

The Level of Motor Abilities of Applicants for the Study of Sports Management

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Abstract

The authors of this contribution focused on a long-term comparison of the level of motor abilities of applicants for university studies. In total, 1,564 applicants for the study of Sports Management were tested using four standardised motor tests. In spite of the demonstrated change in the lifestyle of the population that is accompanied, among others, by reduced physical activity, increases stressful situations and obesity, the results of our study show a stable level of motor abilities of applicants for the field of Sports Management. In both female and male categories, statistically significant changes were only found in one of the monitored motor abilities but the difference does not show sufficient practical significance. Therefore, we can state that students with the same level of motor abilities apply and are accepted to the field of Sports Management at the VSB – Technical University of Ostrava in spite of the significant changes in lifestyle.

Key words: physical activity, motor abilities, test, students, sports management

Introduction

Changes in the lifestyle and the increasing standard of living of the population are associated with constant technological development, and these transformations bring about significant changes in our lifestyle. An important feature of technological development is, among other things, the reduction of human movement activity, which has been an inevitable survival condition for many centuries (Smith & Biddle, 2008). Physical activity (hereinafter also referred to as PA) and sport are important human lifestyle attributes that include the integrity of standards, values, physical and social behaviour of an individual (Kohl & Murray, 2012). Current PA studies in the general population point to significant effects of several factors, in which event, the influence of the factors can be considered positive or negative (positive x negative parental relationship to PA and sport in general).

Naturally, the amount and structure of PA also changes with the age of the individuals and it is influenced by other factors such as the gender of the individual, the person's cultural background and his/her environment (McCrorie, Fenton, & Ellaway, 2014; Knežević, Florić, & Ninković, 2013; Cooper et al., 2005; Dellinger & Staunton, 2002).

The human body, especially in children, is very sensitive and relatively easily influenced by various effects (positive or negative); it should be taken into account that the consequences of these effects are often manifested in later periods (Hart et al., 2011; Ward, Saunders, & Pate, 2007). Lifestyle basics are formed in childhood, and lifestyle also includes the realization of various types of PA, therefore, most of the research is targeted at the population of children and youth in the range of 5-18 years (Ružbarská, 2016; Prukner & Sigmundová, 2014; Vala et al., 2010; Willwéber & Čilík, 2017) to identify any changes in the lifestyle of the population as soon as possible.

As mentioned above, the overall lifestyle has changed, PA has been reduced almost to a minimum, nervous tension and the occurrence of stress situations have increased (Engberg et al., 2012). PA of children gradually decreases, and it is already inadequate during the younger school age. Children prefer less demanding activities such as computer games or watching TV. Research shows that up to 48% of children watch TV more than 2 hours a day (Tammelin et al., 2007; Davison, Francis, & Birch, 2005), while watching TV constantly increases in almost all age groups (Mielke et al., 2014). Some publications even point to the total of 6 hours a day spent using computers, watching television and playing game consoles (Vasiljevič et al., 2015). The children do not have much time to carry out some of the extracurricular activities, which is also supported by the authors Rubická and Valová (2010); they state that up to 70 % of young people do not engage in any sport and 50 % do not engage in any extra-curricular activity. Watching television for more than 2 hours a day is, however, demonstrably associated with reduced fitness and also with negative signs of unfavourable body composition. Possible findings of a decrease in physical activity in children are usually accompanied by deterioration in

general motor performance, health, the prevalence of childhood obesity and related health problems (Tremblay et al., 2011; Cho et al., 2009).

Another important factor influencing the lifestyle and especially the decreasing number of PAs is represented by computers, computer games, gaming consoles (including online games), and Internet surfing (Christakis et al., 2004; Ružić-Baf, Radetić-Paić, & Debeljuh, 2014; Salmon et al., 2005; Wadsworth, Brock, Daly, & Robinson, 2014). The development of PC technology is generally a separate chapter. PCs are used by almost everyone in everyday work, shopping, entertainment or information gathering. In addition, their use has been further enhanced by the availability of Wi-Fi. Today, there is no need to sit at home with a PC with the Internet access, or even to carry a portable PC (notebook), but tablets and especially smart phones fulfil the same function (maybe even in a not better way), which is another option for children to spend free time (Gardašević, 2015).

The applicants for the university study in the period under review were precisely the generation of students who showed changes in their lifestyle (TV watching, using PC, tablets, sedentary lifestyle, and a steadily increasing percentage of obesity), and we also decided to implement this study aimed at comparison of the level of selected motor abilities of the university students in the sports management within 10 years.

Graduates in the field of sports management gain the foundations not only in sport, management and marketing in sport, but also in economics, public administration, accounting and law. They should be prepared to hold a management position in management, or in implementation teams of sports clubs (Oddy and Bason, 2017) sports associations and fit-centres (Polyakova and Mirza, 2016). That is why, in the case of sport management students, high demands are placed on their physical fitness, intellect, and they also have to be very competent organizers. However, it should be noted that there are different views and opinions concerning the role, tasks and abilities of a sports manager (Bennett, Drane, & Henson, 2003; Di Palma, Raiola, & Tafuri, 2016; Zdroik & Babiak, 2017); e.g. Woolf & Dixon (2017) consider decision-making one of the most important abilities for sports managers.

In the Czech Republic, this field can be studied only at five universities, which should guarantee the possibility of constant selection of the best students who are interested in studying sports management. The applicants who are admitted for the study in the field of sports management often include current or former sportsmen and sportswomen at various levels of performance wishing to continue to work in sport in a variety of roles, for example as sports club managers.

We anticipate and hope that this factor will be decisive and it will be demonstrated that, although there are demonstrable changes in the level of motor abilities of the youth (as mentioned above), the level of motor abilities of study applicants and sports management students will not have a declining level.

Target

Comparing the level of selected motor abilities of university applicants in the field of sports management in 2003-2013.

Materials and methods

Ethics

The presented study was conducted on the data of applicants for the study in the field Sports Management at VŠB – Technical University of Ostrava in the Czech Republic. All the data presented were completely anonymous and all personal data protection measures were complied with.

Participants

The presented study was carried out on the data of 1,564 applicants for the study in the field Sports Management at VŠB – Technical University of Ostrava in the Czech Republic. These were anonymous data from 368 women and 1,196 men in 2003-2013.

Procedures

A range of Mackenzie standardized motor abilities tests (2015) or full test batteries such as the Eurofit test (Ružbarská, 2016; Prukner & Sigmund, 2014; Lovecchio et al., 2012; Tsigilis, Douda, & Tokmakidis, 2002; Piccinno & Colella, 2014) are used to diagnose the motor abilities level. In the admission procedure, all applicants for sports management studies also completed 4 selected standardized motor abilities tests below.

One of the standardized motor abilities tests that we have used, and, at the same time, one of the world's most popular motor tests (for example, in the USA) is the standing long jump. This test is also part of the Eurofit test battery, and we used it as well.

The standing long jump – the tested person (hereinafter also referred to as the TP) performs the long jump in the following way: the jumper stands with toes right at the take-off line with the feet slightly apart. The jumper takes off and lands using both feet (it is allowed to bend the knees and swing the arms). We measure the length of the jump from the take-off line to the point of contact of the nearer heel. The jump is repeated three times, and the best attempt is recorded with an accuracy of 1 cm. Other tests that were used are the 3-kg medicine ball throw, sit-up, and 12-minute running.

The tested person stands with the feet slightly apart, the toes are in front of the line, the TP holds a 3-kg medicine ball over the head with both hands. The test begins with a backswing and the subsequent throw of the

ball as far as possible. During the throw, the toes remain in contact with the mat). Three throws are performed, counting the most successful of them, the results are expressed in meters with an accuracy of 0.1 m.

When testing the sit-up, the tested person takes up the basic position: lying on the back with knees bent, the hands on the nape, the fingers laced together. The legs are bent at the knees at an angle of about 90°, the feet are on the ground 30 cm apart, and the helper fixes them to the ground. The TP repeats the sitting position (the elbows touch the knees) and the lying position (the back and the dorsum of the hands touch the mat). Throughout the testing, the legs must remain bent, the hands on the nape and the fingers laced together. The TP must not facilitate the exercise pushing the trunk off the mat. The movement is smooth and it is repeated as quickly as possible for 60 seconds. If the TP has a break due to fatigue, the test is not interrupted. It is done once.

In the 12-minute run test (also known as the Cooper test), the goal is to run the longest possible distance in 12 minutes. At the starter's command, the TPs take the standing start position and on the signal (shot from the pistol), they start running and run for 12 minutes without interruption. They try to overcome the longest possible distance, and they must not stop during the test. The end of the test is signalled by another shot from the pistol; at this point, the TP must stop at a given location. The test is performed on the athletic track and the result is the distance covered by running, measured with an accuracy of 10 m.

Statistical analysis

Statistic processing of the obtained data was carried out using the statistical program IBM SPSS Statistics 21.0. Statistical decision making was carried out at a 5% level of significance. Normality of the data as a prerequisite for the use of parametric test forms was rejected in most cases (Shapiro-Wilk test, p-value<0.05), therefore, non-parametric forms of tests (Kruskal-Wallis test and Mann Whitney test) were used to assess the statistical significance of the observed differences. The obtained results were also assessed from the point of view of material significance by means of the "Effect of Size" by Cohen (1988) and Hendl (2009), both of which recommend Cohen's d values for the Effect of Size (0.2 = small effect, 0.5 = medium effect, 0.8 = great effect). The entire 10-year period under review was divided into 3 shorter periods (3 years) in order to find a possible trend and also to compare the number of admissions, which was only 15-20 men and women each year (n = 15-20). With this step, we also tried to eliminate other factors, such as the admission of excellent sportsmen/sportswomen, i.e. the Olympic winner in the Decathlon.

Results

Although there is increasing evidence of a decrease in the amount of physical activity, which is usually accompanied by a decrease in the level of motor abilities, the results of our study show that the level of motor abilities in university students is still the same.

In the case of applicants for the study of both sexes in the field of sports management during the period under review, statistically significant differences were found only in the level of one selected motor skill (namely the dynamic explosive strength of the lower limbs) – in the standing long jump. However, in the case of men, the difference between the first period 2003-2006 and the third period, when the worst performances were analysed, was only 10 cm (p-value <10⁻³), and in terms of material significance, this difference is considered small by Hendl (2009) and Cohen (1988) (Cohen's d = 0.48).

Table 1: Basic descriptive statistics of men applicants for the study

Men	Period	Mean (95 % CI)	Median	SD	Min	Max	p-value	ES
Test								
Throw 3kg (m)	2003-2006	7.65 (7.52; 7.78)	7.6	1.31	3.3	12.7	0.163	0.10
	2007-2009	7.57 (7.41; 7.72)	7.65	1.38	4.1	11.8		
	2010-2013	7.49 (7.39; 7.61)	7.4	1.20	4.2	11.5		
Standing long jump (m)	2003-2006	2.35 (2.29; 2.03)	2.35	0.19	1.53	2.93	< 0,001	0.48
	2007-2009	2.30 (2.27; 2.32)	2.31	0.22	1.41	2.91		
	2010-2013	2.25 (2.36; 2.01)	2.26	0.20	1.51	2.96		
Sit-up (-)	2003-2006	48.6 (47.8; 49.4)	49	7.9	19	71	0.120	0.13
	2007-2009	48.5 (47.6; 49.4)	49	7.9	22	66		
	2010-2013	49.5 (48.8; 50.2)	50	8.0	21	70		
12- minute run (m)	2003-2006	2825.2 (2797.9; 2852.6)	2830	283.5	1780	3780	0.700	0.05
	2007-2009	2823.3 (2790.2; 2856.4)	2820	294.5	1890	3590		
	2010-2013	2810.9 (2785.1; 2836.8)	2830	286.6	1890	3600		

Note: n (2003-2009) = 415, n (2007-2009) = 306, n (2010-2013)= 475, 95% CI- 95% Confidence Interval for Mean (Lower Bound; Upper Bound). SD- Standard Deviation, ES- Effect Size (Cohen's d)

For women, the same test also revealed statistically significant differences in performance (see Table 2 and Figure 1), specifically between the second period (2007-2009) and the third period (2010-2013), when worse performance was found by 9 cm on average (p-value = 0.027). However, when assessing the material significance of this difference, we must again note that this is a minor difference (Cohen's $d = 0.37$). For the remaining 3 selected tests, the observed differences in the motor skill level cannot be considered statistically significant.

Table 2: Basic descriptive statistics of women applicants for the study

Women	Period	Mean (95 % CI)	Median	SD	Min	Max	p-value	ES
Test								
Throw 3kg (m)	2003-2006	5.12 (4.97; 5.28)	5	0.97	4.1	9.1	0.261	0.25
	2007-2009	5.40 (5.16; 5.63)	5.3	1.23	3.3	9.7		
	2010-2013	5.18 (4.97; 5.40)	5	1.10	3.2	9.5		
Standing long jump (m)	2003-2006	1.94 (1.90; 1.98)	1.91	0.22	1.41	2.91	0.027	0.37
	2007-2009	1.99 (1.94; 2.04)	1.95	0.27	1.50	2.97		
	2010-2013	1.90 (1.85; 1.95)	1.84	0.24	1.37	2.68		
Sit-up (n)	2003-2006	44.4 (43.2; 45.6)	44	7.5	23	60	0.363	0.18
	2007-2009	45.1 (43.6; 46.6)	45	8.0	24	68		
	2010-2013	45.9 (44.1; 47.6)	47	9.1	23	64		
12- minute run (m)	2003-2006	2280.1 (2237.0; 2323.2)	2300	265.1	1530	3120	0.235	0.24
	2007-2009	2252.7 (2195.2; 2310.2)	2250	307.2	1440	3150		
	2010-2013	2208.9 (2151.1; 2266.8)	2205	303.3	1440	2820		

Note: n (2003-2009) = 134, n (2007-2009) = 101, n (2010-2013) = 88, 95% CI- 95% Confidence Interval for Mean (Lower Bound; Upper Bound). SD- Standard Deviation, ES- Effect Size (Cohen's d)

Although statistically significant changes in one of the monitored motor abilities were demonstrated, this is not a significant difference from the point of view of material significance, so it can be stated that students with the same performance (motor skill level) apply, and, above all, are admitted for the study at VŠB – Technical University of Ostrava.

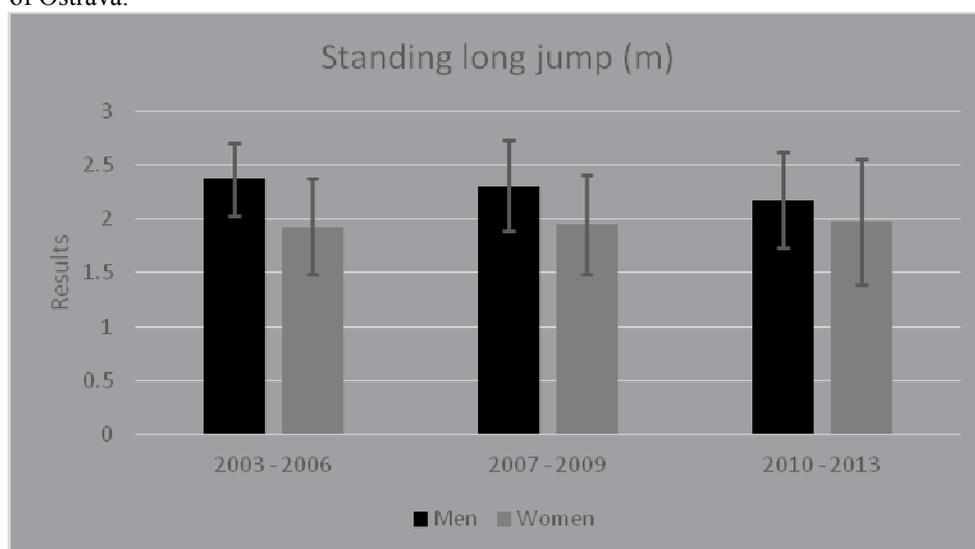


Figure 1: Comparison of the results of the test (standing long jump) during the period under review

Every year, there was a real selection for the study of sports management, as about 140-210 students applied for the study every year, with only about 15 students admitted. This ratio of admitted applicants (approximately 10%) only proves that VŠB – Technical University of Ostrava had the opportunity to choose only the best students from all the applicants who were interested in studying sports management.

Discussion and conclusions

The applicants who are admitted for the study in the field of sports management often include current or former sportsmen and sportswomen at various levels of performance.

The fact that the level of motor abilities of applicants was not negatively affected by the gradual decrease in the number of people born within the individual applicants' age groups during the period under review is

positive as well. In 1993, more than 121,000 children were born in the Czech Republic, while only 3 years later, the number of births was only 90,000. Even this fact did not negatively affect the level of motor abilities of the applicants, which again proves that truly sporting individuals are still selected for the study of sports management. However, in the next few years, theoretically, the level of motor abilities of university applicants may be expected to decrease, particularly as a result of a decrease in the number of births in the given year to the same number of students admitted for the study at university, provided that the number remains the same.

Strengths and limitations

A great advantage of the presented study is the total duration of the period under review and the size of the group, when the results of 1,564 applicants for the study in the sports management are compared over the course of 10 years. Longer-term studies on a larger group are always better because they help eliminate many random factors and can point to the possible long-term effects of any of the factors. In our case, fortunately, the results of the motor abilities of the applicants were not negatively reflected in the reported and demonstrated changes in lifestyle. In 2014, the structure of the acceptance procedure changed and thus the monitored period cannot be longer than the stated ten years.

On the other hand, it is necessary to take into account the limitations of the study, which is mainly based on the fact that the results we present are generalizable for applicants at VŠB – Technical University of Ostrava. To generalize them for the whole of the Czech Republic, it would be necessary to obtain outputs from the remaining four universities offering the same field of study, as most of them have their own structure of admissions and use different motor tests or test batteries.

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