



CORRELATION BETWEEN MUSCLE STRENGTH AND ENDURANCE WHEN USING SPECIALIZED FITNESS TRAINING FOR STUDENTS

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ABSTRACT

Testing was conducted during the winter semester of the academic 2016/2017 year. A total of 67 students from the Faculties of Agriculture, Veterinary Medicine and Economics at Trakia University, Stara Zagora, are the contingent of the survey. The average age of the surveyed students was 20.04 years.

The aim of the study was to establish a correlation between muscle strength and endurance as a result of applying a specialized fitness model. To achieve this goal, the following tasks were assigned: review of scientific literature, development and approbation of a specialized fitness model, development of a test battery, processing and analysis of the data from the conducted testing. The following methods were applied: pedagogical experiment, testing and correlation analysis. Based on the conducted detailed correlation analysis, we believe that following the experimental fitness program, the relationships between muscle strength and stamina retain their essential characteristic - with a significant number of reliable statistical links; after the completion of the experiment, the statistically significant correlations of the EG increased. Significant increase with 99% statistical significance between motor skills after the application of the author's fitness model was observed; the conducted study showed different degrees of correlation dependencies between the motor skills muscle strength and stamina of the students.

Key words: University, experiment

INTRODUCTION

Modern lifestyles, coupled with scientific advances of technology, enter into a paradoxical contradiction with the person's functional capabilities. The mobilization of man enters more and more in his everyday life. This in turn leads to health problems - weight gain, increased cardiac arrest, decreased physical fitness and a number of other negative effects affecting the body.

The issue of physical development and functional abilities of students is becoming more and more relevant. Universities with their organized forms of physical education are the main factor in the development of students' physical capacity. The issue of improving and updating curricula in physical education and

sports classes is at the forefront. The main methodical problem is the application of innovative methods to optimize the training impacts in the training process, in accordance with the regularities of the adaptation process (1-3).

Many authors consider that basically the performance of motor tasks depends on the functional state of man. Muscle strength and endurance are an essential part of man's physical capacity. Silence as a physical quantity of a person is at the moment of motion. Promoting the power of its defenses, we are committed to doing everyday business, as well as re-establishing ourselves in the extreme of our business. It is the basis on which the partner technician and the sponsor are involved in the development of the spontaneous achievements (4-8). Many specialists have a special focus on the durability of physical insight in all age groups. This is associated with the fact that durability

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provides effective solutions to life-threatening systems in the human body: cardiovascular, respiratory, blood and osteoarthritis (9-12).

The aim of the study is to establish the correlation between muscle strength and endurance as a result of applying a specialized fitness model.

To achieve our goal, we have set the following tasks:

1. Study of literary sources
2. Development and approbation of a specialized fitness model.
3. Develop a test battery.
4. Process and analyze the test data.

Methods of study:

1. Pedagogical experiment
2. Testing
3. Correlation analysis

Testing was conducted during the winter semester of the school year 2016/2017. A total of 67 students from the Faculty of Agriculture, Faculty of Veterinary Medicine and Faculty of Economics at the Thracian University in Stara Zagora are part of the survey. The researchers surveyed had an average age of 20.04 years.

The test battery includes the following tests:

1. Jump length of place
2. Vertical jump
3. Deadlift
4. Dynamometry
5. Hanging to a denial
6. Dumbbell hold 2kg
7. Plank
8. Throwing the medical unit (3 kg) forward
9. Tossing of the medical unit (3kg) back
10. Shuttle 10x10 m

11. Pushups to denial
12. Abdominal presses to denial
13. Harvard Stap Test - pulse increase during the step test
14. Harvard Steppe Test - Pulse after 1 minute
15. Harvard Steppe Test - Pulse after 3 minutes
16. Harvard Step Test - Pulse Time - 3 Minutes of Restoration
17. Cooper Test
18. Beep test

Results analysis:

The developed model includes tasks divided into muscular groups (for upper limbs, lower limbs, back, chest, abdominal muscles) with a certain degree of success and prestige. The trainee gymnast was offered for 24 weeks (twice a week) during the winter and summer semester of the 2016/2017 school year.

At the time of the experiment, the students carried out the assignments, assigned in three different circles. Each round runs for 8 weeks with a gap between two minutes in the first four weeks and one minute during the four weeks. Each of the circles contained 15 exercises. The duration of one exercise is 15 seconds. The fifteen performances in the circle are carried out without a prank between them. Every round of the round is completed five times.

The absolute value of the correlations between observed mobility attributes and extent of their significance at the beginning and end of the experimental period of experimentation and organizational group is presented in the context of the corridor (**Tables 1, 2, 3, 4**).

Table 1. Correlation analysis KG first statement

	Jump length of place	Vertical jump	Deadlift	Dynamometry	Hanging to a denial	Dumbbell hold 2kg	Plank	Throwing the medical unit (3 kg) forward	Tossing of the medical unit (3kg) back	Shuttle 10x10 m	Pushups to denial	Abdominal presses to denial	Harvard Stap Test - pulse increase during the step test	Harvard Steppe Test - Pulse after 1 minute	Harvard Steppe Test - Pulse after 3 minutes	Harvard Step Test - Pulse Time - 3 Minutes of Restoration	Cooper Test	Beep test
Jump length of place	1	,656**	0,341	,379*	,413*	0,023	0,026	0,135	0,188	-0,018	0,066	0,238	-0,001	0,046	0,28	0,282	-0,058	0,13
Vertical jump		1	0,276	,405*	0,282	-0,036	0,192	0,185	0,109	-0,283	0,186	0,247	-0,049	0,094	0,291	0,243	-0,039	0,072
Deadlift			1	0,306	0,169	0,005	,438*	0,096	0,046	-0,232	-0,11	0,151	0,226	-0,154	-0,054	0,185	0,021	0,017
Dynamometry				1	0,094	0,045	0,11	0,09	0,131	0,029	0,1	0,129	0,127	-0,162	0,176	0,314	0,155	-0,1
Hanging to a denial					1	0,197	0,291	,364*	,418*	-0,095	-0,056	-0,075	0,259	0,026	0,026	0,302	-0,27	0,086
Dumbbell hold 2kg						1	0,146	,434*	0,326	0,125	-0,022	-0,241	0,253	0,057	0,054	0,324	0,039	0,011
Plank							1	0,219	,388*	-0,291	-0,393*	-0,149	0,128	-0,188	-0,152	-0,018	-0,311	-0,131
Throwing the medical unit (3 kg) forward								1	,534**	-0,334	-0,093	-0,334	0,252	0,104	-0,246	0,019	0,106	0,169
Tossing of the medical unit (3kg) back									1	0,122	-0,343	-0,086	0,18	-0,112	-0,145	0,044	-0,063	0,084
Shuttle 10x10 m										1	0,189	0,044	-0,027	-0,031	0,208	0,182	0,066	-0,074
Pushups to denial											1	0,102	-0,045	,386*	0,154	0,107	0,128	0,046
Abdominal presses to denial												1	0,093	-0,198	0,248	,351*	0,302	0,172
Harvard Stap Test - pulse increase during the step test													1	-0,263	-,537**	,519**	0,066	0,155
Harvard Steppe Test - Pulse after 1 minute														1	0,097	-0,181	-0,13	-0,049
Harvard Steppe Test - Pulse after 3 minutes															1	,442*	-0,171	-0,204
Harvard Step Test - Pulse Time - 3 Minutes of Restoration																1	-0,103	-0,041
Cooper Test																	1	,569**
Beep test																		1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

After the required correlation analysis of the results of incoming and outgoing tests of the experimental group and the control group in order to visualize the significant correlation values of the movement qualities as shown in **Figures 1, 2, 3 and 4**.

They were picked up by the link with the image are accepted ($P \geq 95\%$). We numbered the tests of mobility as follows.

1 - jump length of place, 2 - vertical jump, 3 - Stanova strength, 4 - dynamometer, 5 - Hanging to a denial, 6 - dumbbell hold 2kg, 7 - plank, 8 - throwing the medical unit (3 kg) forward, 9. Tossing of the medical unit (3kg) back, 10 – 10x10m shuttle, 11 - pushups to denial, 12 - abdominal presses to denial, 13 - 3 minutes of Restoration, 14 - pulse increase during the step test, 15 - pulse retrieval 1 minute, 16 - pulse recovery 3 minutes, 17 - Cooper test, 18 - beep test.

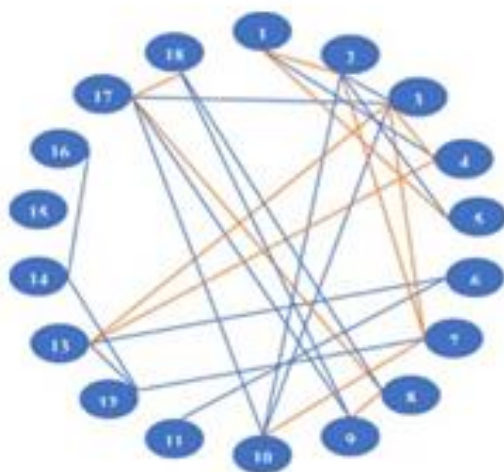
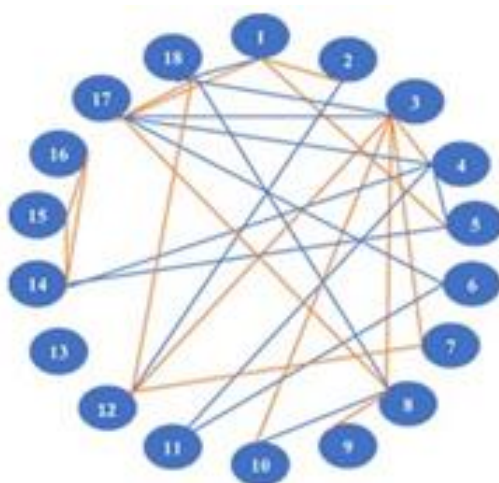


Fig. 1. Correlation structure of the relationship between the mobility rates of the EG on the incoming tests.





Note:
 95% Statistic persistence – 
 99% Statistic persistence – 

Fig. 2. Correlation structure of the relationship between the mobility rates of the EG of the outgoing tests.

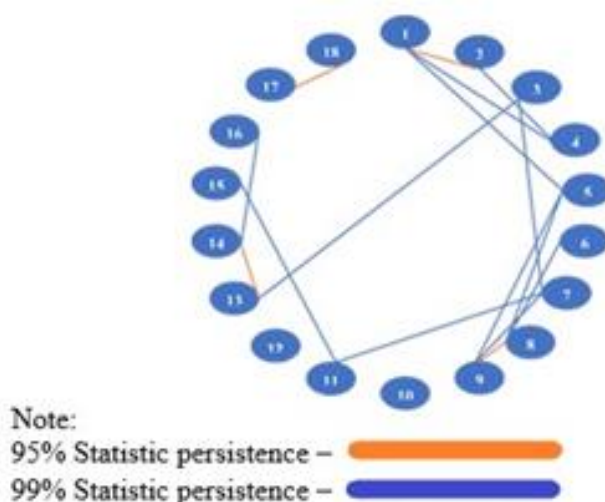


Fig. 3. Correlation structure of the relationship between the mobility rates of the KG on the incoming tests.

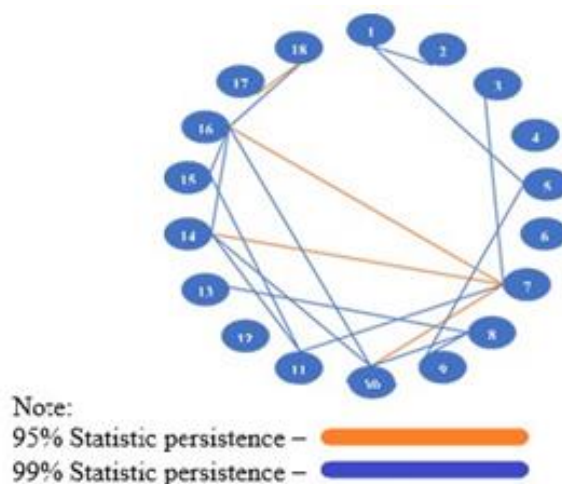


Fig. 4. Correlation structure of the relationship between the mobility rates of the KG of the outgoing tests.

After the need for an adequate civilian analysis, we can draw the following conclusions:

1. After applying the experimental fitness program, the links between muscle strength and endurance retain their key feature - with a significant number of reliable links.
2. Upon completion of the experiment, the statistically significant attributes of the EG increased (in the ingoing tests, they were 25, and in the rising ones, 30). Significantly increased links with 99% statistical confidence between traffic levels after using the author's fitness model.
3. In start tests, KG has 16 statistically tangible connections, and in the 19th century.
4. The study conducted showed the different degrees of correlation dependencies of the muscular strength and endurance of the students.

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