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Basic physical qualities to be developed in children and adolescents

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Abstract

The study addresses the issue of the physical and sports education teacher's ability to develop the basic physical qualities in children and adolescents in Algerian schools. 100 teachers were interviewed on the issue. It was found from the statistical analysis of the questionnaire that 54% of respondents understand the importance of physical qualities but 71% are unaware of their involvement in motor learning in order to avoid any risk to the health of pupils. The development of physical qualities in children and adolescents by the physical and sports education teacher remains a non-negligible imperative in motor learning requiring a good knowledge of these qualities and the possible risks to the health of the pupil, whose characteristics must be known beforehand; hence the pedagogical adaptation.

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INTRODUCTION

"The human body is naturally designed to move, so if we are sedentary, it gets rusty!"(R. Lepers, 2018).

Georges Cazorla (2014) stresses the need to move "The child, like the adolescent, needs movements to build himself up".

Thus, the complete and harmonious physical and psychological development of the pupil has to involve the development of basic physical qualities through the physical and sports activities (PSA) of the subject of physical and sports education (PSE) taught in the Algerian education system and provided by PSE teachers from the various institutes of sciences and techniques of physical and sports activities (STPSA) as well as from regional and national PSE training centres, following a curriculum that includes different disciplines related to the teaching of PSE in the different levels of the Algerian school.

Amongst the training courses, which are spread over a number of years, there is the methodological approach involving the acquisition and/or development of the main basic physical qualities that form a fundamental component of physical fitness, namely: endurance, strength, speed, flexibility, coordination.

The physical qualities are trainable, in spite of age, but with differing effectiveness, and in complementarity with the educational domains defined in the curriculum of the subject teaching, including: the psychomotor domain, the socio-affective domain and the cognitive domain.

The multiple learning and the practice of numerous physical activities ensure the pupil a harmonious development on the physical level but also on the cognitive, social and affective levels, which will have to be developed, in fact, by the PSE teacher in correlation with the fundamental principle of the development of basic physical qualities, in order to ensure a balanced and harmonious physical-technical-psychological development guaranteeing health and the adaptation of the efforts in relation to the age of the pupils and to the principles of the sports training provided in this school which contributes jointly to the improvement of the motor skills and health of the pupils.

Hence the research problem:

What is the most favourable period, based on scientific evidence, to undertake work on the acquisition, development and maintenance of each basic physical quality?

And what training methodology should be implemented to achieve this objective which calls for physical qualities? Is it pure and simple training? Is it training with the

contribution of some qualities? Is it training with total ignorance of these qualities?

The prerequisite of knowing the physical and psychological profile of the child and adolescent in question in the study is justified by the fact that it constitutes an obligatory pathway in a work aimed at the acquisition, development and maintenance of basic physical capacities in the best possible conditions and, particularly, those that do not harm their health above all.

The significance of research

The acquisition, development and maintenance of basic physical qualities are an educational imperative, just as teachers must inquire about the knowledge required to be implemented in the contents of practical sessions, without taking any risk that could harm the health of the pupils; This would not seem to be an easy task if we were to go back to the training course they have received in the STPSA institutes and training centres, both in the scientific and technical field and in the methodology of training and perfect knowledge of the characteristics of the child and the adolescent, in order to choose the workload to be applied to each age group, This implies prior knowledge of the physical and psychological profile of children in these age categories (8-18 years), and thus being able to subject them to an appropriate programme aimed at the acquisition, development and maintenance of basic physical capacities while ensuring the optimal and harmonious development of each individual without taking unnecessary risks; As a result of ignorance or at least insufficient knowledge of the knowledge required in this field or ignorance of how to implement it. All things considered, the consequence of such a state of affairs will manifest itself in a lack of clarity of vision as to the basic physical qualities to be acquired, developed and maintained during the periods of the pupils' healthy lives.

Main hypothesis

In order for the level of development of the pupils to be sufficient to expect the most optimal development of each of the physical qualities in relation to age, it is imperative for the teacher to acquire scientific and methodological knowledge about the basic physical qualities.

First operational hypothesis

Doknowledge of the characteristics of the child and adolescent, together with knowledge of the priority physical quality to be developed, enable the teacher to implement them all?

Second operational hypothesis

Should the teacher know the quality(s) fostering the motor learning without possible risks to health?

Third operational hypothesis

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Is the teacher capable of taking responsibility for the development of basic physical qualities and is he/she willing to integrate them into the curriculum in relation to the pupils' schooling levels and predispositions?

Theoretical overview of the development of basic physical qualities

"A trained muscle is more resistant at the level of its envelopes (fascia, aponeurosis...) and tendons (the connective tissue is more resistant), it gets injured less" (D. Reiss, P. Prévost, 2017).

That said, training for sports performance depends on a certain interaction of several qualities, amongst others:

- Mental qualities,

- Relational qualities,

- Technical and tactical qualities,

- Physical qualities.

According to Renato Manno (1992) "physical qualities constitute the basic motor prerequisite, on which man and athlete build their own technical skills".

According to Jürgen Weineck (1998) "physical qualities represent the basic material of coordinations".

Physical quality is then perceived as a global characteristic of motricity (motor function) and can only be truly possessed by the individual if he or she is able to mobilise it in most situations encountered. This quality is characterised, therefore, by its transferable and operational aspect, thus facilitating the acquisition and quality of motor learning to which the individual who possesses it will be subjected (Pradet, 1999).

Weineck distinguishes two main types of physical qualities:

- factors thatmainly depend on physical condition (and energy processes): endurance, strength and speed.

- factors that mainly dependon the control processes of the nervous system: flexibility and coordination capacity.

* the physical qualities distinguished by Weineck (1998):

- endurance

- strength

- speed

- flexibility

- coordination capacity

Some definitions of keywords

Endurance

Is considered as "the ability of preforming any activity for a long time without a decrease in its efficiency" (Zatsiorsky, 1966), or as "the ability to express a motricity of any intensity for as long as possible" (Pradet, 2001).

Strength

Is considered as "the ability to overcome or oppose external resistance by means of muscular effort" (Zatsiorsky, 1966).

In physical, sports and artistic activities (PSAA), these resistances can be embodied by the body, a device or friction.

Flexibility

Synonymous with joint mobility, flexibility is considered as "the ability to perform movements with the greatest amplitude, in active or passive way" (R. Manno, 1992).

Speed

Is the "ability to perform motor actions in a minimum amount of time" (Zatsiorsky, 1966).

Coordination

Synonymous with skill, it "allows to master motor actions with accuracy and economy and to learn sports gestures (movements) relatively more quickly" (Weineck, 1992).

Interpretation of the findings after studying the questionnaires

Method of investigation

The researcher's investigation was based on experimentation with a sample of 100 teachers from different levels of education dedicated to pupils in the age range of 08 to 18 years, representing four main regions of the country.

Before answering the closed questionnaire, the subjects were given recommendations and guidelines appropriate to the research topic.

In fact, even if the argument justifies working towards the development of certain basic physical qualities and postponing others, it is not limited to the sole parameter of age, but to the intrinsic knowledge of teachers.

- ***1st hypothesis***

Teachers' knowledge of the characteristics of the child and adolescent and the priority physical quality to be developed.

Are teachers able to implement them all?

QUESTIONS		ANSWERS		
		YES	**NO**	**SOMETIMES**
01	Do you adapt the learning content to the age of the pupils?	**41%**	**32%**	**27%**
02	Do you develop all physical qualities in physical and sports activities?	**17%**	**72%**	**11%**
03	If so, why?	**Result of the training and Mastery of the subject**		
04	If not, why?	**Priority to technique**		

It seems obvious that teachers particularly emphasise the technical aspect which seems to them simplest and most accessible to achieve, making physical qualities a mere detail in learning situations that are repeated at all levels of teaching.

- ***2nd hypothesis***

Should the teachers know the quality(s) that foster motor learning without risk to students' health?

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QUESTIONS		ANSWERS				
		ENDURANCE	STRENGTH	SPEED	FLEXIBILITY	COORDINATION
01	What physical quality do you think you develop most in your learning that promotes pupils' health?	**58%**	**02%**	**34%**	**03%**	**03%**
02	According to you, what is the physical quality at risk?	**12%**	**64%**	**19%**	**03%**	**06%**
03	What physical quality do you think you develop most in children aged 08 to 14?	**23%**	**01%**	**21%**	**42%**	**13%**
04	What physical quality do you think you develop most in adolescents aged 15 to 18?	**30%**	**32%**	**26%**	**08%**	**04%**

It seems obvious that the quality 'Endurance' dominates because of its simplicity, being taken as a sports speciality programmed at the beginning of the season and that 'Strength' is a quality at risk, difficult to be taught.

- ***3rd hypothesis***

Are teachers able to take responsibility for the development of basic physical qualities and are they willing to integrate them into the curriculum in relation to the schooling levels and dispositions of the pupils?

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QUESTIONS		ANSWERS			
		YES	NO	SOMETIMES	NO ANSWER
01	Are you willing to take over the development of basic physical qualities in all your school programmes and in all your physical and sports activities?	54%	26%	11%	09%
02	Are you aware of the risks of the wrong approach to the development of basic physical qualities?	76%	14%	06%	04%
03		24%	45%	01%	30%

	Are you deliberately not including them in your learning? If so, what are the reasons for? (For 76%)		**76%**		
		Lack of training and information in this area and the risks that the wrong approach can have on the development of basic physical qualities in pupils, especially children (aged 08-14).			
04	Is it out of ignorance that you avoid developing them?	**71%**	**24%**	**00%**	**05%**
05	Does the lack of development of basic physical qualities hinder the acquisition of sports techniques and performance?	**24%**	**31%**	**20%**	**25%**

It seems obvious that teachers have a consistent understanding of the importance of physical qualities but ignore them when it comes to involving them in learning, in order to avoid any risks that might affect pupils' health.

Finally, according to the results of the three hypotheses, it is concluded that, in addition to the importance of physical qualities and teachers' ignorance of their involvement in pupils' motor learning, flexibility and coordination both remain predominant qualities in children aged 8 to 14, while endurance and speed predominate as two sports specialities to be trained, especially in adolescents aged 15 to 18, while gradually integrating the quality of strength in these adolescents.

CONCLUSION

Health is correlatively linked to physical fitness, which is perceived as "a series of physical qualities related to health or performance" (G. Baquet, A. Blaes, and S. Berthoin, 2007).

The development of these physical qualities during the schooling of children and adolescents, so to speak, remains an imperative not to be neglected in motor learning, which requires perfect knowledge on the part of the teachers of these qualities and of the risks that can be high on the health of the pupils in the event that their ignorance persists in the course of learning through all the physical and sports activities included in the curricula, which must take into consideration the characteristics of the pupils, hence the pedagogical adaptation.

It should be noted that the age group in this study undergoes a very rapid development of motricity (motor function), where particular importance should be given to the education of coordination qualities as well as speed training, since pupils in this age group have great capacities to adapt to simple efforts and team games as well as effort exercises in relation to rapid maturation, knowing that the child has excellent capacities to adapt to aerobic efforts, but less, compared to the adult, to anaerobic lactic efforts.

In this context, the child must find within his or her environment all the forms of physical activities necessary for his or her development. The teacher must help him/her to do this, being aware that the optimal period for training flexibility is between the ages of 6 and 10-12.

Puberty is the crucial phase when the main motor skills involved in physical fitness are approaching their peak growth. It is therefore important to take advantage of this time to strengthen their development while considering the specificities related to age.

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