastolic blood pressure (indicator No. 6, $r = 0.654$) and pulse pressure (indicator No. 13, $r = 0.647$). A strong direct correlation of systolic blood pressure with ADAP (indicator No. 14, $r = 0.787$) and a weak correlation with the CBCE (indicator No. 17, $r = 0.465$) have been established. But the systolic blood pressure of young men who play minifootball has a reverse correlation ($r = -0.312$) with Kérdö's index (indicator No. 20). It means that the higher the systolic blood pressure is, the lower the inhibitory impact in the activity of their autonomic system is.

The HR (indicator No. 7) has the following direct correlations with the indicators No. 16 (endurance coefficient, $r = 0.715$), No. 17 (CBCE, $r = 0.633$), No. 18 (Robinson's index, $r = 0.728$), and No. 20 (Kérdö's index, $r = 0.722$). But the HR of the young men who play minifootball unsupervised has a reverse correlation with Skibinski's index (indicator No. 19, $r = -0.487$).

CBCE (indicator No. 17) has only direct correlations with the following indicators: No. 5 (systolic blood pressure, $r = 0.465$), No. 7 (HR, $r = 0.633$), No. 16 (endurance coefficient, $r = 0.719$), No. 18 (Robinson's index, $r = 0.664$),

No. 20 (Kérdö's index, $r = 0.514$). It means that the higher the above mentioned indicators of the men under study are, the greater CBCE is and hence the lower the efficiency of blood circulation is.

Conclusions

The identified correlations of the indicators of physical development, fitness, and health of the men aged 25-30 who regularly play minifootball lead to the following conclusions:

1. One of the factors that negatively affect the health indicators of men aged 25-30 who play minifootball at least twice a week may be the body overweight and especially its adipose tissue component.
2. Competitions in minifootball, when young men with excess body fat play unsupervised, lead to the excess of physical activity, and, consequently, to an increase in the inhibitory processes of the autonomic nervous system and a decrease in the efficiency of blood circulation.

References

1. Blanc PD, Yen IH, Chen H, Katz PP, Earnest G, *et al.* (2006) Area-level socio-economic status and health status among adults with asthma and rhinitis. European Respiratory Journal 27: 85-94.

2. Pitta F, Troosters T, Probst VS, Spruit MA, Decramer M, *et al.* (2006) Quantifying physical activity in daily life with questionnaires and motion sensors in COPD. European Respiratory Journal 27: 1040-1055.

3. Holmen TL, Barrett-Connor E, Clausen J, Holmen J, Bjermer L. (2002) Physical exercise, sports, and lung function in smoking versus nonsmoking adolescents. European Respiratory Journal 19: 8-15.

4. Balsevich VK (1988) Physical education for comers and goers. Physical Education and Sports Journal, p. 208.

5. Mutko VL, Andreev SN, Aliev EG (2010) Minifootball in higher education institutions: Study guide. Soviet Sports Journal, p. 320.

6. Yakimovitch VS (2002) Designing the System of Physical Education of Children and Young People on the Basis of Personality-oriented Education, Abstract of Ph.D. Thesis, Moscow, p. 48.

7. Yakimovitch VS, Burlykov VD, Proshkin SN, Barlykov SM, Tserenov DP, *et al.* (2013) Analysis of health indicators and physical fitness of men aged 25-30, regularly playing minifootball. Bulletin of P.F. Lesgaft University 5: 146-151.

8. Apanasenko GL (1992) Evolution of Human Bioenergy and Health. IHP "Petropolis", St. Petersburg, p. 123.

9. Makarova GA, Loktev SA (2006) Coach medical guide. Soviet Sports Journal, p. 588.

10. Belotserkovskiy ZB (2005) Ergometric and cardiac standards of athletes' physical performance. Soviet Sports Journal, p. 312.

11. Kérdö I (1966) Ein aus Daten der Blutzirkulation kalkulierter Index zur Beurteilung der vegetativen Tonuslage. Acta neurovegetativa 29(2): 250-268.

12. Egorycheva EV, Mussina SV (2011) Study of body weight deviations at today's college youth. Current Research of Social Problems 4: 1-6: (Date Views: 5.06.2014, http://sisp.nkras.ru/issues/2011/4/egorycheva.pdf).

13. Yakimovitch VS, Mussina SV (2013) The interaction between the health indicators and physical fitness of overweight students. Theory and Practice of Physical Culture Journal 1: 37-40.