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DEAR LEADING RESEARCHERS,
DEAR YOUNG SCIENTISTS AND DOCTORAL STUDENTS,
PARTNERS AND PRACTICE SPECIALISTS,

In a time of global crisis, such as the current pandemic caused by COVID-19, we are publishing a summary of magazine issues 1 and 2 at the end of this difficult year for the whole world. This edition of the scientific journal for Smart innovations in the Recreational & Wellness industry and Nis tourism is the second edition for 2020. An online platform is offered, giving the opportunity to present and publish scientific materials to young researchers, doctoral students, practitioners and leading researchers from national and international networks for educational and scientific exchange in the thematic priority of the European Commission - "Creative and recreational industry". On behalf of the editorial board, we are pleased to welcome you to this second volume of the e-Science Platform for 2020. Our priority is the scientific publications of young researchers and PhD students. We believe that their scientific results will contribute to building a knowledge-based economy that provides inclusive smart growth. We are convinced that they will be the future scientific leaders in the Recreational (Wellness) industry and Nis tourism and the scientific results of the research will become a foundation for improving the quality of final products in support of a healthy lifestyle for all social categories. Our reviewers are expert representatives of the Global Wellness Institute, the All-Russian Wellness & Spa Council, the World Cluster for Healthy Aging, the Balkan Cluster for Health, Wellness & SPA Tourism, as well as Bulgarian and foreign: universities, research institutes, representatives of Bulgarian ministries and municipalities, non-governmental organizations, owners of Wellness & Spa sites, entrepreneurs in the recreational industry and business, heads of international and Balkan agencies and organizations.

Founder & Editor in Chief:
Prof. Bistra Dimitrova, D.Sc.

IMPROVING THE POSSIBILITIES FOR EVALUATION OF VERTICAL DETECTION EQUIVALENCE

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Keywords: *vertical jump, evaluation on the vertical, equivalence, ground reaction forces*

INTRODUCTION

Vertical jump is a key element in many sports disciplines such as athletics, basketball, volleyball, handball, etc. (Cavanagh & Lafortune, 1980; Clarce et al., 1983; Hamill et al., 1984; Mc Nitt-Gray, 1991; Zareva, 2015). A basic method to investigate it is through the ground reaction forces that arise from the interaction between the body of the athlete, and the solid support on which the jump is being performed. The ground reaction is a force and as such it has a vector characteristics. In practice it can be conveniently studied with a device called dynamometric platform. Such a device has been previously used for assessment of the forces during walking, running and jumping (Hamill & Knutzen, 1995). For studying vertical jumps the platform is placed horizontally on a hard, non-deformable surface, and the athlete walks or jumps on it. The forces that the athlete applies on the platform are measured by an array of tensometric sensors placed below the platform's stage. In some simplified versions of the platform the tensometric sensors are replaced with contact switches which do not measure forces but only detect vertical displacement of the stage above a certain detection limit. Such platforms are used only for measuring time intervals between dynamic events (steps, jumps, etc.) (Yordanov et al, 2010).

The second approach to investigate vertical jump is through the so-called kinematic analysis. This type of analysis traces the trajectories of a set of pre-defined points on the surface of the athlete's body in time. It is carried out by filming the motion and later analyzing it with a specific software (APAS, 2019, ScillSpector, 2014).

Our study aims to combine the two approaches for studying vertical jump, dynamometric and kinematic. The study by Gioshev, et al. (2016) established a quantitative relationship between the potential and the kinetic energy of the vertical rebound:

$$\text{It's } E_{\text{kin.}} = m \cdot V_{\text{max}}^2 / 2; E_{\text{pot.}} = P \cdot H_{\text{max}};$$

where $E_{\text{kin.}}$ - kinetic energy, $E_{\text{pot.}}$ - the potential energy, V_{max} - the maximum velocity, H_{max} - the maximum bounce height reached, P - the weight of the athlete and $g = 9,8 \text{ m} / \text{S}^2$

The final result of the mathematical processing according to the above formula justifies that $H_{\text{max}} = V_{\text{max}}^2 / 2 \cdot g$

In the present study we use this relationship to describe the height of the jump as a function of the force of repulsion from the ground (ground reaction) and the duration of its action.

We believe the effective interaction of the athlete with the support (ground) can be optimized so that it would generate maximum velocity of separation from the dynamometric platform to achieve a maximum rebound height.

METHODS

Four athletes performed a total of 48 vertical jumps (12 jumps per athlete) on a dynamometric platform in an attempt to achieve maximal height. The jumps performed were either with or without engaging the

hands and the arms in the movement. The movement of the upper limbs additionally complicated the analysis so we considered only jumps with the hands and arms tucked to the body for our analysis.

The study was conducted at the ergometric sector of the indoor athletics track NSA "V. Levski ". Once the purpose and procedure of the study were explained in detail, informed consent was received from all participants in the experiment (IRB submission procedures - 2020).

The dynamometric platform used for the study was built into the support surface, according to the requirements of the International Society of Biomechanics (ISB), the standardization of the forces acting on the dynamometric platform was carried out in all three dimensions of space and characterized by the vectors. We studied 12 dynamic and kinematic indicators which are listed in Table 1.

Table 1. Investigated kinematics and dynamic indicators in vertical rebound

	Kinematic-dynamic indicators	Signature
	Depreciation time	t_1 [s]
	Repulsion time	t_2 [s]
3	Flight time	t_3 [s]
	Interval speeds max V_{ccg} V_{step}	Δt [s]
	Maximum reached height	H_{max} [m]
	Maximal vertical force	F_{max} [N]
	Depreciation gradient	Grad $_1$ [N/s]
	Repulsion gradient	Grad $_2$ [N/s]
	Maximal velocity of COG	V_{CCG} [m/s]
0	Maximal velocity of step	V_{step} [m/s]
1	Maximal acceleration of step	A_{step} [m/s ²]
2	$t_3 / (t_1 + t_2)$	-

Depreciation and repulsion time are two parts of the ground contact time with the platform.

Repulsion time is a takeoff of the athlete’s mass center (Adashevskiy et al., 2014). Depreciation time is defined as the first part of the ground contact time.

The pelvis and the upper part of the foot of the athlete were chosen as main points to trace the body movement and contrast markers were placed on these areas.

Video capture of the vertical jumps was done with the use of a 120-fps video frame of the CASIO ZR 400. To achieve the required contrast, additional lighting was provided.

The dynamometric platform records with frequency (200 measur. per sec.).



Figure 1. Dynamogram of a sample jump

Figure 1 shows an exemplary dynamogram of applied effort on the platform during a vertical jump. The function shows monotonous rise and decrease, t_1 is depreciation time, t_2 is time of repulsion, t_3 is time of flight, and F_m is maximum applied force.

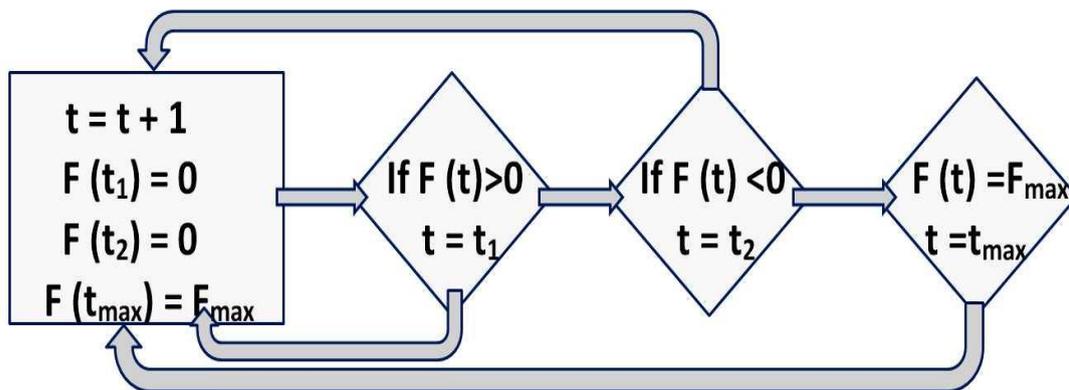


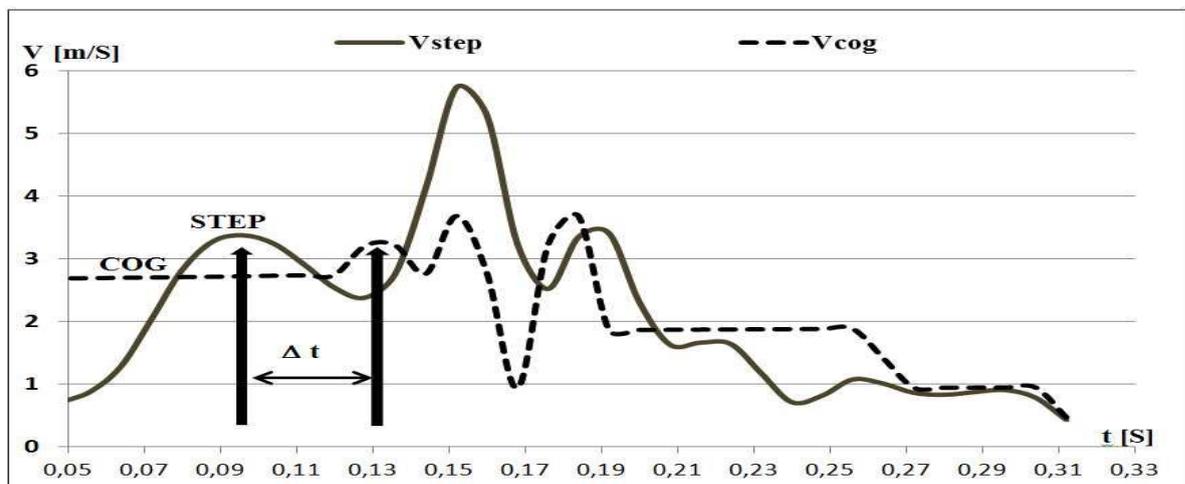
Figure 2. Block diagram of the computer algorithm for determination of F_{max} , t_1 , t_2 , t_3

Specifically for this study we developed a software which estimates parameters 1 to 3 and 5 to 8 (Table 1) through the algorithm presented in Figure 2. The process stops when the recorded test data is exhausted.

Kinematic analysis of the point coordinates was performed with the use of ScillSpector software (2014).

The data obtained from the survey were subjected to mathematical and statistical processing with variation, correlation and regression analysis methods with SPSS 19 software (Damyanova & Gigova, 2007).

RESULTS

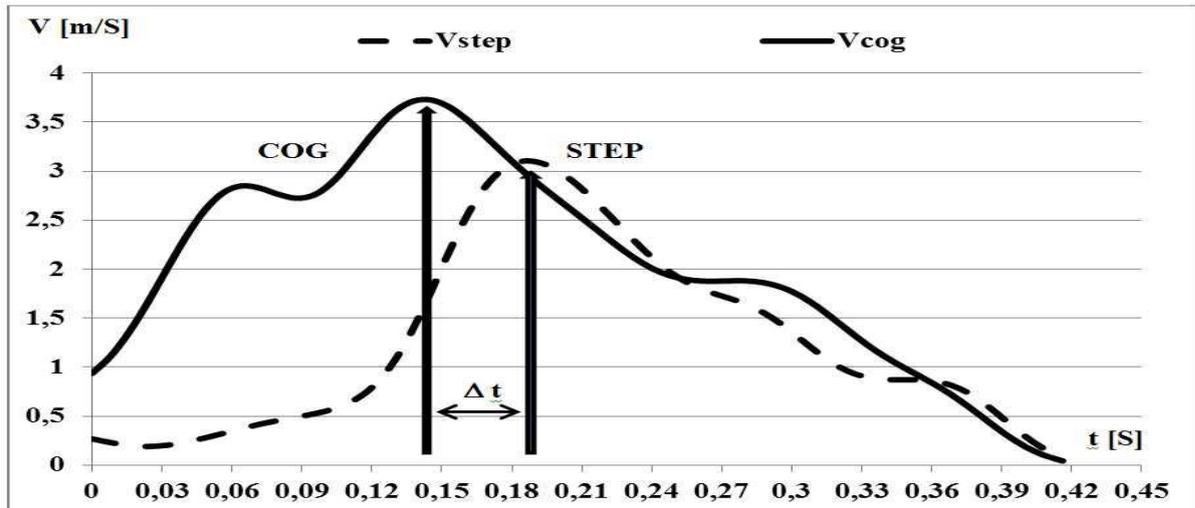


* V_{step} - Velocity of the step in the vertical rebound of the lower limb

* V_{cog} - Velocity of the Center of Gravity (COG)

Figure 3. Dynamics of V_{cog} and $V_{step-mod.1}$

Figure 3 shows different graphs of the velocity of the Center of Gravity (COG) and the step in the vertical rebound. The broken line indicates the speed of the COG, and the unbroken one indicates the point on the foot. The time intervals were recorded on the horizontal axis, with the delay being within 0.02 seconds, which is a short time interval according to the duration of the engine structure of execution.

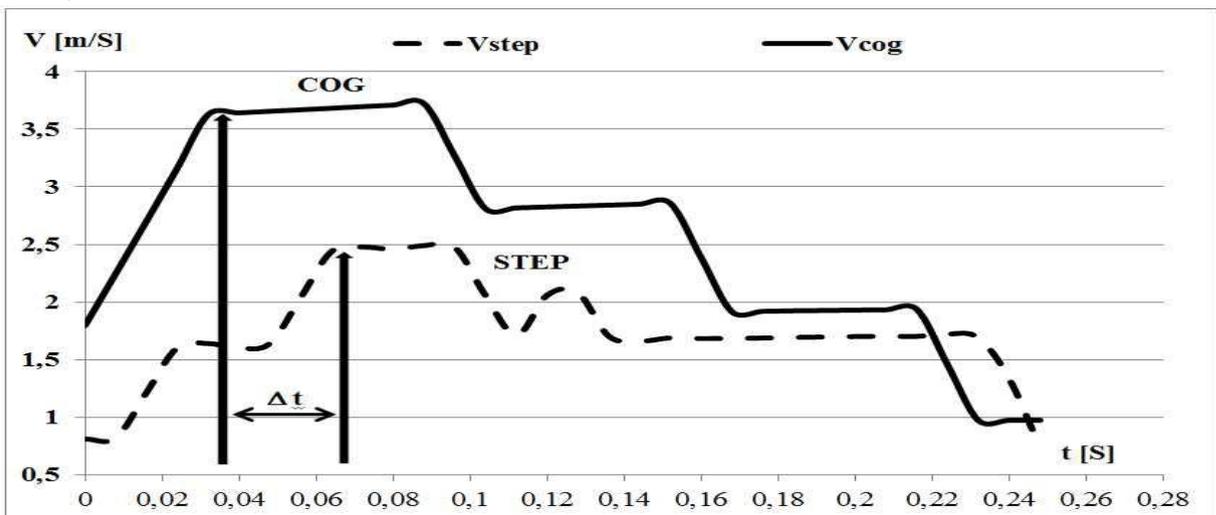


***Vstep** - Velocity of the step in the vertical rebound of the lower limb

***Vcog** - Velocity of the Center of Gravity (COG)

Figure 4. Dynamics of Vcog and Vstep-mod.2

Figure 4, Figure 5, Figure 6 show different graphs of the velocity of the Center of Gravity (COG) and the step in the vertical rebound. The unbroken lines indicate the speed of the COG, and the broken ones indicate the point on the foot.

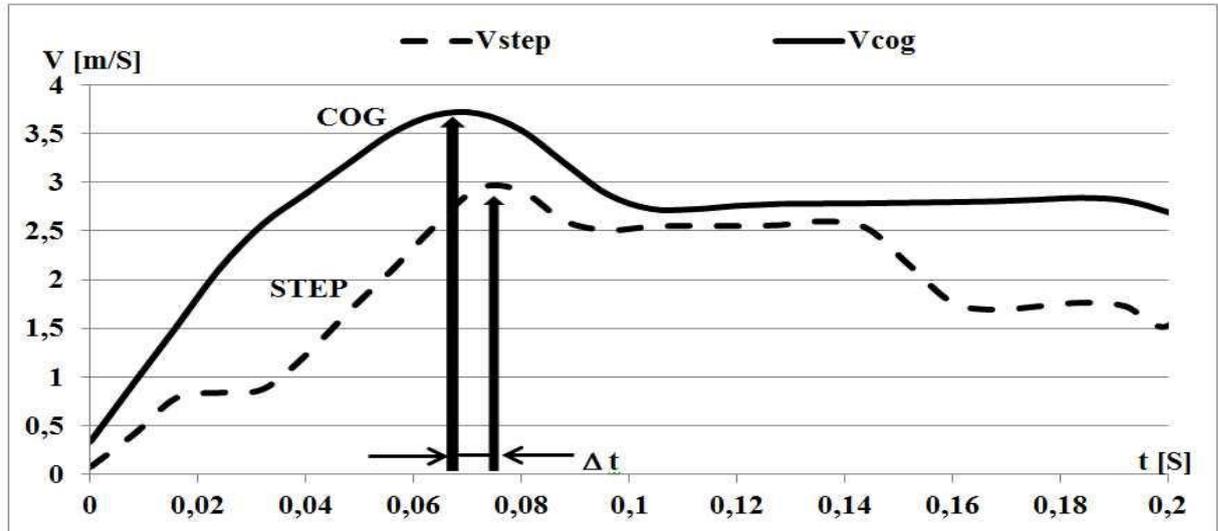


***Vstep** - Velocity of the step in the vertical rebound of the lower limb

***Vcog** - Velocity of the Center of Gravity (COG)

Figure 5. Dynamics of Vcog and Vstep-mod.3

According to the biomechanical fitness criteria adopted in the theory of sports biomechanics, the force of the athlete's pushing should cause the speed to rise initially in the general center of gravity and then in the foot velocity, i.e. the spread of the force should be from a proximal to distal direction - from the thigh muscles, the muscles of the legs, and finally through the muscles of the foot. This is evident in Figure 4 (mod.2), Figure 5 (mod.3) and Figure 6 (mod.4). The increase in the rate of the V_{COG} is reached upon the moment of the step release, whereas in Figure 3 (mod.1) there is a delayed character of reaching the maximum speed of the COG - after separation from the support, which is unjustified in terms of efficiency.



**Vstep* - Velocity of the step in the vertical rebound of the lower limb

**Vcog* - Velocity of the Center of Gravity (COG)

Figure 6. Dynamics of *Vcog* and *Vstep-mod.4*

However, in all the cases examined, there was a difference in the fact that the *Vcog* rate was higher than that of the foot (*Vstep*) at the time of its removal from the support surface.

Our opinion is that vertical jumps will be the most effective when the maximum speed in the foot is reached almost simultaneously with the maximum speed in the COG. In this aspect, as a benchmark for bounce performance, the time interval between reaching the two maximums can be assumed.

Table 3 presents the average values of the biomechanical indicators calculated with the variation analysis of the investigated jumps.

Table 2. Biomechanical characteristics of jumps

Indicators	Average	Aver. Err	S	V%	Max	Min	R
t_1 [s]	0,42	0,046	0,30	72%	1,30	0,09	1,21
t_2 [s]	0,25	0,013	0,08	34%	0,38	0,10	0,28
t_3 [s]	0,54	0,067	0,44	82%	1,93	0,09	1,85
Δt [s]	0,024	0,003	0,022	89%	0,056	0	0,056
H_{max} [m]	0,62	0,011	0,07	11%	0,76	0,49	0,27
F_{max} [N]	1537	82,3	546	36%	2487	605	1882
$Grad_1$ [N/s]	4803	265,4	1760	37%	7060	900	6160
$Grad_2$ [N/s]	6171	90,9	603	10%	6800	4100	2699
V_{COG} [m/s]	3,36	0,060	0,40	12%	4,00	2,30	1,70
V_{step} [m/s]	2,81	0,061	0,41	14%	3,80	2,00	1,80
A_{step} [m/s ²]	81,49	5,994	39,76	49%	300,00	40,00	260
$t_3/(t_1+t_2)$	0,81	0,105	0,69	78%	2,55	0,23	2,32

According to the calculated values, it is possible to consider the following scale of deviations from the normal spacing of the time intervals to reach the maximum speed of the COG and the footstep.

DISCUSSION

The negative value denotes inverse proportional dependence, which indicates that when the vertical load F_m increases, gradient $Grad_1$ decreases and this is fully understandable according to the mathematical formula of the force gradient.

A very important statistical feature is the inter-group correlation between the maximum velocity of the V_{step} in the displacement and the gradient $Grad_2$ (0,383). This dependence is interpreted by the explanation that the efficient execution of a bounce from the dynamometric platform determines the high value of the foot velocity at the time of separation from the support.

The time t_2 is inversely correlated to the ratio $t_3 / (t_1 + t_2)$ (time of flight divided by support time) - $(t_3 / (t_1 + t_2))$, the correlation coefficient value being (-0,402). This circumstance is explained by the fact that the reduction of the elapsing time t_2 increases the time of the athlete's flight and the height reached. Between the kinematic footstep V_{step} and its acceleration there is a correlation coefficient of 0.514 logically corresponding to the intragroup correlation relationship between them. The flight time is in a proportional relation to the $Divided = t_3 / (t_1 + t_2)$ ratio, which is fully explained by the high positive correlation coefficient of 0.729. When increasing the flight time t_3 , the ratio $t_3 / (t_1 + t_2)$ is also increasing, which corresponds to the formula, since t_3 is placed in the numerator.

With a linear step regression, a mathematical formula is defined, linking the V_{step} , $Grad_2$, A_{step} parameters included in the equation. The coefficients in the equation are determined.

$$V_{step} = 0,991 + 0,0023 \cdot Grad_2 + 0,00496 \cdot A_{step};$$

In this case, the maximum foot velocity at the moment of rebound is 2.81 m/S, corresponding to the value in Table 2, with the corresponding gradient and step acceleration values:

$$V_{step} = 0,991 + 0,00023 \cdot 6172 + 0,00496 \cdot 81 = 2,81 \text{ m/S}$$

The simultaneous (synchronic) mapping of the COG and foot speeds at the time of separation from the support confirms the effective use of the athlete's attitude.

The vigorous bounce performance using short-term active depreciation and subsequent instantaneous ejection is an effective way to improve the sporting outcome. This effect can be further developed by athletes using a recommended technique to improve vertical bounces by using extra weight placed in the pelvis area. Extra weight has a positive effect on the development of the muscles of the lower limbs (Rodriguez D. at all. – 2017).

The amount of the extra weight should not change the rhythmic structure i.e. increase the ejection time of the support. In cases where there is an increase in elapsed time, the weight should be reduced. The aim is to place the additional weight in the vicinity of the athlete's COG to activate the hip, lower leg and foot hump muscles by introducing the additional inertial force directly affecting the growth of the support response.

CONCLUSIONS

The approach used in the study for determining the biomechanical picture in the implementation of vertical bounces is distinguished by its innovations in the choice of a combination of apparatuses, indicators and a software algorithm for their determination.

The change in the speed of the selected points from the body of the athlete in the implementation of the vertical jumps is an informational basis for revealing the biomechanical suitability of the motor structure of the exercise.

As an optimization criterion for the effective use in vertical jumps, it is advisable to use the difference in the interval to reach the maximum speed of the COG and the footstep from the time of separation from the support.

The proposed normative table of criteria allows for an objective assessment of the efficiency of the motor structure of the movement in the implementation of vertical recurrences investigated through the innovative approach.

The dynamometer results obtained from the athlete's interaction with the support provide reliable information about the quantitative interaction between the bodies.

The vigorous bounce performance using short-term active depreciation and subsequent instantaneous ejection is an effective way to improve the sporting result by effectively using the inertial power of the athlete.

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MOTOR QUALITIES AND THEIR INFLUENCE ON THE CHILDREN'S DEVELOPMENT

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Keywords: *motor skills, preschool age, harmonious development*

INTRODUCTION

The motor skills in preschool age and the harmonious children's development is a well-known process for all categories of pedagogues (Dimitrova, 2016; Dimitrova, 2019; Polimenov, 2019; Nesheva, 2019; Chipeva, 2018). This is the dream of each family and important part of our everyday life (Dimitrova, 2019a; Dimitrova, 2020a; Kaneva, 2009). The harmonious children's development isn't come without exercises for developing their motor qualities (Kaneva, 2009a; Dimitrova, 2017). It is possible to see real results after minimum 1 year of applying specific influences and methods (Ignatova, 2018; Dimitrova, 2019b; Dimitrova, 2019d). In all this cases is useful to build Wellness culture in school (Dimitrova, 2020; Dimitrova, 2019c).

The main tasks of physical education and sports in preschool age are the complex development of motor skills, capacity and coordination of children's movements. The coordinated movements and balance that the child acquires during this period are fundamental for their further motor development. The physical strength that children develop during this period is the basis of their skillful and stable movement, as well as the performance of various motor exercises related to running, turning and jumping. They are based on the development of basic motor skills and building motor skills. It is the construction and development of these motor qualities that are fundamental for the harmonious development of preschool children.

The object of study herein are the motor qualities speed, strength, endurance, general flexibility, agility, coordination and stability of attention / maintaining concentration /, through a network of figures in 5-6-year-old children in kindergarten. The listed motor qualities differ in their development from each other. They are based on different physiological and biological mechanisms, as well as the manifestation of different properties of the psyche and different ways of measuring them. The existing differences between them affect the methodology used for their development, which is very specific to the motor quality of each individual.

The aim of the present study is to monitor the degree of development of motor skills, speed, lower limb strength, strength endurance and the development of coordination with respect to the stability of attention.

Tasks of the present research as a result of the set goal are:

- To determine the degree of development of motor skills speed, lower limb strength, strength endurance and coordination in 5-6-year-old children,
- To establish the stability of the attention of 5-6-year-old children by conducting a Bourdon test adapted to the conditions of kindergarten,
- To establish the presence of a correlation between the level of motor skills and the level of stability of attention, taking into account the psychological development of children in preschool.

The subject of our pedagogical research is the general physical capacity of the child's organism, as well as the development of the motor qualities in relation to the stability of the attention.

The object of the study are the motor qualities, speed, strength, endurance, coordination, which determine the development of the physical capacity of preschool children in relation to the stability of attention through a network of figures.

The scope of this study is 20 children aged 5-6, regularly attending kindergarten "Zornitsa", Sofia, Bulgaria.

The indicators of the study are the following:

- smooth running of 40 m - the test gives information about the development of motor speed,
- long jump with two legs from a place - the test gives information about the explosive force of the lower limbs,
- throwing a small, solid ball in a vertical target - the test provides information for coordination of movements,
- throwing a solid ball 1 kg. with two hands over head - the test gives information about the strength of the upper limbs,
- seat from the back of the head for 30 seconds - this test gives information about the strength of the abdominal muscles,
- squat for 20 seconds - the test provides information on the strength of the lower limbs.

METHODS

- Main testing methods:
 - Non-standardized tests are used to determine and analyze the level of motor qualities speed, lower limb strength, strength endurance and coordination,
 - Bourdon proofreading test to determine the stability of attention /fig. 1/ - the sample is adapted to the conditions of a kindergarten:

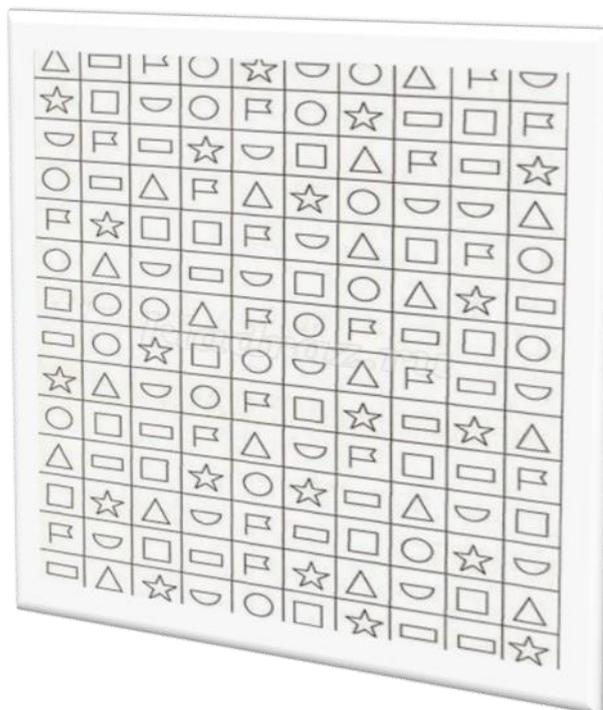


Figure 1. Visualization of the Bourdon test to determine the stability of attention

RESULTS

The analysis was performed after conducting diagnostics at the beginning and end of the school year. The pedagogical study was conducted in 20 children, of which 12 boys and 8 girls aged 5-6 years. The

above-mentioned tests were used, and the results of their implementation were expressed in empirical data in tabular and graphical form and are differentiated by indicator - gender.

Table 1. Summary assessment of the group September

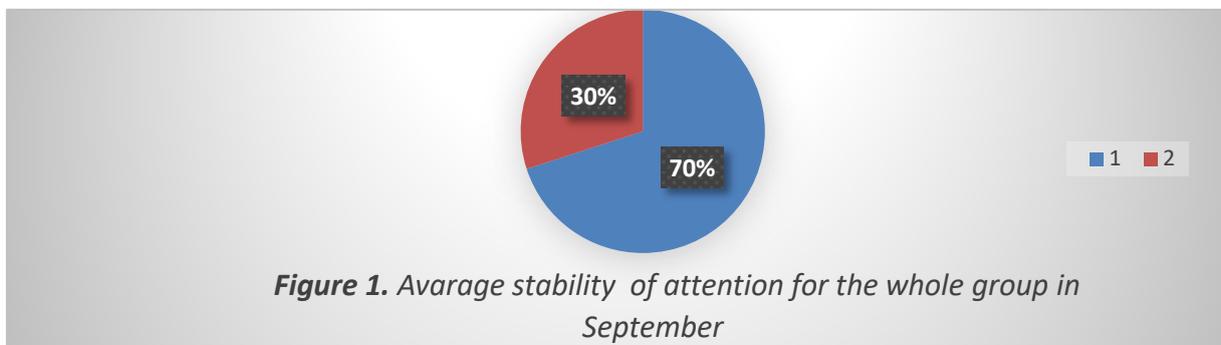
Indicators	Excellent/verbal number	%	Good / verbal number	%	Satisfactory number	%
Running for 40m	6	30	7	35	7	35
Squat for 20 seconds /number	6	30	8	40	6	30
Throwing a small solid ball	5	25	7	35	8	40

From the data presented in tab. 1 it is evident that according to the indicator of running for 40 m 30% of the examined children have an excellent grade, 35% have a good grade and 35% have a satisfactory verbal grade

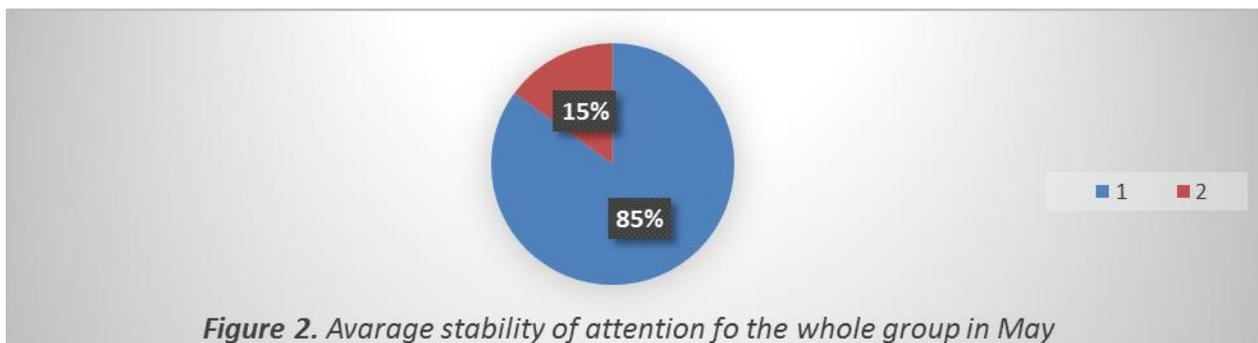
Table 2. Summary assessment of the group May

Indicators	Excellent/verbal number	%	Good / verbal number	%	Satisfactory number	%
Running for 40m	10	50	6	30	4	20
Squat for 20 seconds /number	10	50	6	30	4	20
Throwing a small solid ball	10	50	6	30	4	20

When squatting for 20 seconds, 30% have an excellent verbal grade, 40% have a good verbal grade and 30% have a satisfactory verbal grade. Throwing a small solid ball on target - 25% have an excellent grade, 35% have a good grade and 40% have a satisfactory grade.



From the data presented in tab. 2 for the month of May it is evident that the children improve their physical achievements in comparison with the data from tab. 1, from September. Children do much better on all indicators.



The analysis establishing the stability of attention through a Bourdon test / adapted for kindergarten / found no children with poor resistance to attention, and it was found that 38% of the boys have moderate resistance and 62% of girls have high values of resistance to attention.

DISCUSSION

In boys, the average resistance to attention is 25%, with high resistance are 75%, and in total for the group with high resistance to attention are 70%, and with medium resistance are 30%. There are no children with poor resistance to attention. These are the data from the incoming survey conducted in September. Figure 1 shows the results presented as a percentage for the whole group in September from the study of the average stability of attention.

In the analysis of the data from the measurements made in May, it was found that there are no children with low resistance to attention, as with average resistance to attention for 12% of girls, and 88% of them have high resistance to attention. In boys, 16% have moderate resistance and 84% of them have high resistance to attention. A total of 85% of children with high resilience and 15% with medium levels of attentional resilience were found for the whole group, without establishing the presence of children with weak attentional resilience. The data thus interpreted are shown in Figure 2.

The final correlation analysis was calculated in June. The final results show that in a sample of 20 children the coefficient of dependence is likely to be 0.382, which is moderate (through Spearman coefficient).

CONCLUSIONS

After conducting the tests for motor activity, based on the presented results, the empirical data were collected, diagnostic procedures were processed, and as a result an analysis was conducted, from which the following conclusions were made:

- There is a tendency for the motor development of boys to outpace that of girls,
- In the studies conducted with the Bourdon proofreading test, it was found that the studied children belong to the "average level" of resistance that is the level of resistance of attention corresponds to the studied age. No gender discrepancies were registered.

Stability, as a property of attention, characterizes the time in which its concentration is maintained. It depends on a number of conditions, such as expression of interest, current state of the child, volitional qualities, and degree of difficulty.

Finally, it can be concluded that children with good concentration are characterized by good physical capacity and vice versa. Children with poor general physical condition have a less developed ability to concentrate, as a result of which they have reduced resistance to attention, i.e. they are distracted and inaccurate.

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DELAYED ONSET MUSCLE SORENESS (DOMS) – A THREAT OR A HARMLESS CONDITION

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Key words: *delayed muscle soreness, eccentric exercise, mechanisms, treatment*

INTRODUCTION

Muscle soreness is a well-known phenomenon for all categories of people and in different age (Dimitrova, 2016; Dimitrova, 2019; Ignatova, 2018); Chipeva, 2018). This can happen in our everyday life due of the professional fatigue (Dimitrova, 2019a; Dimitrova, 2020a; Polimenov, 2019). Sometimes it's come after some fitness exercises (Nesheva, 2019; Dimitrova, 2017). It is possible to feel muscle pain during your walking promenade (Dimitrova, 2019b; Dimitrova, 2019d). In all this situations is useful to apply Spa therapies (Dimitrova, 2019c; Dimitrova, 2020).

This original paper presents a specific analysis of the muscle soreness process in both points of view from athletes, as well from doctors, working in the field of sports medicine. Still, there are many uncertain facts, which concern this interesting and important area.

Immediate and delayed-onset muscle soreness differs mainly in chronology of presentation. Both conditions share the same quality of pain, eliciting and relieving activities and a varying degree of functional deficits.

As I previously said, Delayed onset muscle soreness (DOMS) is a familiar experience for the elite or novice athlete. Symptoms can range from muscle tenderness to severe debilitating pain. One of the specific features of DOMS is the development of clinical symptoms with delay-peak soreness at 48 - 72 h post-exercise, as a result of complex sequences of local and systemic physiological responses.

The mechanisms, treatment strategies, and impact on athletic performance remain uncertain, despite the high incidence of DOMS. DOMS is most prevalent at the beginning of the sporting season when athletes are returning to training following a period of reduced activity. DOMS is also common when athletes are first introduced to certain types of activities regardless of the time of year. Eccentric activities induce micro-injury at a greater frequency and severity than other types of muscle actions. They are the strongest trigger of DOMS (e.g. lengthening contraction, such as quadriceps while descending). DOMS is much weaker after the next workout, but the first bout can be so fierce that people avoid starting valuable exercise programs, especially strength training. It's worse for some people due to genetic factors and other biological stresses. The intensity and duration of exercise are also important factors in DOMS onset. Its typical sign is mechanical hyperalgesia (tenderness and movement related pain). The involved muscles, after such exercise, adapt rapidly to prevent muscle damage, and thereby occur soreness, if the exercise is repeated.

METHODS

Although the exact pathophysiological pathway of DOMS remains unknown, the primary mechanism is currently considered to be the ultrastructural damage of muscle cells due to unfamiliar sporting activities or eccentric exercise, which leads to further protein degradation, apoptosis and local inflammatory response. It is considered that there are up to six hypothesized theories, which have been proposed for the mechanism

of DOMS. Namely they are: lactic acid, muscle spasm, connective tissue damage, muscle damage, inflammation and the enzyme efflux theories. However, an integration of two or more theories is likely to explain muscle soreness.

The developing pathway - begins with micro trauma to muscles and then surrounding connective tissues. Microtrauma is then followed by an inflammatory process and subsequent shifts of fluid and electrolytes. Throughout the progression of these events, muscle spasms may be present, exacerbating the overall condition.

In the pathogenesis of DOMS, it is revealed that the increased staining of actin and desmin reflects an increased synthesis of these proteins as part of an adaptation process following the unaccustomed eccentric exercise.

In the process of developing DOMS, there are two pathways involved in inducing mechanical hyperalgesia after lengthening contraction : activation of the B2 bradykinin receptor-nerve growth factor (NGF) pathway and activation of the COX-2-glia cell line-derived neurotrophic factor (GDNF) pathway. These neurotrophic factors are produced by muscle fibers and/or satellite cells. This means that muscle fiber damage is not essential, although it is sufficient, for induction of DOMS instead, NGF and GDNF produced by muscle fibers/satellite cells play crucial roles in DOMS.

It is also investigated that neutrophil mobilization and migration after exercise may be involved in the muscle damage and inflammatory processes of this type of muscle soreness.

Besides, the following model explaining the etiology and cellular mechanisms of the phenomenon DOMS, may be proposed: 1) high tensions (particularly those associated with eccentric exercise) in the contractile/elastic system of the muscle result in structural damage; 2) cell membrane damage leads to disruption of Ca^{++} homeostasis in the injured fibers, resulting in necrosis that peaks about 2 days post-exercise; and 3) products of macrophage activity and intracellular contents accumulate in the interstitium, which in turn stimulate free nerve endings of group-IV sensory neurons in the muscles leading to the sensation of DOMS.

Recently, it is considered that Delayed Onset Muscle Soreness is, in fact, neural microdamage rather than muscle damage. According to this hypothesis, DOMS is an acute compression axonopathy of the nerve endings in the muscle spindle. It is caused by the superposition of compression when repetitive eccentric contractions are executed under cognitive demand. The acute compression axonopathy could coincide with microinjury of the surrounding tissues and is enhanced by immune-mediated inflammation. DOMS is masked by sympathetic nervous system activity at initiation, but once it subsides, a safety mode comes into play to prevent further injury. DOMS becomes manifest when the microinjured non-nociceptive sensory fibers of the muscle spindle stop inhibiting the effects of the microinjured, hyperexcited nociceptive sensory fibers, therefore providing the 'open gate' in the dorsal horn to hyperalgesia. Reactive oxygen species and nitric oxide play a cross-talking role in the parallel, interlinked degeneration-regeneration mechanisms of these injured tissues. Probably, the mitochondrial electron transport chain generated free radical involvement in the acute compression axonopathy. 'Closed gate exercises' could be of nonpharmacological therapeutic importance, because they reduce neuropathic pain in addition to having an anti-inflammatory effect.

RESULTS

For the last 3 decades, the DOMS phenomenon has gained a considerable amount of interest amongst researchers and specialists in exercise physiology, sports, and rehabilitation fields. There has been a variety of published studies investigating this painful occurrence in regards to its underlying mechanisms,

treatment interventions, and preventive strategies. However, it is evident from the literature that DOMS is not an easy pathology to quantify, as there is a wide amount of variability between the measurement tools and methods used to quantify this condition. It is obvious that no agreement has been made on one best evaluation measure for DOMS, which makes it difficult to verify whether a specific intervention really helps in decreasing the symptoms associated with this type of soreness or not. Thus, DOMS can be seen as somewhat ambiguous, because many studies depend on measuring soreness using a visual analog scale (VAS), which is a subjective rather than an objective measure. Even though needle biopsies of the muscle, and blood levels of myofibre proteins might be considered a gold standard to some, large variations in some of these blood proteins have been documented, in addition to the high risks sometimes associated with invasive techniques.

Therefore, in order to diagnose DOMS, a thermal infra-red (IR) imaging technique of the skin above the exercised muscle to detect the associated muscle soreness, is used. The main purpose is to examine changes in DOMS using this safe and non-invasive technique.

It is of great importance to investigate the mechanisms of DOMS, in order to draw conclusions about its consequences. DOMS can affect athletic performance by causing a reduction in joint range of motion, shock attenuation and peak torque. Alterations in muscle sequencing and recruitment patterns may also occur, causing unaccustomed stress to be placed on muscle ligaments and tendons. These compensatory mechanisms may increase the risk of further injury if a premature return to sport is attempted. A number of treatment strategies have been introduced to help alleviate the severity of DOMS and to restore the maximal function of the muscles as rapidly as possible.

To summarize, DOMS is probably not caused by micro-trauma — a popular old idea — although it might be a mild form of “rhabdomyolysis,” which is caused by muscle proteins spilling into the blood. Some kind of “metabolic stress” may be a more likely culprit, and yet there is no clear link between DOMS and any specific biological marker. There are even clues that DOMS is neurological. Certainly it is not straightforwardly inflammatory: evidence suggests that inflammation is what reduces DOMS pain as you continue to exercise. Mysterious indeed!

Furthermore, to define muscle fever — such a wonderfully descriptive term — is that distinctive muscle pain that nearly everyone experiences after intense or unfamiliar exercise, often peaking as long as a day or two later. Because of the delay, it is best known as DOMS for delayed-onset muscle soreness. Sometimes DOMS is so severe that it is mistaken for a muscle strain, an actual injury.

Muscle fever is a great term because DOMS makes your muscles feel sickly and gross as well as sore. Weakness is another symptom, major and measurable — but only hardened competitors are likely to test their strength while feeling so sore (though they probably should not). The nastiness starts after a bit of a delay, often after sleeping, and then continues for 24 to 72 hours. Some people don't even notice it until the second day. If you do the same workout again a few days later, it's nowhere near as bad.

DISCUSSION

There are treatment strategies, which have been introduced to help alleviate the severity of DOMS and to restore the maximal function of the muscles as rapidly as possible.

- Nonsteroidal anti-inflammatory drugs have demonstrated dosage-dependent effects that may also be influenced by the time of administration.
- Similarly, massage has shown varying results that may be attributed to the time of massage application and the type of massage technique used.
- Compression garments used during the post exercise period could be an effective way to reduce DOMS and accelerate the recovery of muscle function.

- Cryotherapy, stretching, homeopathy, ultrasound and electrical current modalities have demonstrated no effect on the alleviation of muscle soreness or other DOMS symptoms.
- Exercise is the most effective means of alleviating pain during DOMS, however the analgesic effect is also temporary.
- Exercises targeting less affected body parts, while the most affected muscle groups recover

Athletes who must train on a daily basis should be encouraged to reduce the intensity and duration of exercise for 1-2 days following intense DOMS-inducing exercise. Alternatively, exercises targeting less affected body parts should be executed, in order to allow the most affected muscle groups to recover. Eccentric exercises or novel activities should be introduced progressively over a period of 1 or 2 weeks at the beginning of, or during, the sporting season in order to reduce the level of physical impairment and/or training disruption.

The features of these eccentric contractions can be seen on chart 1 below.

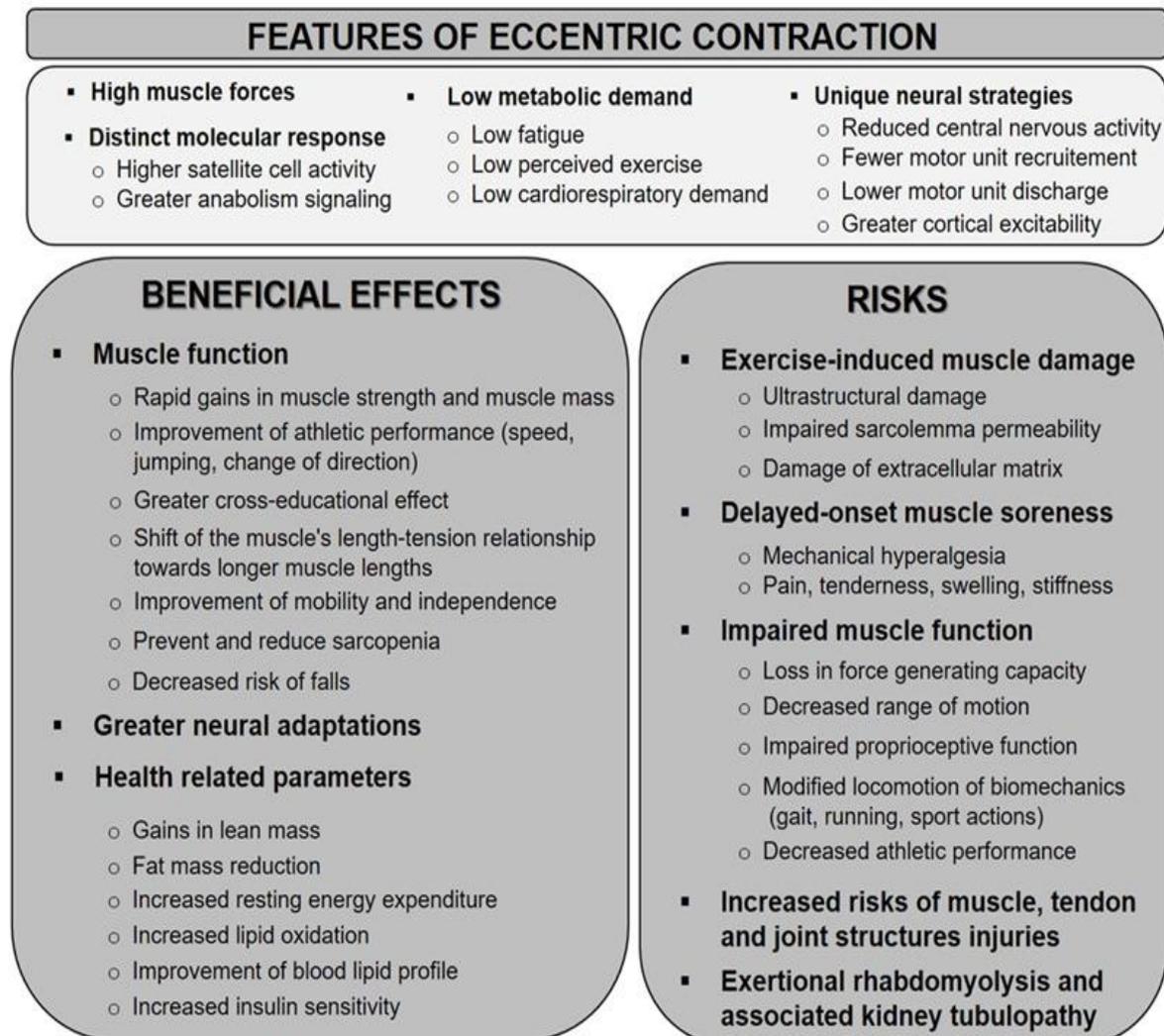


Chart 1. *Eccentric contractions- when to use and when to avoid them*

Although training is considered to prevent muscle soreness, even trained individuals will become sore following a novel or unaccustomed exercise bout. The most useful preventive strategy to avoid the adverse effects of DOMS, consists of repeating sessions involving submaximal eccentric contractions whose intensity is progressively increased over the training.

Despite an increased number of investigations focusing on the eccentric contraction, a significant gap still remains in the understanding of the cellular and molecular mechanisms underlying the initial damage

response and subsequent adaptations to eccentric exercise. Yet, unraveling the molecular basis of exercise-related muscle damage and soreness might help uncover the mechanistic basis of pathological conditions as myalgia or neuromuscular diseases. In addition, a better insight into the mechanisms governing eccentric training adaptations should provide invaluable information for designing therapeutic interventions and identifying potential therapeutic targets.

CONCLUSION

Inspire everything known about DOMS, there are still many unanswered questions and many potential areas for future research.

Overall, DOMS is annoying and style-cramping, particularly if you're starting or restarting an exercise regimen, especially strength training — which is much more worthwhile than most people realize, and DOMS is one of the main things that discourages people.

That is why, it is strongly recommended to investigate more performant factors and mechanisms of this type of muscle soreness, as well as find better treatment strategies to cure clinical symptoms of athletes in order to help them improve their achievements.

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OPPORTUNITIES OF EMOTIONAL QUALITY TO INCREASE THE COMPETITIVENESS OF TOURIST HOSPITALITY

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INTRODUCTION

The opportunities for success in tourism are not only in the introduction of new techniques. Some time is better to rethinking the possibilities of human capital (Dimitrova, 2017; Dimitrova, 2020a). The basis for the success of a particular tourist activity lies in the emotional and intelligent qualities of the individual (Dimitrova, 2019; Dimitrova, 2019c). The recommendations for progress in the tourism business are to the traditions, hospitality and competence skills of the management team directly involved in the production process (Dimitrova, 2019d). The competitiveness of the tourist product is influenced by the processes inside of the activity and is a function of innovation of the tourist activity.

Innovative management processes are aimed at implementing, mastering and complying with modern quality management strategies and systems (Kaneva, 2009; Polimenov, 2014; Ignatova, 2018; Ignatova, 2018a; Chipeva, 2018). The expectations are for satisfying the requirements of the consumers and for satisfying the internal company needs (Dimitrova, 2016; Dimitrova, 2019b). Systematic analysis of hazards and critical points is also aimed at implementing, eliminating and controlling the risk of operations below acceptable levels (Kaneva, 2009a; Dimitrova, 2019a). The goal is to reduce or eliminate the risks of both technological operations and emotional control (EIQ)¹. In the United States, it is not so much the IQ as the level of emotional intelligence [emotional quotient (EQ) / that is essential when choosing a specialist. The best operators of tourist products hint at emotions in the service (Lukanova, 2017) for finesse and harmony, through which they reach emotional satisfaction (Dimitrova, 2020).

Emotional intelligence (EQ) in the tourism product aims to improve or transform the factors of production to innovate the activity and create such a niche product that meets high quality with a high standard. The subtlety is in the knowledge and skills of the operators of talent and creative skills, created on the basis of competencies and competency skills.

METHODOLOGY

Assessing the potential of a particular tourism product on the basis of efficiency of the expected advantages, asks the question: How to improve the quality of supply?, in view of the expectations of guests, and by changing the perceptions of staff. The answer is in the preparation of a certain methodology and standards for work that meet the satisfaction of guests with service. There are many requirements and features that must be so skillfully compiled and directed so as not to confuse. The methodologies should be composed in such a way that they not only pursue the set goals but also have the opportunity to bypass to supplement the standards.

¹ emotional intelligence quotient (EIQ), коефициент на емоционална интелигентност (EIQ)

The use of these levers allows managers to either increase demand (from the first to the second level) of the niche product at a constant price or increase the price while maintaining demand. In other words, either increase the quantity of supply (volume) and turnover at a low price or reduce the quantity produced by increasing the price in both cases while fully preserving the concept of the offered niche product (strategy). Therefore, quality management in the production process and supply is a function of the skills and emotional qualities (EQ) of all professionals, which leads to improving the quality of the service offered and increasing its competitiveness. Here it can be concluded that the determining factor-quality in the organization of service is the finesse-responsiveness which definitely tends to emotional intelligence (EQ).

Accelerating service depends on emotional intelligence (EQ) and is at the heart of improving product quality, and professionalism at the heart of labor savings is energy saving, which also leads to good financial results. The attractions of the emotions in the service strengthen the desire of the consumer to be a direct participant in the service process and create an image.

RESULTS

The created written technology must be adapted to the specific conditions in the individual objects, which is a slow process. The test effect and financial efficiency are tested in at least three sites. Standard technology proves to be effective (customer transactions are limited), where transactions are simple and repetitive to the point of feasibility. This allows operations to be standardized and dressed in process performance standards for maximum performance with minimum uncertainty. Operations are complex and personalized and difficult to formalize. Relationships are difficult to fix and therefore it all comes down to technology that captures emotions and different feelings by directing thinking and action to achieve goals.

Emotional qualities reflect the empathy of the staff and their willingness to respond to challenges. Empathy is a quality that must infect to see through the curtain and to feel and anticipate the wishes of the guests. Through external perception and facial expressions, non-verbal signs reach the emotional state of the guest, which helps to understand the mood and react properly. More and more companies rely on staff who are not only involved in the work but also to invest emotional qualities in the processes to be able to communicate with guests and colleagues. Practice proves that it is difficult to achieve good results. No matter how much one relies on the emotions of the reactions of the worker's ability to react, in practice everything depends on the actions and reactions. The ability to manage communication is embedded in practice in the emotional state and how it will reach the tourist. All this is embedded in the emotional intelligence of everyone and is related to satisfaction with the offered tourist product and emotional happiness. The degree of enthusiasm for energy should always move to a much higher energy level of communication and energy level of emotion. It has been proven that gains increase with effective emotional communication that is properly directed.

Ultimately, in order for a tourism product to be innovative on the market, it must outperform similar products by at least one of the indicators of quantity, quality and price. Undoubtedly, the highest competitiveness is achieved when the superiority is on all three indicators and when they are most effectively combined. In the economic literature, it is believed that the "competitiveness"² of a product is greater the greater the share of unpaid consumer value (utility) of the product (Ribov, 1997). This is defined as a sustainable increase in productivity and the imposed standard. That is, the more profitable the product, the higher the turnover and the huge the demand. Implementation strategies are used, through which the unpaid part of the value of the product is compensated with speed and technique of service, ie increasing the

² Ribov, M., 1997, Competition and competitiveness of the tourist product, - ed. "Economy", S.

turnover with professionalism and quality in the technology of service, ie increasing the emotional intelligence. We can easily direct all these skills to the emotional intelligence (EQ) of those employed in the industry. These non-price competitive advantages in the differentiation of the tourist product are a condition for innovation and improvement of the activity and its competitiveness.

The technology of service is a factor and guarantor of the quality of the tourist product. The innovation of the tourist product also consists in the renewal of the product through the emotional intelligence (EQ) in the various forms in the technologies of service, but also in the supply from the point of view of the tourists and the search for quality products. In the restaurant business it should not be forgotten that for tourists the choice of different dishes is made not only depending on the organoleptic aspects (taste, content, color, appearance, smell), it is also influenced by the environment (atmosphere), through psychological, cultural, social, professional, economic and religious factors, as well as emotional intelligence (EQ).

The so-called technological core-core is created from the prescriptions with the main operations, the microclimate, the degree of representativeness is not formalized, but is detailed. Standard technologies, prevalent in many chains, are becoming a barrier to success. The reasons are many, but the main one is the lack of elasticity and rapid adaptation to changing demand requirements. It is difficult to reject the standard product and replace it with a variety of options and the focus is on the individual's ability to process emotional information and apply it. In individualization, the cost of changing the technology core is very high. The conclusion is that the technology of service as an element of the technological product has a life cycle, the emotional phases of which must be carefully monitored by specialists. The importance is enhanced by the role of service technology as an object of intellectual property. Emotional competencies are not innate talents, but rather acquired abilities, skills that need to be worked on and developed in order to achieve exceptional results. Goleman³ argues that people are born with a common emotional intelligence that determines their potential to acquire emotional competencies (Goleman, 1995). In the model (fig 1) below, four types of emotional abilities are observed:⁴



Figure 1. Meyer and Salovey model (1997) with four branches of emotional intelligence

Source: <http://ehealthaustralia.org/article/emotional-intelligence-101-for-healthcare/>

³ Goleman, D., (1995). Emotional intelligence: why it can matter more than IQ. London: Bloomsbury. Goleman, Daniel (1998), *What Makes a Leader?*, Harvard Business Review

⁴ "Chapter 2 EMOTIONAL INTELLIGENCE : AN OVERVIEW" (PDF). INFLIBNET Centre. Retrieved 3 February 2019

1. Perception of emotions - the ability to identify and interpret emotions in faces, pictures and voices - including the ability to identify one's own emotions.
2. Use of emotions - the ability to use emotions to facilitate various cognitive activities, such as thinking and problem solving.
3. Understanding emotions - the ability to understand the language of emotions and to assess the complex relationships between emotions.
4. Emotion management - the ability to regulate emotions both in ourselves and in others.

Overcoming the problems and anticipating the reduction of the demand for the offered product is done on the basis of long-term planning and is directly linked to the overall strategy. Avoiding stagnation is overcome by implementing scientific advances in the study area this is achieved by copying the results of competition. Changes constantly lead to a fast-moving and changing process that is constantly renewed. Chains that care about the quality of service constantly stimulate their innovation and emotional intelligence of employees. This is achieved through a good knowledge of the details and operations of correspondence with the client and improving the elements and philosophy of the overall technology. There are opportunities to break standardization. Large chains such as leading hotels of the world, Small luxury hotels⁵ stimulate the development of their own technological rules skills, thus controlling the emotional intelligence and quality of service. The technology is marketed separately from the trademark or in combination with the trademark only. The conclusion is that the requirements for service technology as a condition for success in companies are growing. This liberal concept allows profitable companies to valorize their technology skills and derive financial benefit and a positive image. As an element of the tourism product, the technology of service skills can be very attractive and even unique. The whole service process is innovated, the unique technology, forms a unique product with a specific emotionally unique image. In practice, it is difficult to create and maintain a unique technology the difficulties are differentiated in the emotional thematic products. Another type of original technology is individualized emotional technology, which is directly related to emotional intelligence.

DISCUSSION

My opinion is that the next big evolution for tourism will not only be the natural resources, but also the emotional skills of the staff and its emotional vibrations leading to satisfaction for the guests.

Good service always relies on courtesy, speed and finesse. Speed does not always lead to efficiency, and as a complex vertical operation it is a set of techniques that recreate plastic movements and create harmony. This is associated with the exact execution of the order in strict compliance with technological operations.

Observance of these creative processes over time will provide the consumer with recreational peace and pleasure from the offered niche tourist product (Dimitrova, 2019). Courtesy is not enough to build an image, it must be interwoven with the sequence of details of work techniques and trained opportunities for a sense of the tourist product.

Observation and anticipation of errors in technological operations is the basis for overcoming possible failures and creating a balance in consumers and good memories.

Professional hospitality is a complex category and it is inevitably related to the standard of service and technological processes. The guest hardly wants to remember these details after visiting the restaurant to eat, but He immediately feels the kindness, the way of loading and the visualization of the work techniques

⁵ <http://www.slh.com/>; www.lhw.com

both when serving and when serving. This is exactly what is set in the standards for specific restaurant products. The main axioms create a quality of service, reaching the finesse and beauty of the offered product. They are related to, polite attitude towards guests, importance in the details of service and plasticity in the performance of specific operations. The attitude between the staff and the team work creates intimacy, compliance with the set standard and ensures the required quality of supply.

Professionalism does not only require knowing a standard or a technological process, it requires constant learning and enrichment of production skills, by improving observation, which fixes errors and proceeds to the details of operations. Quality, this complex concept that we struggle with, is an effort, but quite complex when it is tied to compliance with a certain standard in which many criteria and skills are set.

CONCLUSION

Achieving excellence in service technology is not just learning certain techniques, but it is a complete endless continuous process that is constantly smoothed out to achieve standard and harmony. Innovative technological processes are not easily achieved, they are based on creativity, planning, organizing and monitoring. These creative innovations are not possible without knowing the details in which emotional intelligence takes advantage of changes and moods at work.

From the analysis I allow myself to formulate the following conclusions:

1. The conclusion is that emotions help to feel the sensitivity of the niche tourist product, its variations and optimalities are also an opportunity to maintain quality;
2. Innovative emotional service combined with professionalism and compliance with the techniques of work and finesse in detail, provides recreational (Dimitrova, 2019) opportunities to obtain a niche product at a certain price at a certain quality;
3. Entrepreneurship is about providing better hospitality than competitors, but this requires knowledge and talent, components of which are targeted competitive niche tourism products.

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INFORMATION SYSTEM FOR INCLUSION OF WOMEN WITH NORMAL PREGNANCY IN GYMNASTICS PROGRAM

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INTRODUCTION

Lately prenatal exercises persuasive are recommended for healthy and preventive effect on the pregnant woman. Experimental data show that in normal pregnancy moderate aerobic physical activity is a very important tool (May et al., 2010; Montoya Arizabaleta et al.2010) in maintaining good health and helps to easily and seamless birth (Bala, 2012). The information systems are important social process for all categories of people (Kaneva, 2009; Dimitrova, 2016; Polimenov, 2019; Dimitrova, 2019). The harmonious development of normal pregnancy is a dreamed event for all categories of women (Nesheva, 2019; Dimitrova, 2020). This is the wish of each family and important part of our everyday life style (Kaneva, 2009a; Ignatova, 2018). The harmonious children's development isn't come without exercises for developing their motor qualities (Dimitrova, 2017; Kaneva, 2009a). It is possible to see real results after minimum 1 year of applying specific influences and methods (Ignatova, 2018a; Dimitrova, 2019b; Dimitrova, 2019d). In all this cases is useful to build Wellness culture in school (Dimitrova, 2020a; Dimitrova, 2019c).

The results of original scientific research suggests that there are potential benefits in terms of control of maternal weight through fitness exercises, leading to significant long-term benefits for its overall health and that of the fetus (Brown, 2002; Davies, 2003). According Emonts et al. (2001) the physical exercises and useful sports are recommended during pregnancy, but women should be informed of their dangers and contraindications (Sports Medicine Australia, 2002).

Wellness and SPA culture is focused entirely on health prevention (Dimitrova, 2016, 2019) through a rational, conscious, purposeful, progressive and lasting change in people's daily lives and behavior (including pregnant women).

According to Valev, 2015, 2018 "the urbanization of society, increasing hypodynamics, overweight and unhealthy lifestyle" stress in everyday life, both in adolescents and in all people, including pregnant women, leads to lower levels of their health status and working capacity.

"One of the important factors in maintaining good health for prevention... is physical activity", and "... the well-known effects of aerobics are its potential to reduce excess weight, which allows the pregnant woman to stay within normal limits. According Chipeva, 2018a "...Having fun and entertainment through aerobic program,... accompanied by music have a significant emotional impact...". As well we can cite "...the effect of aerobic running on improving functional status..." (Chipeva, 2018b).

Obstetricians and gynecologists of Canada, and American College of Obstetricians and Gynecologists recommend physical activity for all healthy pregnant women (Entin and Coffin, 2004).

General health of women should be evaluated before prescribing an exercise program (ACOG, 2002; Artal & O'Toole, 2003). In general, all actions taken must be safe (ACOG, 2002; American College of and Gynecologists, 2003). According Wadsworth (2007) prenatal care offers a unique opportunity to promote the adoption of healthy behaviors, but although recommendations are currently accepted for pregnant women to engage in moderate exercise, many women may not receive this information from their health care providers.

Some elements of exercise and fitness aerobics from the gymnastics disciplines are also suitable for pregnant women, which comply with the dosage and the physiological state of pregnancy (Kramer, 2002; Kramer & McDonald, 2006). Many authors recommend them for pregnant women (Babbar et al., 2012; Bala, 2012; Battle et al., 2010; May et al., 2010; Montoya Arizabaleta et al., 2010; Krivonogova et al., 2010; Yeo,

2010). In order to encourage the promotion of useful programs for pregnant women and increase their efficiency for flexible individual and group adequate implementation are necessary in-depth knowledge and awareness of interdisciplinary team.

In response to today's challenges, we aim to create an information system to regulate the inclusion of pregnant women in the gymnastics program with psycho prophylaxis.

METHODS

The preliminary data for establishment of the information system are processed by the questionnaire method in a pilot study on 100 pregnant women (Nesheva, 2007). Standardized questionnaire containing 5 questions with alternative answers is applied to identify attitudes and practical participation of women respondents in physical exercises and sports during pregnancy and their activity in leisure time.

During the period 2010 - 2013 years, experimental study also done in terms of physical activity, but for pregnant women included in the Program for normal pregnancy (<https://www.facebook.com/GymFitMama/>). The results of 100 pregnant women are processed as prevailing number registered pregnant women are in the second trimester (from IV to VI month).

Materials were given to pregnant women to work at home, so as not to interrupt the program's impact during the holidays. Each of the participants fills in personal informational paperboard (Fig.1) with all necessary approvals.

НАУЧНО ИЗСЛЕДВАНЕ ГИМНАСТИКА ПРИ ЖЕНИ С НОРМАЛНА БРЕМЕННОСТ ПРИ НСА "ВАСИЛ ЛЕВСКИ"	
СНИМКА	ИМЕ : Имя №..... / собствено, бащино, фамилно /
	ГОДИНЕ :
	ПРОФЕСИЯ : / вид дейност /
	ОБРАЗОВАНИЕ : / начално, средно, полувисше, висше /
	АДРЕС : / град, село бул., ул. № д.тел., gsm /
	ОТ КОЙ АКУШЕР-ГИНЕКОЛОГ Е ПРЕПОРЪКАТА ЗА ДВИГАТЕЛНА АКТИВНОСТ: Д-р:
	/ АГ — завеление / АНАМНЕСТИЧНИ ДАННИ
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	ДАТА НА ПОСЛЕДНО РАЖДАНЕ : ДЕЦА : / бр., момиче, момче, близнаци, зг. /
	ИЗСЛЕДВАНАТА ЗАНИМАВАЛА ЛИ СЕ Е СЪС СПОРТ : / какъв вид спорт / да не /
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МЕХАНИЗЪМ НА РАЖДАНЕТО	
⇒ ПАРТОС НОРМАЛИС (PN): / да, не /	
⇒ СЕКЦИО ЦЕЗАРЕЯ (SC): / да, не /	
⇒ ПАРТОС АНОРМАЛИС (PAN): / епизиотомия, форцепс, вакуум /	
Забележка: <i>Картонът се попълва на свободните места, там където е необходимо се загражда и оцветява.</i>	

Figures1. Authentic documents to personal paperboard (in Bulgarian)

On figures 2, 3 and 4 we visualise pregnant women with the ambience after the gymnastic activities and how they fill data in their personal cards under the specialist instruction who conduct classes.



Figure 2 - 4. Pregnant women in the gym

The pregnant women apply recommendations, signed by their private obstetrician - gynecologist with the seal of the Medical center and a written statement - informed consent applicable to tests and they accept the terms of adapted gymnastics program (Fig.5, 6). Research is part of the mandatory functional control and control over their physical fitness during the training program. Adapted gymnastics program for normal pregnancy is conducted 2 times a week on a research Project No. 234/30.05.2011.

МЦ - ФЕМИНА МЕДИЦИНСКО НАПРАВЛЕНИЕ №50
3-2 и 2-30

МНЗ - Специализирано отделение До Спортна академия
г. София г. София

Пациент - име Таблинска Валентина Възраст
Адрес София ул. "Земля Никола 6" №50
месторабота професия

С молба за диагноза Year III
хоспитализация
консултация
изследване
курортолечение

Бележки за проведените изследвания и лечение
Молба за участие в гимнастиката
за 39 седмици.

лекар - име, длъжност, подпис
дата 10.01.2012.

Бл. МНЗ №119

Figure 5. Recommendation of case P. M. signed by her private obstetrician - gynecologist with the seal of the Medical center (in Bulgarian)

ДЕКЛАРАЦИЯ №50
ЗА ИНФОРМИРАНО СЪГЛАСИЕ

Таблинска Валентина Доброволно се съгласявам за
смане на данни и отчитане на показатели от тестове проведени през 2012 г.
И ПРИЕМАМ УСЛОВИЯТА ЗА РАБОТА.

8.01.12 г. ПОДПИС: [Signature]

София

Figure 6. Written informed consent of the pregnant P. M. for participation in gymnastics program

The information system includes three components:

1. Clinical status;
2. General characteristics;
3. Physiometric characteristics.

Clinical status

Clinical status of the hundred pregnant women enrolled in the program "Gymnastics with psycho prophylaxis" is described as calm obstetric status.

Based on clinical research and medical scrutiny of specialists and the establishment of normal pregnancy the studied women apply to their personal card a recommendation from the supervising obstetricians to participate in the program (see Fig.7).

Medical centers that target pregnant are many and from different areas of the city. Most women with recommendation came from: MC St. Demetrius - Dr. Ionkova; Sofia Med Clinic - Dr. Netzov; Maternity Hospital - Dr. Kolarov, Dr. Kirimichiev Dr. Karamishev Dr. Petrov and others.; ClinicTokuda - Dr. Iliev, PhD Evtimova Dr. Gerginova; Sheinovo II AG - Dr. Chalmanov, 15, 20, 22, 25 polyclinics, by Military Hospital, Governmental Hospital, Transport Hospital and many other medical establishments.

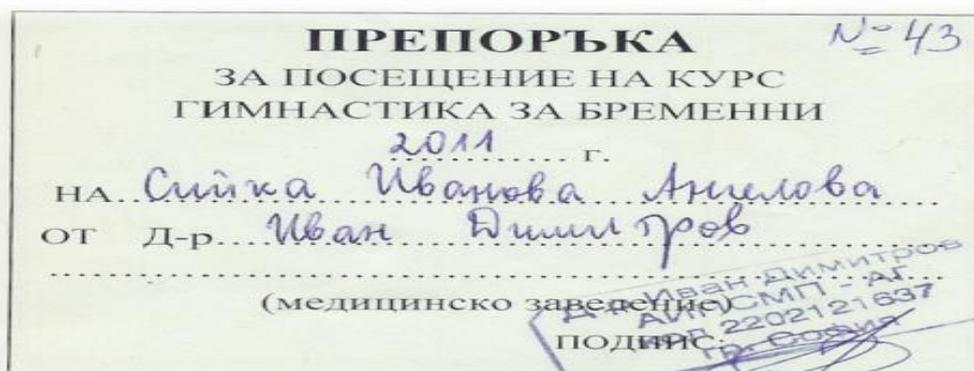


Figure 7. Recommendation of case S. A. signed by her private obstetrician - gynecologist with the seal of the Medical center (in Bulgarian)

RESULTS

The common characteristic reveals very good social status. All pregnant women organized combine work with motivated commitment and participation in the exercises for pregnant women in the National Sports Academy. 16 of them have secondary education, 2 have secondary vocational education and 82 have higher education.

Made advertising activity helped to form conditionally 12 groups' pregnant women during the period 2010 to 2013 year. 44% of the respondents received information about the program from the site - www.nsa-nesheva.com, 41% learned about it from friends, 14% - from advertisements and a pregnant participated in the program twice - the first and second pregnancy.

The anamnesis data show that out of 100 women, three are with three pregnancies, 22 have two and the remaining 75 have one child. The percentage among physically active (78%, 2% of this percentage are highly skilled athletes), and inactive (22%) before pregnancy, motivated and involved in gymnastics program for pregnant shows predominance of the former. The physical active women before pregnancy have practiced some form or elements of different sports (swimming, tennis, athletics, gymnastics, tae - bo, fitness, etc.) and exercise. 87 of Participants exert different professions (prosecutors, lawyers, architects, accountants, economists, engineers, designers, a doctor, nurse and other professions) and 13 pregnant women are undergraduates.

DISCUSSION

From the detailed analysis of questionnaire survey can be summed that:

1. Education it turns out an essential element for awareness of the necessity of participation in physical activity program to maintain good health and mental status.

2. Physical activity before pregnancy plays an important role in motivating and involving pregnant women in specialized exercise program.

Physiometric characteristics

Table 1 presents the mean and standard deviation (Mean \pm SD) of indicators of the physiometric characteristics of the studied pregnant women (age – A; height – H; body mass immediately after establishment of the pregnancy – W_I; BMI immediately after establishment of the pregnancy; body mass in the program inclusion – W_M).

Table 1. Descriptive statistics (Mean \pm SD) of physiometrics parameters of the pregnant women

Parameters	N	Mean \pm SD
(A)	100	28,98 \pm 3,94
(H) [cm]	100	167,14 \pm 6,56
(W_I) [kg]	100	57,05 \pm 8,57
(BMI) [kg/cm ²]	100	20,38 \pm 2,49
(W_M) [kg]	100	62,33 \pm 9,28

It was found that one percent is obese, 2% are overweight, 20% are underweight and 77% of pregnant women are in the norm in comparison with the standards of the World Health Organization (Fig.8).

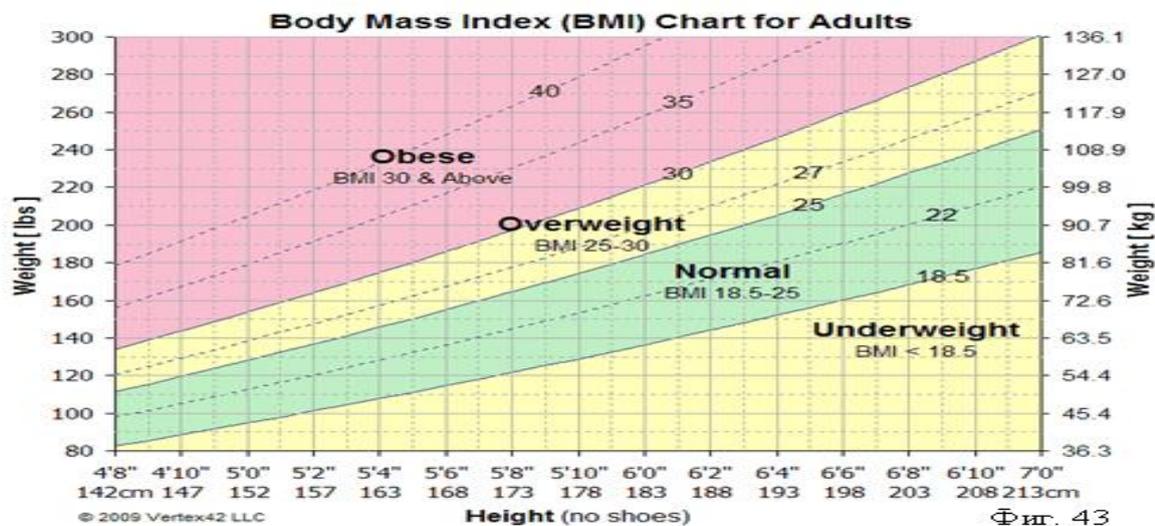


Fig. 8

CONCLUSIONS

It can be concluded that the need for comprehensive information system for the inclusion of women with normal pregnancy in gymnastics program is grounded on the pilot extensive survey and the actual survey of pregnant women.

Gymnastics program with psycho prophylaxis is originally elaborated. Any training/session of it consists of the following parts: 5 min preparatory, 5 min dance, 25 min basic, 5 min final - stretching and 10 min relaxation.

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IMPORTANCE OF MOTOR SKILLS IN ORDER TO INCREASE THE OVERALL PHYSICAL CAPACITY OF CHILDREN

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Key words: *motor qualities, group of exercises, general physical capacity*

INTRODUCTION

In order to achieve good physical capacity, it is necessary to be systematic and consistent in the use of physical exercises, as well as the observance of certain regularities in the course of the learning process. The motor qualities and the group of exercises possess and benefit from their specificities (Dimitrova, 2019a; Dimitrova, 2020a; Nesheva, 2014). They are a well-known and frequent process in the work of different type of pedagogues (Kaneva, 2009; Polimenov, 2019; Nesheva, 2019; Chipeva, 2018). This is an important part of our wellness or healthy life style (Dimitrova, 2016; Dimitrova, 2019). The harmonious physical capacity development isn't come without exercises for developing the motor qualities using specific groups of exercises (Kaneva, 2009a; Dimitrova, 2017). It is possible to see real results after minimum 1 year of applying specific influences and methods (Ignatova, 2018; Dimitrova, 2019b; Dimitrova, 2019d). In all this cases is useful to build Wellness culture in school (Dimitrova, 2020; Dimitrova, 2019c; Polimenov, 2014).

It should be noted that exercising has a lasting effect only in the case of systematic repetition, as a result of which a certain fatigue occurs, and children must alternate physical activity with active rest for recovery. The application of the group of motor exercises should be done gradually, which refers mainly to the process of development of motor qualities. This gradual increase of the load is mainly expressed in: 1) the progressive increase of the volume and intensity of the motor load, 2) in the complication of the technique of the performed exercises, and 3) in the increase of development of the moral and volitional qualities related to team work.

METHODOLOGY

The aim of the present study is to present technology for the application of groups of general developmental exercises, for the development of motor skills speed, strength, endurance, flexibility and agility in order to increase the overall physical capacity when working with children from the third preparatory group in kindergarten.

Tasks of the present research as a result of the set goal are:

- To summarize motor and psychological-pedagogical features for the application of complexes of motor exercises for the development of physical qualities in order to increase the overall physical capacity,
- To present game situations, as a main form of pedagogical interaction in which to apply complexes of exercises with motor orientation, for the development of motor skills when working with children from level-3 preparatory group in kindergarten.

The subject of the pedagogical research is the complexes with motor orientation of general-developmental exercises, applied in the educational process in physical culture.

The object of the study is the process of learning motor exercises by adolescents.

Scope and organization of the study was conducted in a three-month study period, in October, November and December 2019, with children from level-3 preparatory group.

The indicators and criteria for assessing the degree of mastery of the applied complexes of general developmental exercises with motor orientation are:

- Execution with high precision or execution with ease and insignificant errors is evaluated with a high degree of mastery,
- Performances with small inaccuracies without violating the general structure of the exercises are assessed with a medium degree,
- Performance only in general terms or non-performance of the exercises is assessed as well.

Research methods are pedagogical observation, control performance and survey

Toolkit: survey with the parents of children in the group

RESULTS

By means of timing, the duration of some of the exercises included in the motor complexes for speed and endurance was determined. In order to achieve the set goal and accomplish the set tasks, the complexes were applied in different pedagogical situations under approved programs using various devices and methods of interaction, suitable for organizing the work with children of the third age group. Intentionally developed motor complexes were also included in the morning gymnastics. The results of the performance evaluation are shown in Figure 1, where the statistical processing of the data is presented in percentages.

Topic - "To be strong" - statistical processing of data on motor quality "strength"

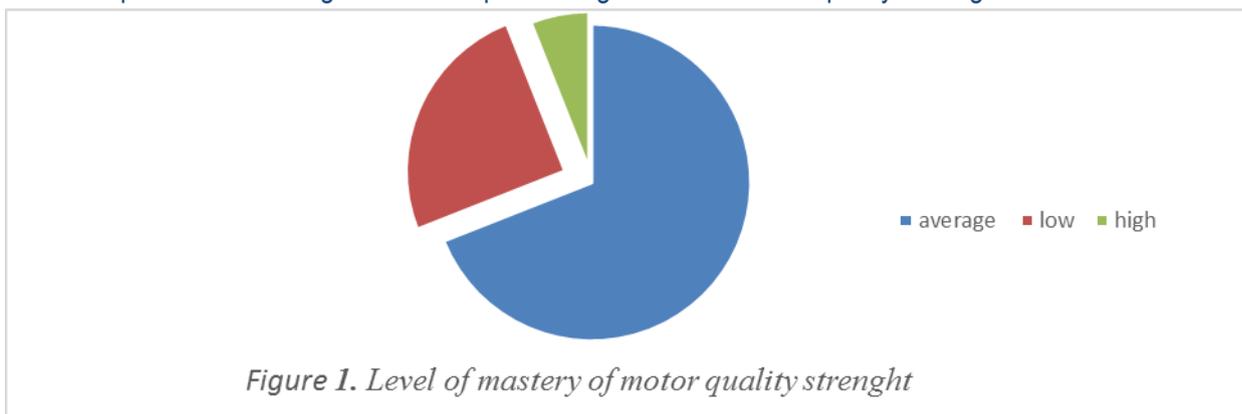


Figure 1. Level of mastery of motor quality strenght

Topic - "Be agile" - statistical processing of motor quality data "agility".

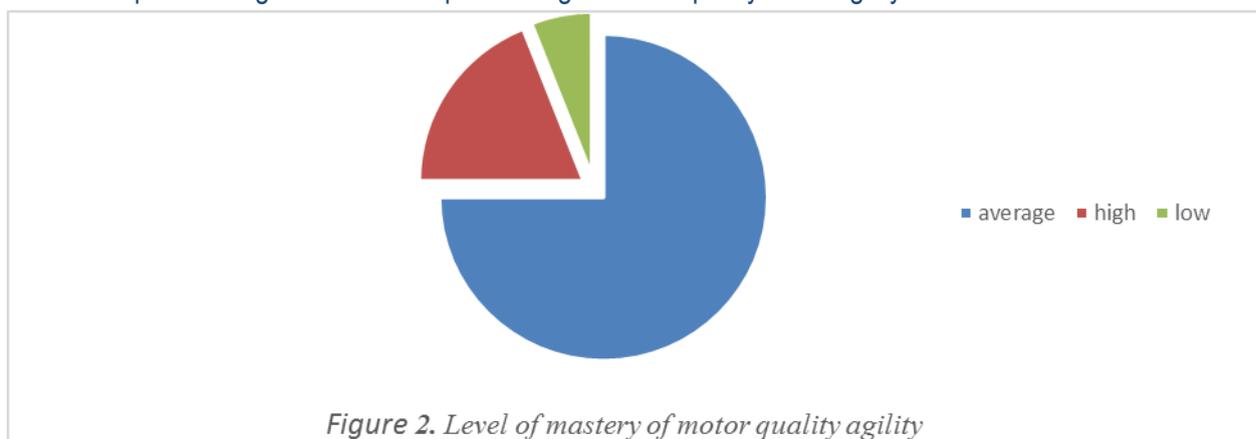


Figure 2. Level of mastery of motor quality agility

Topic - "Flexible as cats" - statistical processing of motor quality data "flexibility"

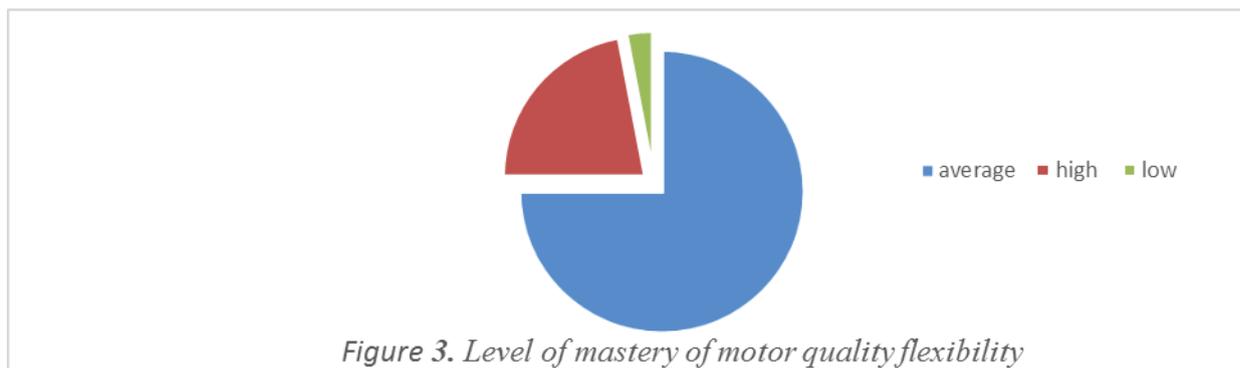


Figure 3. Level of mastery of motor quality flexibility

Topic - "Fast, brave, dexterous" - statistical processing of data on motor quality "speed"

Topic - "Who will give up and who will endure" - statistical processing of data on motor quality "endurance"

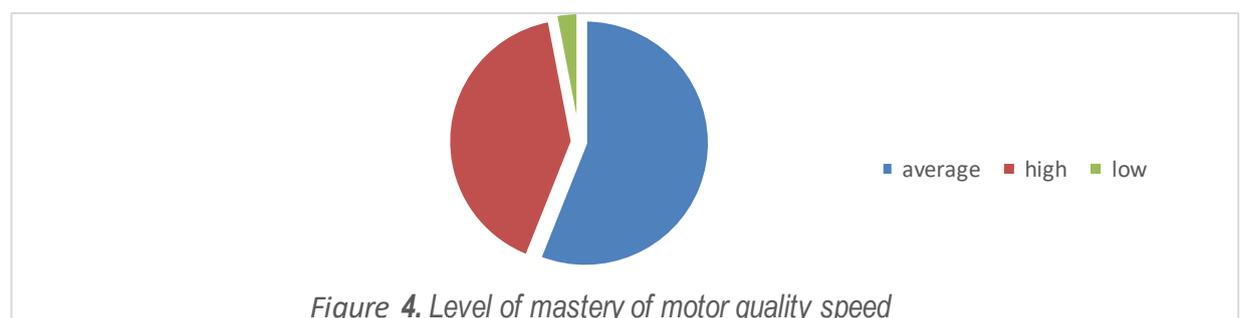


Figure 4. Level of mastery of motor quality speed

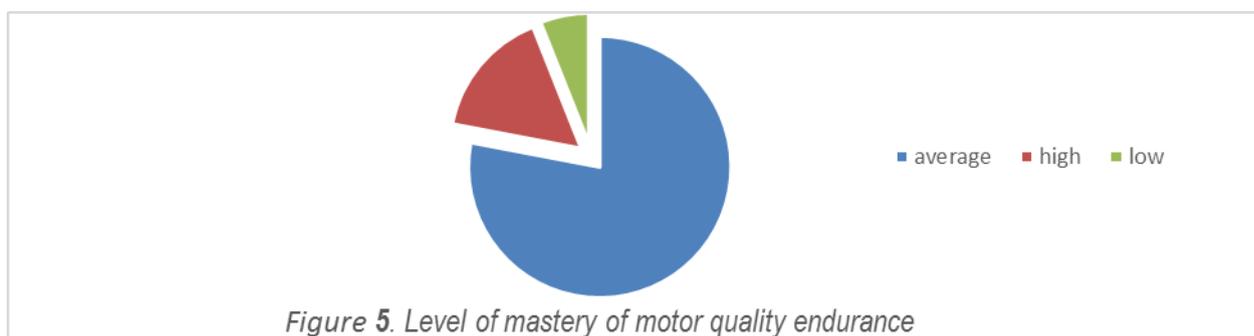


Figure 5. Level of mastery of motor quality endurance

DISCUSSION

The results of the study of motor quality flexibility show that 75% of children have an average degree of mastery of the exercises of the motor complex to develop motor quality flexibility.

As 22% have a high degree of mastery and only 3% have a low degree of mastery.

The results of the study of motor quality agility show that 75% of children have an average degree of mastery of the exercises of the motor complex to develop motor quality agility, as 19% have a high degree of mastery and only 6% have a low degree of mastery.

The results of the pedagogical study of motor quality strength show that 69% of children have an average degree of mastery of the exercises of the motor complex to develop motor quality strength, 25% have a low degree of mastery and only 6% have a high degree of mastery.

The results of the study of motor quality speed show that 56% of children have an average degree of mastery of the exercises of the motor complex to develop motor quality speed, 41% have a high degree of mastery and only 3% have a low degree of mastery. These 3%, as in the complex for the development of motor flexibility, correspond to one child who during the study period was in a period of recovery after illness.

The results of the study of motor quality endurance show that 78% of children have an average degree of mastery of exercises from the motor complex to develop motor quality endurance, 16% have a high degree of mastery and only 6% have a low degree of mastery.

CONCLUSIONS

Based on the presented data from the study, the following conclusions can be made:

- Based on the game situations in the module for physical activity, in combination with the applied motor complexes of general developmental exercises for the development of motor skills, it was found that they undoubtedly contribute to stimulating the motor activity of adolescents,
- Based on the tools used in this study, as well as on the indicators and criteria for assessing the degree of mastery of the applied complexes of general developmental exercises with motor orientation, reliable data were obtained on the level of physical activity and capacity of the studied children,
- The data obtained from the study show that the development of motor skills leads to an increase in overall physical capacity, as a result of which the studied children show good motor activity,
- Active physical activity leads to the development of motor skills and the increase of overall physical capacity,
- The developed motor exercises, implemented in the system of pedagogical situations, are applicable in the physical education classes in the conditions of the kindergarten,
- Undoubtedly, there is a need for constant work to develop and improve the motor skills of adolescents, which leads to increased physical fitness and health strengthening of the body. Physical culture has a beneficial effect not only on the motor development of children, but also on their intellectual and socio-moral development,
- It is necessary to motivate children for physical activity and to educate them to strive for the development of moral and volitional qualities, as well as their work in a team,
- The modern way of life requires an increase in sports activities, as well as an increase in the intensity of exercise, according to the individual age and physiological characteristics of each child.

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BREASTSTROKE STYLE – DYNAMIC AND HISTORIC SOURCES

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Key words: *Swimming, diagnostic analysis of historical dynamic, Breaststroke skills development, etapisaton.*

INTRODUCTION

The development of swimming styles is dictated by the changes in the rules of the competitive swimming. "... In recent years, hypoxic resistance in the swimming sports is a fundamental factor that directly affects the sports results and the final ranking in the race ..." (Dimitrova, 2014). A nowadays international FINA requirement regulates the technique in all water sports: swimming, synchronized swimming, water polo and diving. Into the 21st century and the latest research on the health effects of water activates the spread of all aqua practices (Dimitrova, 2020a; Ignatova, 2018a) including "...adapted programs for pregnant women..." (Nesheva, 2019) or the muscle soreness (Kaneva, 2009a; Ignatova, 2018; Chipeva, 2018). It is important to be discussed the problem of the importance of the water for the health prevention thought physical activity (Dimitrova, 2014a; Dimitrova (Димитрова), 2019) and the direct link to improving the quality of life and the health status of practitioners (Kaneva, 2009; Polimenov, 2019; Dimitrova (Димитрова), 2020). In this paper we attempt to trace in detail the development of the style breaststroke from the antiquity to 1952. Consciously we confine our analysis into the period from the emergence of research for this swimming style to the first official Olympic Games.

Given that the development of the swimming styles are not sufficiently studied and reported in the references, we focus our attention on the years before 1896. Even after the first Olympic Games scientific experiments for analysis are with vague or incomplete conclusions about how to swim, what are the style characteristics of the classic version of breaststroke and the differences with applied modern skills. The literature found evidence for "... ancient Eastern practices in search of effective anti-stress influences ..." in the sports training of elite swimmers (Dimitrova, 2019a) and admiration for the natural resources of mineral or spring water, which is "... a gift from the gods ..." and "... today [we] perceive water as a vital and we cannot imagine existence without it..." Димитрова (Dimitrova, 2014a). Under the current level of International development at all swimming sports, each one of them dreams about grow up.

To achieve the formulated objective we made the following main **tasks**:

- Identifying social and sporting causes of the style breaststroke;
- Defining periods and stages in the development of the technique of the style breaststroke;
- Analysis of key indicators from antiquity to the first Olympic Games and separation of the breaststroke of the butterfly stroke.

The **object** of this work are indicators distinct differentiation of modern technology of the style breaststroke.

Subject of the study are the specialized reference sources and private swimming historical materials.

RESULTS

Based on the analysis made the literary we allow ourselves to differentiate two periods with the corresponding stages in the development of the breaststroke technique into account assigned tasks for the study period (Figure 1).

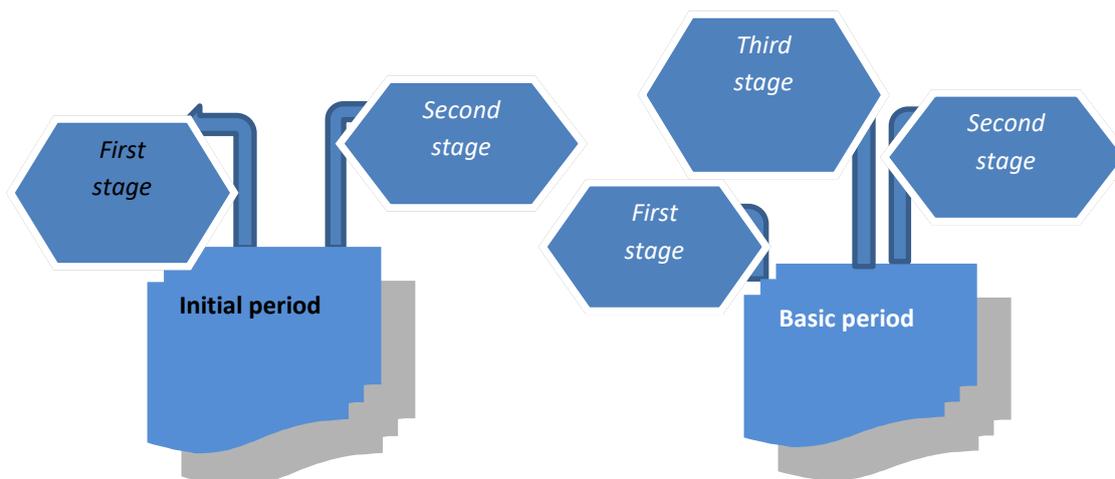


Figure 1: The differentiated periods with the corresponding stages in the development of the breaststroke skills.

✚ Initial period - from ancient times to 1896

First stage: Emergence of the swimming styles

The first historical evidence of the emergence and development of swimming dates back to first ancient historical evidence and the development of swimming times. Depending on geography, religion and economic development of nations, swimming has developed at different speeds. The fact of this are the found vases decorated with floating people, rock paintings and other images that demonstrate the emergence and use of swimming.

In ancient times, swimming is used in both occupational and household activities - hunting, fishing, and also for military purposes.

In ancient Egypt, Assyria and Babylon are also found papyri and carvings depicting the use of swimming as a means of hunting, fishing, crossing rivers and water obstacles of soldiers, as well as people who use swimming in working conditions.

It can be assumed that for the first time in ancient Greece people used successive movements with the limbs to move in the water like modern crawl and also simultaneous movements mimic the movements of breaststroke and dolphin.

In ancient Rome, swimming is also used primarily for military purposes. Roman historians talk about training their legions in the ability to swim.

Second stage: distribution of the breaststroke in Europe

During the Renaissance period in the 14-18 century, Educating human paying attention not only intellectual but also physical development of the generations. During this period, released the first swimming guide in Augsburg (1538). Nicolas Widmann entitled it "Kolimbretika." In the following years the development of swimming gradually gaining momentum through the construction of swimming pools. Follows the establishment of training schools in Paris in 1785g., Berlin, Vienna, Prague, Russia, where he has applied mainly breaststroke technique.

As issued in this period of training aids also recommended this technique - "Full course of learning to swim based on new experiments on the relative weight of the human body" – in 1794 by Ornotsio De Bernardi, and "Little guidance on swimming" - 1798 by Guts Muts and others.

Under the influence of England swimming as a sport is spreading in Germany, France, Sweden, Holland, Denmark, Austria, Czech Republic, in Europe, the first style of training and racing is breaststroke. In America, swimming develops only in the early 20th century, mainly used the technique of crawl.

Basic period 1896-1952

First phase: style breaststroke in the first Olympic Games.

The program of the first Olympic Games held in 1896 in Athens includes eight kinds of sports, one of which is swimming. His subjects are only four - 100, 500 and 1200 meters freestyle and 100 m. applied swimming. In freestyle been permitted to use any type of skills in the distance, as well as any change of swimming technique.

All participants used predominantly one already formed at the end of the century, two main options of swimming breaststroke, "swimming sideways" and "tradgan." In the process of evolution until today, all of those styles of sports technique remain only the style breaststroke.

Second stage: Classical technique

The first prominent representative of the classical technique of swimming breaststroke stay Eric Rademacher between 1922 and 1924, when the results achieved respectively 2.54.4 min. and 2.50.4 min. Feature of his style is the advantage of working legs compared with that of hands.

To increase the efficiency of the work with the legs is considered necessary impetus to carry a larger motion. This movement is called a "wedge scissors" at which relied primarily to move from pushing of the wedge of water between the two legs. Similarly swim in 1935 and G.Kartone (200 m - 2.39.6 min.). Swimming body lying horizontally, hand scoop made under the water surface to the line of the shoulders; legs out horizontal movement with broad "wedge scissors"; head is raised for the breath in the phase of stroke after a dip in the water and exhale; coordination of movements is relatively segmented, with extended slide.

Third stage: Changes in the movements of the legs

The technique of the movements of the legs gets a boost in its development with the imposition of butterfly around 1936, the major acceleration in this style comes from the work effort of the hands and the technique of leg movement obeys the cycle of arms. When the legs appear the following amendments: to use more rational stroke of the hands, reduce resistance arising from the collection of feet and prepare them for a boost in the preparatory phase so they fold less hip.

DISCUSSION

And to ensure a high shoulder line and the acceleration conferred by the legs is palpable; the momentum is carried out with greater speed mostly backwards with slight incline. These changes in butterfly are transferred to the technique of legs in the style breaststroke. Initially retained the traditional width of thrust, but now the impetus is derived primarily back. Thus was born "circular pushing kick."

In the postwar years until the London Olympics (1948), the breaststroke technique is significantly improved by the Dutch. This is characterized by high rates of movement resulting from the reduced drag and a significant narrowing of the gap with their feet. Dutch apply "motive scissors." The push in the slightly incline helps to maintain a high shoulder girdle, as the head is fixed on the surface, which creates a stable posture. Characteristics of modern breaststroke technique, which can be formulated as the third period in the development of the style will cover through the subject of our future studies.

CONCLUSIONS

The analysis of the study give reason to be formulated the following important conclusions:

1. We found the causes of the style breaststroke - social and sports;

2. We have identified two specific periods - primary and secondary;
3. We define two stages in the first period and three in the second - the development of separation technique of the style breaststroke.

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RELATIONSHIP BETWEEN THE STATE OF ANXIETY AND THE TYPE "MIND-BODY" IN AYURVEDA FOR PERSONS ENGAGED WITH AQUAYOGA

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Key words: *Classes of aquayoga, anxiety, Ayurveda, psychological profile, diagnostic of the mind-body relationship, analysis of specific indexes.*

INTRODUCTION

The scientific body Balakan cluster for health, wellness and spa tourism creates an annual report which analyzes the Mental Wellness Economy as \$121 billion market – the biggest wellness business opportunity in 2021. After the Covid19 world crisis, the world is turning to wellness or medical wellness. Learn what lies ahead in this original paper as new wellness approaches and use the information to succeed in 2021 and beyond. Yoga and Ayurveda are ancient philosophies and cultures occurred more than 5,000 years ago, as part of the Vedic tradition, and developed in parallel (Frawley, 2000; 2004). This tradition carried over into the 21st century and consistent with the latest research on the health effects of water activates the spread of aquayoga practice and "...adapted programs for pregnant women..." (Necheva, 2019; Vasant, 2006). Through Ayurveda it's made possible to apply ancient methods of healing, to maintain life without diseases, according to the "Science of Life". The aqua practices and in particular the aquayoga programs are important social processes for all categories of people (Kaneva, 2009; Dimitrova, 2019; Dimitrova, 2020a). The harmonious development of normal health status is a dreamed gift for all categories of people in all age categories (Chipeva, 2018, Polimenov, 2019). This is the wish of each family and important part of our everyday life style (Kaneva, 2009a; Ignatova, 2018). It is possible to see real results after minimum 1 year of applying specific influences and methods (Ignatova, 2018a; Dimitrova, 2019a). In all these cases it is useful to build Wellness culture in school (Dimitrova, 2020).

Its complex methods include therapies using nutrition, herbs, yoga, gems, mantras and meditation, as well as surgery. In Ayurveda, treatment is focused on balancing the doshas, or constitutional types. It is believed that when there is an imbalance of the doshas, poor health can result.

Both exercises using breathing techniques, relaxation and meditation are struggling with negative emotions and blockages, stress, depression and seek to establish a balance between the **physical, mental, emotional and spiritual** powers of the individual. They are based on morals and ethics and obey the "Yama" and "Niyama" outlining lofty moral character and qualities of the individual. Upgrading each other they assist in selecting the most appropriate type, time and dosage of exercise, taking into account individual needs, according to the personal specificities and body structure (accumulated dosha which execution is possible in water environment).

Repertoire of physical and mental qualities, character and reactions determine the type of "mind-body" with which man is born. The perfect coordination between them as a unique expression of nature is represented by "Vata", "Pita" and "Kapha" doshas. There are three main doshas: kapha, or water; vata, or air; and, pitta, or fire. Most individuals have one dominant dosha, but may be a combination of two. In "Ayurvedic Healing," author and Vedic physician Dr. David Frawley explains the characteristics of each dosha. Vata types tend to be thin and have a hard time gaining weight. They tend to have light-brown hair, dry skin and delicate features. They prefer sour or salty foods, and may develop constipation. They tend to be

hyperactive, but have poor endurance. Pitta types are of medium build with well-developed muscles. They tend to be athletic and goal oriented. They prefer sweet and raw foods, and often develop inflammatory diseases. Kapha types tend to be short and stocky. They have round features, and tend to have a sluggish metabolism. They prefer pungent or bitter foods, and do not like a lot of spices. They may be prone to respiratory illnesses.

METHODS

The **purpose** in the present research notes is to explore the psychological parameters defining the current or situational anxiety and made them comparable to individual doshas - Ayurveda models to look up and find relationship between them. Our long years experiences⁶ has directed us to establishing a **working hypothesis** based on the supposition that the aquayoga classes tailored to the individual and a "mind-body" in Ayurveda are pleasant, relaxing and not lead to fatigue practices that neutralize situational anxiety, live anxiety and stress, using the support of the water environment.

The following **tasks** have been executed to reach the purpose set:

- To select the required contingent of persons included in the systematic aquayoga classes with different experience and preparation;
- To determine the current level of situational anxiety after a specific aquayoga practice;
- To prepare individual doshas models for finding the "mind-body" type by Ayurveda.

The research **object** of this work were total 77 women, 37 of them with little experience we have assumed for beginners, while 40 persons - advanced in its preparation, which participated in the main experiment.

The research **subject** is the selection of specific indexes, which manifestation defines the process of the current or situational anxiety and made them comparable to the individual doshas - Ayurveda models, for defining the individual psychological stress profile.

Specific methods of the study:

1. Polls developed specifically by us, with open and closed questions. Highlights are on the age, the work experience, the anthropometric data, the motivation to participate in organized aquayoga activities, number of weekly visits to classes, regular physical activity, participation in sports events in the past and currently, diet and interest in Aquayoga, Ayurveda and water influences literature or scientific results.
2. Psychological test for subjective assessment of current situational anxiety of the participants in the advanced group. We applied the Spielberg test (STAI). It consists of 20 questions, of which four point scale, registering subjective assessments of feelings, experiences, stress or anxiety during the practice. The test is filled out in person immediately after the classes. Responses are processed with the Spielberg key and evaluated according to the standard rate (values for women) is within 33.99 prom.
3. Test for defining the type of "mind-body" according Ayurveda, by calculating the ratio of "Vata", "Pita" and "Kaffa" doshas. The questionnaire for our study is divided into three sections of 20 questions, which is selected in response to a 6-point scale (0 to 6). The first 20 questions concern the "Vata" dosha next - for the "Pita-accumulated" dosha last 20 - for the "Kaffa" accumulated dosha, and the total determined respectively "Vata", "Pita" and "Kafa"- doshas. When comparing the obtained data we can fix the predominant body type, such as physical characteristics, mental character and behavior. When they are in balance there is an ideal "coordination of mind and body". Ayurvedic system combines three doshas and 10 ways to differentiate the

⁶ *Bistra Dimitrova is "Master of sports" in swimming (national team member), Head coach of the synchronized swimming in Bulgaria. She is the author of the educational programs on "master" and "doctoral" degree on "SPA culture, east and aqua practices" at the National Sports Academy, 10 years experience in management with classes for aqua practices (aquayoga, aquafitness, aquajogging ext.)*

persons with 10 different types of psy-profiles. There are individuals with a single, pure type, two types ("double dosha") and three types ("triple dosha").

RESULTS

1 Responses from the survey united in five key issues that sparked our interest:

* The question "Why aquayoga classes", the answers to those two groups show different levels of motivation: beginners are guided by the interest and curiosity (24%), the strong desire to improve health (40%) and quest for self-improvement (36%); advanced experiencing constant need (66%) and awareness of the need of physical and spiritual perfection and knowledge of his own body (34%).

* The question "How many times a week visiting classes" both groups are adamant that try to be regular as participate in classes on average twice a week (26-27%): beginners, who practice two times with 28% but three times or more, 44%; advanced involved three or more times were 87%, but daily work independently at home (Table 1).

Table 1. Systematisation and tabulation of the obtained results like individual responses from the survey united in five key issues

Question	Beginners answers %	Advanced answers %
Q1: Why aquayoga classes		
• Interest	24	76
• improve health	40	60
• self-improvement	36	64
• knowledge of his own body	66	34
Q2: How many times a week visiting classes:		
• twice a week	72	27
• three a week	56	44
• more	13	87
Q3: sports you before		
• no	56	44
• swimming	23	77
• gym	14	86
Q4: What is your diet	72	28
• without	50	50
• vegetarian	12	88
• organic food		

* The question "sports you before," 55-56% of the participants answered negatively and only 44-45% said that sports are two to five years, mostly swimming, gymnastics and fall for tourism.

The test shows that they are within 24-57 homecoming or prom 31.78 average (score over 30 prom was registered only 13 participants).

This indicator is found to be lower than the norm (33.99), a fact which eloquently in favor of moderate, evenly, not stressful load classes and tranquil, serene water environment in which minimizes feelings of anxiety and tension.

This result (Table 2, 3) is confirmed by our study on the behavior of practitioners - their facial expressions, gestures, color of the face, sweating.

Table 2. The mean and variation of the results studied group: beginner

No	Indexes	X	S	tX	V	R	As	Ex
1	AGE (years)	36.16	12.96	2.96	36	47	1.09	0.73
2	Experience (month)	7.26	3.07	0.70	42	8	0.41	-1.49
3	Bodimass index (Ind.)	21.28	3.04	0.70	14	9.87	1.12	0.39
4	Test Rufina (Ind.)	3.68	1.96	0.45	53	6.40	0.05	-1.22
5	Evaluation Rufina (Bal)	4.31	0.40	0.09	9	1.40	-0.10	-1.07
6	Inhalation Home (s)	41.53	10.70	2.46	26	36	0.15	-0.64
7	Inhalation after 20 squat (s)	19.58	5.38	1.23	27	19	1.13	0.60
8	Exhalation Home (s)	25.11	5.27	1.21	21	19	0.70	0.10
9	Exhalation After 20 squat (s)	14.74	3.77	0.86	25	15	1.02	1.74
10	Test Romberg TREE (s)	17.21	6.66	1.53	39	23	0.08	-0.74
11	Scale test Romberg (s)	15.89	4.36	1.00	27	14	0.02	-1.11
12	STAI (Ind.)	31.32	9.83	2.25	31	35	1.72	2.13

We believe that the behavior represents a reliable diagnosis for the functional status among cognitive (cognitive) parameters.

Table 3. The mean and variation of the results studied group: advanced

No	Indexes	X	S	tX	V	R	As	Ex
1	AGE (years)	47.05	15.91	3.65	34	57	0.10	-0.84
2	Experience (month)	4.95	3.46	0.79	70	11	1.14	0.23
3	Bodimass index (Ind.)	21.73	2.58	0.59	12	9.73	0.60	0.07
4	Test Rufina (Ind.)	2.44	1.79	0.41	73	5.20	0.65	-1.11
5	Evaluation Rufina (Bal)	4.57	0.37	0.08	8	1.10	-0.64	-1.05
6	Inhalation Home (s)	45.42	7.40	1.70	16	28	0.45	-0.10
7	Inhalation after 20 squat (s)	22.84	5.40	1.24	24	20	0.48	0.16
8	Exhalation Home (s)	29.05	5.97	1.37	20	23	0.60	0.79
9	Exhalation After 20 squat (s)	17.26	4.27	0.98	25	20	1.31	3.59
10	Test Romberg TREE (s)	17.84	4.45	1.02	25	19	0.53	1.47
11	Scale test Romberg (s)	18.79	4.18	0.96	26	12	-0.18	-1.08
12	STAI (Ind.)	31.36	7.54	1.73	24	23	0.71	-0.80

Критерии за нормално разпределение при $\alpha < 0.05$: As < 0.71; Ex < 0.88.

3. Analysis of data from the Ayurveda research and development of individual doshas models.

We tried to determine the **dominant or predominant doshas**, to determine combinations and ratios between them. Due to the relatively small number of persons and the inability to compare the results (Table 4) with other case described, satisfied with the preparation of individual profiles.

Table 4. Authenticity of the differences between study groups

Indexes	Beginner		Advanced		Δ	t	α	P(t)
	X	S	X	S				
AGE (years)	36,16	12,96	47,05	15,91	-	2,31	0,027	-
Experience (month)	7,26	3,07	4,95	3,46	2,31	2,18	\:	-
Bodimass index (Ind.)	21,28	3,04	21,73	2,58	-0,45	0,49	0,626	37,43
Test Rufina (Ind.)	3,68	1,96	2,44	1,79	1,24	2,04		95,09
Evaluation Rufina (Bal)	4,31	0,40	4,57	0,37]	2,08		95,53
Inhalation Home (s)	41,53	10,70	45,42	7,40	-3,89	1,30	0,201	79,93
Inhalation after 20 squat (s)	19,58	5,38	22,84	5,40	-3,26	1,86	0,070	92,95
Exhalation Home (s)	25,11	5,27	29,05	5,97	-3,94	2,16	" .	
Exhalation After 20 squat (s)	14,74	3,77	17,26	4,27	-2,52	1,93	0,062	93,83
Test Romberg TREE (s)	17,21	6,66	17,84	4,45	-0,63	0,34	0,734	26,63
Scale test Romberg (s)	15,89	4,36	18,79	4,18	-2,9	2,09	, / > ,	\
STAI (Ind.)	31,32	9,83	31,36	7,54	-0,04	0,01	0,989	1,12

DISCUSSION

Summarizing the data, the following trends emerged (Tab.5):

Table 5. Systematisation and tabulation of the obtained results from the Ayurvedic survey for the doshas type

Index	Beginners index	Advanced index
	Prom	Prom
1. single dosha	5	1
2. double dosha	1	18
3. triple dosha	3	10

- With "single dosha with" were registered only six persons, most representatives of Watts;
- With "double dosha" in different ratios proved nineteen persons;
- With "triple dosha" were established thirteen persons.

Our data differ from those presented in the literature, where it is stated that "triple doshas" fairly rare. It is noted that this applies generally to individuals who are not specified and refine the age, sex, and physical activity. In our studied women and both types are present almost equally, with a slight preponderance of "double dosha". Perhaps, to some extent, they were able to overcome and overcome some of the natural features, dealing with yoga, such as volatility and unpredictability (Watts); irritability and propensity to anger (Pita) inertia and conceit (Kaffa). It can be seen that the accumulated dosha Vata is advocated in most, probably in his role as managing all external and internal movement and pointing the way to the other doshas.

Very important for us was the ability to make a connection between psychological indicators and a "mind-body". Puzzled us high values of the index for situational anxiety, registered in six people with "double dosha" (39 to 57) and six persons with "triple dosha" (29 to 46) who is leading watts. Age and experience do

not differ, but we noticed that Body mass index (BMI) for them is higher or lower than normal (about over and under 25), they are overweight or underweight.

As a result of the established features of the ratios Vata- Pita and Kaffa doshas, Vata- Pita we can assume that there is some correlation between the level of anxiety, the weight of individuals and their types in which the predominant accumulated dosha is Vata. Perhaps in our case the respondents were in a stressful situation or possible they often fall into this as a result of their individual tendency to nervousness, anxiety and imbalance.

We have come to formulating the following basic **conclusions**, grounded on the general **summary** on the above results analysis:

CONCLUSIONS:

Finally, combining of global knowledge and practices of both unique and belonging practices to the worldwide science, no doubt, will achieve the desired effect and to carry the balance between body, mind and spirit.

1. The aquayoga Classes are an important and strong motivational factor for the social integration of the individual.
2. In an ever increasing stress in our modern world, yoga practices are perceived as pleasant, exciting and relaxing activities exclusive to a minimum sense of anxiety and tension.
3. Knowing your own type of "mind-body" in Ayurveda is an important prerequisite and basic need for the additional information useful and necessary for every practitioner of aquayoga

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