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Original Article

The preliminary study on morpho-functional optimization in speed crawl style at the cadets swimmers' level

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Abstract:
It was our choice to study a complex problem at the level of intra- and interdisciplinary notions, the acuity and degree of reflection of the theme in the literature, lies in the very complexity, interdependence and level of application of the educational phenomena included in the teaching-learning-evaluation relation.
After studying different sources of information about combination between psychological and motric skills specifics in children from the primary cycle, there is a lack of interest in knowing the bio-psychosocial potential of this age group by different categories of researchers. The purpose of the paper is how the means of psychological and motric capacity development contribute efficiently within the time of physical education for the education and development of the space and time orientation, laterality and body schematics. After studying the specialized literature, we have noticed that the issue of increasing the efficiency of the relationship between educational theory and praxis, in general and especially for physical education, constitutes for us a permanent process subject to optimization, by the tendency to give equal attention to the two aspects of the process didactic, informative and formative, transferring the specific weight from the transmitter to the receiver (from teacher to children).
Key words: children, school, motric and psychological capacity.

Introduction

This experimental study aims at:

- monitoring and evaluating the effect of implementing a proposed program to improve some of the physical variables of swimmers over short distances and processing of the results with the help of modern technology.
- Keeping track of the effect of implementing the proposed program to improve performance in competitions.

The location of the research will be at the teaching pool of the Baracuda Sports Club in Câmpina. The subjects of the research are the swimmers of the Baracuda Sports Club, with coaches Professor Cojocaru Ioana and Professor Cojocaru Gabriel, for a period of 12 months.

The case study is used to highlight significant aspects useful in the scientific knowledge of the psychomotor behaviour of the evolution of the functional state (neuromuscular - muscle fibre strength, upper limbs, lower limbs, exercise capacity) as well as physical development (active muscle mass, musculoskeletal attitude), also in the theoretical elaboration of a training program in the training motor activity.

The experiment started by testing the level of morpho-functional training at the National Institute of Sports Medicine of Bucharest with the recording of morphological and functional parameters on 27.10.2017. Between the initial and the final testing, according to the results recorded at INMSB, a malfunction correction motor program was performed according to the medical recommendations received.

The experimental research was carried out in the training according to the recommendations, by following the execution of the motor program for the application of specific and non-specific means, during the period between the records at INMSB: 27.10.2017: 29.03.2018.

The experimental stage was continued after finding and interpreting the INMSB results that allowed us to know and identify the physical training faults in order to adapt some corrective measures. For the purpose of correction, **a suitable individual training program for sprint swimming trials in crawl procedure in cadets and juniors craft** was developed.

The swimming motor training program, sprint trials, crawl procedure, is addressed to a proposed model, which corresponds to individualized physical training according to age applied by specific and non-specific means.

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Results

Conducting the longitudinal research of the preliminary experiment

Spr = preliminary topic
Waist 1.49m year 2017
Weight 36 kg
Span 1.52m
Trial result 100m crawl time 1.11.32

Initial testing

Physical development: 4.7 cm increase (of which bust 1.9 cm, lower limbs + 2.8 cm)
Functional state: corresponding to the training stage
Cardiac Frequency (FCC) 92
Ruffier test: 7 value M
Standing long jump: 1.43m
Speed run on 50m flat 8.2 seconds
Bar pull-ups: 4 reps

Results of control trials in water

4x 25 m crawl (anaerobic effort) 17.7 seconds

Number of arms stroke cycle per 100m in crawl procedure 96

Results of control trials on land

Length without take-off 1.43 m
Arm pull-ups 4

Performance at 100m trial crawl 1.11.32

Motor training program according to INMSB recommendations, applied before initial testing and before final testing

The proposed training program with non-specific means on land

Monday and Wednesday - execution and reaction speed

2x 4 x 10m running Pl start legs 90% of total capacity
2x 4 x 30m running Pl start legs 95% of total capacity
1x 50m running Pl start legs 98%

Tuesday and Thursday ***Force - Power for the arms and lower limbs***

Circuit description

4x 10-12 press-ups, 4x5 bar pull-ups, 4x 15m jumping (with flexion position extension, sitting on the chair, no full flexion) 30 seconds pause between reps

Total circuit time 7 minutes, 3 minutes break between circuits
Volume 3 circuits

The proposed water-specific training program, crawl style, appropriate to the age of cadets and juniors as follows:

Monday - ***Force - power for the arms***

1. crawl swimming with small hand paddles (floats between legs and rubber circle at ankles) 3x200m 60 sec break.
2. swimming with parachute harnessed, of various sizes, hand paddle stroke 4x80m 30 sec. break
3. Swimming with sand bracelets, various weights, on the forearm, 4x 100m crawl, 20 seconds break.

Strength - Power for the legs

3. Swim with short foot paddles 3x200m 60sec break.
4. Swim with sand bracelets at the ankles (80-150gr). 8x50m 30 sec break

Force - power for the upper body, the pelvic belt

5. Swimming in long-sleeved shirt 3x200m 60 sec. break

Wednesday - ***Force - power for the arms***

1. Swimming with large hand paddles (floats between legs and rubber ring at the ankles) 2x200m 60 sec. break
2. swimming with parachute harnessed, of various sizes, hand paddle stroke 6x80m 30 sec. break

Force - power for the legs

3. Swimming with long foot paddles 3x200m 60sec. break
4. Swimming with sand bracelets at the ankles (80-150gr). 4x100m 60 sec. break

Force - power for the upper body, the pelvic belt

5. Swim with light weight jacket 3x200m 60 sec. break

Friday - ***Force - power for the arms***

1. Swimming with medium hand paddles (floats between legs and rubber ring at the ankle) 3x200m 60 sec. break
2. Swimming with parachute of various sizes, hand paddle stroke 6x80m 30 sec. break

Force-power for the legs

3. Swim with medium foot paddles 3x200m 60sec. break

4. Swim with sand bracelets at the ankles (80-150gr). 6x80m 45 sec break

Force - power for the upper body, the pelvic belt

5. Swimming with jacket with variable weight 3x200m 60 sec. break

6. Pushing into the wall of the pelvis from the leg flexing with floating in water 20x10m 20 sec. break

The evaluation consists in the fact that during the training time is kept over the distances above to see progress.

Complex recovery after anaerobic swimming effort

Recovery after effort generally involves physical, cardio-respiratory, metabolic recovery by appropriate methods. Neuropsychological recovery is done by relaxation techniques, techniques presented by Demeter A. (1981). It is recommended to use specific means, with care for diet and medication (Belaus V, 1995).

In particular, the recovery must involve the morpho-functional state recovery through active and passive rest. Hydroelectrolytic rebalancing after training is of utmost importance. Recovery after stage or annual cycle takes place in hydri-climatic resorts at the end of the annual and competitive season.

Final testing

Physical development: Grows 2.5 cm (bust 0.4 cm lower limbs 2.1 cm)

Weight 34 kg

Functional state:

Cardiac Frequency (FCC) 88

Ruffier test: 3 value B

Results of control trials in water

4x 25 m crawl (anaerobic effort) 17.0 seconds

Number of arms stroke cycle per 100m in the crack 92 procedure

Results of control trials on land

Length without take-off 1.52 m

Arm pull-ups 9

50m speed run flat 7.9 sec

Performance in the 100m crawl trial time 1.08.21

Control trials in water:

4x 25 m crawl (anaerobic effort):

- initial test 17.7 seconds
- final test 17, 0 seconds
- 0.7 second/25 m difference
- Progress B

Number of arm stroke cycle per 100m in the crawl procedure

- Initial test number of arm cycles 96
- final test number of arm cycles 92
- difference in number of arms cycles 4
- progress M

Comparative numerical interpretation of preliminary research results

	Initial testing	Final testing	Result analysis	Remarks
Physical development waist	1.49m	1.52m	0.3m	3 cm increase
FCC	92 beats/minute	88 beats/minute	5 beats/minute	FCC Improvement 5 beats/minute
Ruffier Test	7	3	4	Improvement from M to B
4x 25m crawl	17.7 sec	17 sec	0.7 sec	Progress 0.7 sec/25m Crawl
No. of stroke cycle	96	92	4	progress M
Performance 100m crawl	1.11.32 time (71.32 sec)	1.08.21 time (68.21 sec)	3.11 sec	progress 3.11 sec/100m crawl
running 50m flat	8.2 sec	7.9 sec	0.3 sec	improvement 0.3 sec
Pull-ups	4 reps	9 reps	5 reps	improvement 5 reps
Standing jumps	1.43m	1.52m	0.09m	progress 9 cm

Conclusions (confirmation of working hypotheses) and recommendations

Progression is observed for muscle mass, bust, inferior limbs, both after physical training before initial testing and for final testing, according to the differences presented by comparative analysis.

We believe that the working hypothesis is confirmed by the results of experimental research.

We recommend that research be continued with a sample of performers in sprint trials in crawl procedure considering the age of cadets and junior.

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